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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/795,283	07/25/2017	9716644	FOR-112C3	4507

88268 7590 07/03/2017

Law Office of Dorian Cartwright
P.O. Box 7617
San Jose, CA 95150

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 14 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Shaohong Wei, Sunnyvale, CA;
Fortinet, Inc., Sunnyvale, CA;
Zhong Qiang Chen, Sunnyvale, CA;
Ping Ng, Milpitas, CA;
Gang Duan, San Jose, CA;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

Document Description: Issue Fee Payment (PTO-85B)

Issue Fee Transmittal Form

Application Number	Filing Date	First Named Inventor	Atty. Docket No.	Confirmation No.
13795283	12-Mar-2013	Shaohong Wei	FOR-112C3	4507

TITLE OF INVENTION :

SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Entity Status		Application Type	Art Unit	Class - Subclass	EXAMINER
Regular Undiscounted		Utility under 35 USC 111(a)	2462	241000	KEVIN HARPER
Issue Fee Due	Publication Due	Total Fee(s) Due	Date Due		Prev. Paid Fee
\$960	\$0	\$960	22-Jun-2017		\$0

1.Change of Correspondence Address and/or Indication Of Fee Address (37 CFR 1.33 & 1.363)

Current Correspondence Address:	Current Indicated Fee Address :
88268 Law Office of Dorian Cartwright P.O. Box 7617 San Jose CA 95150 UNITED STATES 800-810-8030 eoofficeaction@appcoll.com	
☐ Change of correspondence address requested, system generated AIA/122-EFS form attached	☒ Fee Address indication requested, system generated SB/47-EFS form attached

2.Entity Status**Change in Entity Status**

- ☐ Applicant certifying micro entity status; system generated Micro Entity certification form attached. See 37 CFR 1.29.
Note: Absent a valid certification of micro entity status, issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment. If this box is checked, you will be prompted to choose a micro entity status on the gross income basis (37 CFR 1.29(a)) or the institution of higher education basis (37 CFR 1.29(d)), and make the applicable certification online.
- ☐ Applicant asserting small entity status. See 37 CFR 1.27.
Note: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ☒ Applicant changing to regular undiscounted fee status.
Note: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

Document Description: Issue Fee Payment (PTO-85B)

3.The Following Fee(s) Are Submitted:

☒ Issue Fee

☐ I authorize USPTO to apply my previously paid issue fee to the current fees due

☐ Publication Fee

☐ The Director is hereby authorized to apply my previously paid issue fee to the current fee due and to charge deficient fees to Deposit Account Number _____

☐ Advance Order - # of copies _____

☐ If **in addition to** the payment of the issue fee amount submitted with this form, there are any discrepancies in any amount(s) due, the Director is authorized to charge any deficiency, or credit any overpayment, to Deposit Account Number _____.
The **issue fee must be submitted** with this form. **If payment of the issue fee does not accompany this form, checking this box and providing a deposit account number will NOT be effective to satisfy full payment of the fee(s) due.**

4.Firm and/or Attorney Names To Be Printed

NOTE: If no name is listed, no name will be printed
For printing on the patent front page, list to be displayed as entered

1. LAW OFFICE OF DORIAN CARTWRIGHT

2. DORIAN CARTWRIGHT

3.

5.Assignee Name(s) and Residence Data To Be Printed

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

Name	City	State	Country	Category
Fortinet, Inc.	Sunnyvale	CALIFORNIA	united states	corporation

6.Signature

I certify, in accordance with 37 CFR 1.4(d)(4) that I am an attorney or agent registered to practice before the Patent and Trademark Office who has filed and has been granted power of attorney in this application. I also certify that this Fee(s) Transmittal form is being transmitted to the USPTO via EFS-WEB on the date indicated below.

Signature	/Dorian Cartwright/	Date	06-21-2017
Name	Dorian Cartwright	Registration Number	53853

FEE ADDRESS INDICATION FORM

Application Number	13795283	Art Unit	2462
Filing Date	12-Mar-2013	Examiner Name	KEVIN HARPER
First Name Inventor	Shaohong Wei	Attorney Doc. Number	FOR-112C3

INSTRUCTIONS: In order for the fee address identified on this form to be effective, the issue fee must have been paid for the application listed on this form. Only an address represented by a customer number can be established as the fee address for maintenance fee purposes (hereafter, fee address). A fee address should be established when correspondence related to maintenance fees should be mailed to a different address than the correspondence address for the application. For more information on customer numbers, see the Manual of Patent Examining Procedure (MPEP) § 403.

Please recognize as the Fee Address under the provisions of 37 CFR 1.363 the address associated with:

Customer Number:

88268

Signature :

I certify, in accordance with 37 CFR 1.4(d)(4) that I am an attorney or agent registered to practice before the Patent and Trademark Office who has filed and has been granted power of attorney in this application.

Signature	/Dorian Cartwright/	Date	06-21-2017
Name	Dorian Cartwright	Registration Number	53853

Electronic Patent Application Fee Transmittal				
Application Number:		13795283		
Filing Date:		12-Mar-2013		
Title of Invention:		SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		
First Named Inventor/Applicant Name:		Shaohong Wei		
Filer:		Dorian Cartwright/Kym Moore		
Attorney Docket Number:		FOR-112C3		
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
UTILITY APPL ISSUE FEE	1501	1	960	960
PUBL. FEE- EARLY, VOLUNTARY, OR NORMAL	1504	1	0	0
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				960

Electronic Acknowledgement Receipt

EFS ID:	29571625
Application Number:	13795283
International Application Number:	
Confirmation Number:	4507
Title of Invention:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
First Named Inventor/Applicant Name:	Shaohong Wei
Customer Number:	88268
Filer:	Dorian Cartwright/Kym Moore
Filer Authorized By:	Dorian Cartwright
Attorney Docket Number:	FOR-112C3
Receipt Date:	21-JUN-2017
Filing Date:	12-MAR-2013
Time Stamp:	23:17:25
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	EFT
Payment was successfully received in RAM	\$960
RAM confirmation Number	062217INTEFSW23172300
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	Web85b.pdf	46093	no	2
			bd6bed434f979deb39fd9058c81c82e862b55dac		
Warnings:					
Information:					
2	Maintenance Fee Address Change	web85feeaddress.pdf	32416	no	1
			4f2d06850fbcc58931fd07f1463ada54e84b2eef		
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	32233	no	2
			88db9345de76d7d7defc122c0b91a2e3f17a21f6		
Warnings:					
Information:					
Total Files Size (in bytes):			110742		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					



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www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

88268 7590 03/22/2017
Law Office of Dorian Cartwright
P.O. Box 7617
San Jose, CA 95150

EXAMINER

HARPER, KEVIN C

ART UNIT

PAPER NUMBER

2462

DATE MAILED: 03/22/2017

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/795,283	03/12/2013	Shaohong Wei	FOR-112C3	4507

TITLE OF INVENTION: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$960	\$0	\$0	\$960	06/22/2017

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

88268 7590 03/22/2017

Law Office of Dorian Cartwright
P.O. Box 7617
San Jose, CA 95150

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/795,283	03/12/2013	Shaohong Wei	FOR-112C3	4507

TITLE OF INVENTION: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$960	\$0	\$0	\$960	06/22/2017

EXAMINER	ART UNIT	CLASS-SUBCLASS
HARPER, KEVIN C	2462	370-241000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) The names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY AND STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
- ☐ Applicant asserting small entity status. See 37 CFR 1.27
- ☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/795,283	03/12/2013	Shaohong Wei	FOR-112C3	4507
88268	7590	03/22/2017	EXAMINER	
Law Office of Dorian Cartwright P.O. Box 7617 San Jose, CA 95150			HARPER, KEVIN C	
			ART UNIT	PAPER NUMBER
			2462	
DATE MAILED: 03/22/2017				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 13/795,283	Applicant(s) WEI ET AL.	
	Examiner Kevin C. Harper	Art Unit 2462	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment of 17 December 2016.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are 1-12. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some *c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has **THREE MONTHS FROM THE "MAILING DATE"** of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. ☐ Notice of References Cited (PTO-892) | 5. ☐ Examiner's Amendment/Comment |
| 2. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 6. ☐ Examiner's Statement of Reasons for Allowance |
| 3. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 7. ☐ Other _____. |
| 4. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____. | |

/Kevin C. Harper/
Primary Examiner, Art Unit 2462

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S452	81	(first adj packet\$1 same second adj packet\$1) with (classif\$7) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2017/01/20 18:30
L4	3	(h04l43/18 h04l47/2441 h04l47/36 h04l69/22).cpc. and (eliminat\$3 potential suspected) near6 (classif\$7) and @pd>"20160912"	US-PGPUB; USPAT	OR	OFF	2017/03/07 21:38
L5	40	packet\$1 near5 port\$1 near9 (analyz\$5 classif\$5) near5 (content application\$1) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2017/03/07 21:48
L6	30	(eliminat\$3 potential suspected) near6 (classification) near5 (frame\$1 packet\$1) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2017/03/07 21:53
L7	38	("20060262789" "8010685" "20060161986" "20060077989" "7447220" "7756997" "20070088845" "8224989" "20100250743" "6381242" "7778194" "7031316" "20020105910" "7782793" "6412000" "20110208871" "8730984" "20020055998" "6591299" "6457051" "20020143939" "8244859" "20070076606" "7644158" "6957258" "20100067537" "20020143948" "20110208874" "8493852" "20090133114" "20120327767" "7436830" "9172629" "20060002292" "6789116" "20050190694" "8331234" "7093280").pn.	US-PGPUB; USPAT	OR	OFF	2017/03/07 21:55
L9	7	WO2002019639A1 EP1314285A1 EP1905213B1 WO1999027684A1 CN100490422C EP2264942A2 EP1764951A1 WO2002079949A2 EP1764951B1 WO2002080004A1 EP1805956B1 EP1374067A1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/03/07 22:00

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	36	(first adj packet\$1 same second adj packet\$1) with (classifi\$6).clm.	USPAT	OR	OFF	2017/03/07 21:37
L1	18	packet\$1 near5 (analyz\$5 classif\$5).clm. and (candidate\$1 likel\$5 potential\$2 probabl\$1 probabilit\$3) near6 (type\$1 kind\$1 application\$1 content).clm.	USPAT	OR	OFF	2017/03/07 21:37

3/ 7/ 2017 10:02:44 PM

C:\Users\kharper\Documents\EAST\Workspaces\14087847 packet session analyzer.wsp

Search Notes 	Application/Control No. 13795283	Applicant(s)/Patent Under Reexamination WEI ET AL.
	Examiner KEVIN C HARPER	Art Unit 2462

CPC- SEARCHED		
Symbol	Date	Examiner
H04L 43/18, 47/2441, 47/36, 69/22	9/12/16	kch
updated above search	3/7/17	kch

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
inventorship search on PALM	9/28/14	kch
EAST - see printout	9/28/14	kch
updated above searches	1/26/15	kch
updated above searches	6/14/15	kch
updated above searches	1/21/16	kch
updated above searches (CPC of 9/12/16 limited by text)	9/12/16	kch
updated above searches (CPC of 3/7/17 limited by text)	3/7/17	kch
ip.iq.com (NPL and patent search based on amended claim ; see printout for patent listing)1	3/7/17	kch

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
	see interference printout	3/7/17	kch

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Issue Classification 	Application/Control No. 13795283	Applicant(s)/Patent Under Reexamination WEI ET AL.
	Examiner KEVIN C HARPER	Art Unit 2462

[illegible]

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	12	
/KEVIN C HARPER/ Primary Examiner.Art Unit 2462	03/07/2017	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	4

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor: Shaohong Wei Confirmation No.: 4507
Serial No.: 13/795,283 Group Art Unit: 2462
Filed: 03/12/2013 Examiner: Kevin C HARPER
For: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

MAIL STOP AMENDMENT
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT IN RESPONSE TO OFFICE ACTION OF SEPTEMBER 16, 2016

Sir:

In response to the Office Action (non-final) of
September 16, 2016. Applicant submits the following
amendments and remarks:

Amendments to the Claims begin on page 2 of this paper.

Remarks begin on page 8 of this paper.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions of the claims in the present application:

Listing of Claims:

1. (Currently Amended) A computer-implemented method for determining a type of content for packets of a data network, comprising:

receiving an input of a string pattern from a user interface as a parameter for classification;

receiving, at a first port of a plurality of ports, a first packet from the data network that is associated with a first session of packets, wherein the first port is configured to receive a plurality of distinctive content types;

eliminating at least one potential classification from a group of potential classifications for the first packet without identifying a classification for the first packet associated with the first session;

receiving a second packet associated with the first session;

determining whether a content type has been determined
for the first packet associated with the first
session;
responsive to the content type of the first packet
associated with the first session having been
determined, classifying the second packet to be the
content type based at least in part on the
determined content type without expending further
classification resources; ~~and~~
responsive to the content type of the first packet not
having been determined, classifying the second
packet based on the input string pattern without
consideration of the at least one identified
potential classification that has been eliminated
with respect to the first packet and without
consideration for identification of the first port;
processing data associated with the first session based
on the determined content type; and
controlling flow of the first session based on the
determined content type.

2. (Previously Presented) The method of claim 1,
wherein the content type for the first packet
has been determined.

3. (Previously Presented) The method of claim 1, wherein the content type for the first packet has not been determined, and the method further comprises receiving one or more additional packets.

4. (Original) The method of claim 3, wherein the act of classifying the packet comprises analyzing one of the one or more additional packets to determine if the one or more additional packets satisfy a prescribed criteria.

5. (Previously Presented) The method of claim 1, wherein the content type has been determined for the first packet associated with the session to not be at least one ruled out classification.

6. (Previously Presented) The method of claim 1, wherein the content type has been determined for the first packet associated with the session to potentially be of a particular classification.

7. (Currently Amended) A computer product includes a non-transitory computer-readable medium, the non-transitory computer-readable medium having a set of stored

instructions, an execution of which causes a method for determining a type of content for packets of a data network to be performed, the method comprising:

receiving, at a first port of a plurality of ports, a first packet and a second packet from the data network that is associated with a first session of packets, wherein the first port is configured to receive a plurality of content types for the packets associated with the session without identifying classification of respective port numbers of the packets;

eliminating at least one potential classification from a group of potential classifications for the first packet without identifying a classification for the first packet associated with the first session;

~~receiving a second packet associated with the first session;~~

determining whether a content type has been determined for the first packet associated with the session;

responsive to the content type of the first packet associated with the session having been determined, classifying the second packet to be the content type based at least in part on the determined

content type without expending further classification resources; and responsive to the content type of the first packet not having been determined, classifying the second packet without consideration of the at least one identified potential classification that has been eliminated with respect to the first packet.

8. (Previously Presented) The computer product of claim 7, wherein the content type for the first packet has been determined.

9. (Previously Presented) The computer product of claim 7, wherein the content type for the first packet has not been determined, and the method further comprises receiving one or more additional packets.

10. (Original) The computer product of claim 9, wherein the act of classifying the packet comprises analyzing one of the one or more additional packets to determine if the one or more additional packets satisfy a prescribed criteria.

11. (Previously Presented) The computer product of claim 7, wherein the content type has been determined for the

first packet associated with the session to not be at least one ruled out classification.

12. (Previously Presented) The computer product of claim 7, wherein the content type has been determined for the first packet associated with the session to potentially be of a particular classification.

13.-18. (Canceled)

REMARKS

Claims 1-18 were pending in the present application. In the Office Action (non-final) of September 16, 2016, claims 1-18 were rejected. The claims, as amended, are listed above. No claims have been deleted. Accordingly, claims 1-18 remain pending in the present application.

Applicant requests entry of the amendments and responds to the Office Action with the following remarks:

I. Claim Objections

Claims 1-12 are objected to because in the independent claims "classifying the packet" (e.g., in line 18 for claim 1) lacks antecedent basis because it may refer to the first packet or the second packet.

In response, Applicant has amended claims 1, 7, and 13 to recite "classifying the second packet".

II. Claim Rejections - 35 USC § 102

Claims 1-15 and 17-18 were rejected under pre-AIA 35 USC 102(e) as being anticipated by Yung et al (US Pat. No. 7,664,048).

Applicant respectfully traverses the rejections.

Applicant submits Yung fails to teach or disclose the limitations as recited in amended claim 1 for at least the reasons discussed below. Therefore, claim 1 is patentable

over Yung. Further, similar claims 7 and 13, and all dependent claims therefrom, are also patentable over Yung.

A. Yung fails to teach or disclose the limitations of amended claim 1 including: receiving, at a first port of a plurality of ports...wherein the first port is configured to receive a plurality of content types for the packets associated with the session without identifying classification of respective port numbers of the packets

Amended claim 1 recites the first port receives a plurality of content types for the packets associated with the session. This receipt of packets is performed without identifying classification of respective port numbers of the packets. Support for the amendment can be found in at least paragraph 0049 of the application as filed.

Yung, as relied upon by the Examiner, describes a packet processor receiving a data packet and determines whether a flow object has already been created for the flow to which the data packet is a part (Col. 8, lines 3-5). However, there is no teaching of a first port of a plurality of ports. Neither is there a teaching of said port receiving a plurality of content types for the packets without identifying classification of respective port numbers of the packets.

This feature of amended claim 1, namely the receiving of the plurality of content types without identifying

classification of respective port numbers of the packets, provides advantageously the improvement of the processing time (e.g., of a data classification module) by having multiple content types being received a single port.

B. The References fail to teach or suggest the limitations of amended claim 1 including: receiving input of a string pattern from a user interface for classification

Amended claim 1 also recites that input of a string pattern can be received from a user interface for classification.

Yung and Yoakum (discussed below) fail to even contemplate the claim limitation, being completely silent.

III. Claim Rejections - 35 USC § 103

Claim 16 was rejected under 35 USC 103(a) as being unpatentable over Yung et al in view of Yoakum et al (US Pub. No. 2014/0198632, referred to herein as "Yoakum"). Applicant respectfully traverses the rejections.

In response, Applicant respectfully traverses the rejections. Because claim 16 is each dependent upon an allowable base claim as discussed above, these claims are patentable over the combination of Yung in view of Yoakum for at least the same reasons as the base claim. Moreover,

Yoakum fails to cure the deficiencies of Yung concerning the base claim. Furthermore, the dependent claims recite additional limitations that are neither disclosed nor suggested by the cited references. Applicant reserves the right to address these additional limitations separately if need be.

Conclusion

Accordingly, Applicant respectfully requests reconsideration and allowance of the claims as now presented. Applicant's attorney believes this application is in condition for allowance. Should any unresolved issues remain, Examiner is invited to call Applicant's attorney at the telephone number indicated below.

Respectfully submitted,

12/16/2016

/Dorian Cartwright/
Dorian Cartwright
Reg. No. 53,853

Customer Number 88268
(800) 810-8030

Electronic Acknowledgement Receipt

EFS ID:	27821606
Application Number:	13795283
International Application Number:	
Confirmation Number:	4507
Title of Invention:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
First Named Inventor/Applicant Name:	Shaohong Wei
Customer Number:	88268
Filer:	Dorian Cartwright/Kym Moore
Filer Authorized By:	Dorian Cartwright
Attorney Docket Number:	FOR-112C3
Receipt Date:	17-DEC-2016
Filing Date:	12-MAR-2013
Time Stamp:	01:16:33
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		FOR-112C3_response.pdf	122806	yes	12
			5bad49329c8f0cfeeb66e66df5507b4d982754ff		

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	7
	Applicant Arguments/Remarks Made in an Amendment	8	12
Warnings:			
Information:			
Total Files Size (in bytes):		122806	
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/Dorian Cartwright/

Signature

Dorian Cartwright

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12/16/2016

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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	27821623
Application Number:	13795283
International Application Number:	
Confirmation Number:	4507
Title of Invention:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
First Named Inventor/Applicant Name:	Shaohong Wei
Customer Number:	88268
Filer:	Dorian Cartwright/Kym Moore
Filer Authorized By:	Dorian Cartwright
Attorney Docket Number:	FOR-112C3
Receipt Date:	17-DEC-2016
Filing Date:	12-MAR-2013
Time Stamp:	02:53:50
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	FOR-112C3_certificate.pdf	118319	no	2
			079fee19182bd6f46eaa0b76969aad6df6485247		

Warnings:

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875				Application or Docket Number 13/795,283		Filing Date 03/12/2013		☐ To be Mailed	
ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO									
APPLICATION AS FILED – PART I									
(Column 1)		(Column 2)							
FOR	NUMBER FILED	NUMBER EXTRA			RATE (\$)	FEE (\$)			
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A			N/A				
☐ SEARCH FEE (37 CFR 1.16(k), (j), or (m))	N/A	N/A			N/A				
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A			N/A				
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*			X \$	=			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*			X \$	=			
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).								
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))									
* If the difference in column 1 is less than zero, enter "0" in column 2.					TOTAL				
APPLICATION AS AMENDED – PART II									
(Column 1)		(Column 2)		(Column 3)					
AMENDMENT	12/17/2016	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	* 12	Minus	** 20	= 0	X \$80 =		0	
	Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X \$420 =		0	
	☐ Application Size Fee (37 CFR 1.16(s))								
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE		0	
(Column 1)		(Column 2)		(Column 3)					
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$		=	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$		=	
	☐ Application Size Fee (37 CFR 1.16(s))								
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE			
<p>* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.</p>									

LIE
GLORIA ANTHONY

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/795,283	03/12/2013	Shaohong Wei	FOR-112C3	4507
88268	7590	09/16/2016		
Law Office of Dorian Cartwright P.O. Box 7617 San Jose, CA 95150			EXAMINER HARPER, KEVIN C	
			ART UNIT	PAPER NUMBER
			2462	
			NOTIFICATION DATE	DELIVERY MODE
			09/16/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@cartwrightesq.com
vibrantnet@yahoo.com
eofficeaction@appcoll.com

Office Action Summary	Application No. 13/795,283	Applicant(s) WEI ET AL.	
	Examiner Kevin C. Harper	Art Unit 2462	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 08 August 2016.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☒ Claim(s) 1-18 is/are pending in the application.
5a) Of the above claim(s) ____ is/are withdrawn from consideration.

6) ☐ Claim(s) ____ is/are allowed.

7) ☒ Claim(s) 1-18 is/are rejected.

8) ☐ Claim(s) ____ is/are objected to.

9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10) ☐ The specification is objected to by the Examiner.

11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some** c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. ____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
Paper No(s)/Mail Date ____.

3) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.

4) ☐ Other: ____.

The present application is being examined under the pre-AIA first to invent provisions.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 08 August 2016 has been entered.

Response to Arguments

Applicants' arguments filed 08 August 2016 have been fully considered but they are not persuasive. Applicant argued Yung does not disclose classifying the second packet without consideration of at least one eliminated potential classification for the first packet. However, Examiner disagrees.

In Yung a suspected application represents a potential classification as claimed. A returned suspected application (step 340) is determined by eliminating prior applications in a list that do not match (steps 332, 342 and 344). Only at step 326 of fig. 5A is a packet classified with the suspected application (fig. 5D, note: after several consecutive packets match a suspected application pattern – steps 314 and 316-no) and only the suspected application is considered for the second packet and subsequent packets (step 314; fig. 5D). The first packet of a session is the only packet that is compared with several potential classifications (step 306 and fig. 5B). Thus, Yung teaches as claimed eliminating at least one potential classification of a first packet of a session and classifying the second packet without consideration of the potential classification that has been eliminated.

Additionally, Examiner notes in the broadest reasonable interpretation “a first packet” can be the second or subsequent packet of a session, the “determined content type” can be a classification of ‘unknown’ as shown in fig. 5A, step 318, and “the content type of the first packet not having been determined” can be an association with a suspected application (fig. 5B, step 340) before the actual classification is determined (step 326).

Statement Regarding 35 U.S.C. 112(f) (or 112 6th paragraph, pre-AIA)

The following is a quotation of 35 U.S.C. 112(f):

(f) Element in Claim for a Combination. – An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

The following is a quotation of pre-AIA 35 U.S.C. 112, sixth paragraph:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

Use of the word “means” (or “step for”) in a claim with functional language creates a rebuttable presumption that the claim element is to be treated in accordance with 35 U.S.C. 112(f) (pre-AIA 35 U.S.C. 112, sixth paragraph). The presumption that 35 U.S.C. 112(f) (pre-AIA 35 U.S.C. 112, sixth paragraph) is invoked is rebutted when the function is recited with sufficient structure, material, or acts within the claim itself to entirely perform the recited function.

Absence of the word “means” (or “step for”) in a claim creates a rebuttable presumption that the claim element **is not** to be treated in accordance with 35 U.S.C. 112(f) (pre-AIA 35 U.S.C. 112, sixth paragraph). The presumption that 35 U.S.C. 112(f) (pre-AIA 35 U.S.C. 112, sixth paragraph) is not invoked is rebutted when the claim element recites function but fails to recite sufficiently definite structure, material or acts to perform that function.

Claim elements in this application that use the word “means” (or “step for”) are presumed to invoke 35 U.S.C. 112(f) except as otherwise indicated in an Office action. Similarly, claim elements that do not use the word “means” (or “step for”) are presumed not to invoke 35 U.S.C. 112(f) except as otherwise indicated in an Office action.

The structure described in the specification at least in paras. 53-60 and fig. 5 is generally recognized in the electric art (such as a computer, processor, specialized hardware, specialized software, etc., to realize the invention). Therefore, Examiner finds the claims are reasonably supported by the structure described in the specification pertaining to 35 U.S.C. 112 (a) and (b) (or 35 U.S.C. 112, first and second paragraphs, pre-AIA) whether 35 U.S.C. 112(f) is invoked or not.

Claim Objections

Claims 1-12 are objected to because in the independent claims “classifying the packet” (e.g., in line 18 for claim 1) lacks antecedent basis because it may refer to the first packet or the second packet. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-15 and 17-18 are rejected under pre-AIA 35 U.S.C. 102(e) as being anticipated by Yung et al. (US 7,664,048).

1. Regarding claims 1-15 and 17-18, Yung discloses a computer-implemented method (col. 6, lines 60-64) for determining a type of content for packets of a data network (figs. 1-2; fig. 5A, steps 306 and 326; col. 18, lines 29-30; note: packet content based on an application as determined by the

Art Unit: 2462

packet sizes - fig. 5D and col. 14, line 60 through col. 15, line 22; col. 10, line 53 through col. 11, line 8). The method comprises **receiving** a packet from the data network that is associated with a first session of packets (fig. 4; fig. 5A, step 302; note: flow), **eliminating** at least one potential classification from a group of potential classifications for the first packet without identifying a classification for the first packet associated with the first session (fig. 5B, no for steps 332, 334 or 338 and 342- No and 344; note: steps performed before a suspected classification is determined; in the broadest reasonable interpretation “identifying a classification” can be an actual classification assigned to a packet or session (instant application, specification, para. 35; note: identifying traffic involves classification of the packets) in which case fig. 5A, step 326 is not performed for the first packet), **receiving** a second packet associated with the first session (step 302-no), determining whether a content type has been determined for the first packet associated with the session (step 304; col. 13, lines 40-43), **responsive** to the content type of the first packet associated with the session having been determined classifying the first and second packet (and all packets of the session – col. 14, lines 16-19; note: classifying the flow) to be the content type based at least in part on the determined content type without expending further classification resources (step 305; col. 13, lines 46-53), **and responsive** to the content type of the first packet not having been determined (steps 306, 310 and 312 - Yes), classifying the second packet without consideration of the at least one identified potential classification that has been eliminated with respect to the first packet (step 326 and for previous packets steps 314 and 316 - No; fig. 5D; col. 14, lines 4-5, 16-19 and 60-62 and col. 15, lines 2-5; alternatively, steps 316 - Yes and 318; note: only the suspected application is considered). **Further regarding claim 13**, the monitoring device includes a network port (fig. 1, items 71-72). **Regarding claim 14**, a port number of a port on the monitoring device is not used to determine the content type (fig. 1; figs. 5B and 5D; col. 8, lines 15-24).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 16 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Yung in view of Yoakum et al. (US 2014/0198632).

2. Yung discloses analyzing a packet based several characteristics (col. 4, lines 51-55; col. 20, lines 20-30) but not on a characteristic selected from the group consisting of a string pattern, a session classifier, a packet size and a port number. However, Yoakum discloses analyzing a packet base on any packet attributes as desired (para. 24, last sentence). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to analyze a packet based on a specific group of packet characteristics in the invention of Yung in order to classify a packet as desired, as is known in the art (Yoakum, para. 24).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Harper whose telephone number is 571-272-3166. The examiner can normally be reached weekdays from 11:00 AM to 7:00 PM ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yemane Mesfin, can be reached at 571-272-3927. The centralized fax number for the Patent Office is 571-273-8300. For non-official communications, the examiner's personal fax number is 571-273-3166 and the examiner's e-mail address is kevin.harper@uspto.gov.

Art Unit: 2462

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications associated with a customer number is available through Private PAIR only. For more information about the PAIR system, see portal.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin C. Harper/

Primary Examiner, Art Unit 2462

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S410	15	(S400 S401 S402 S403 S404 S405 S406 S407 S408 S409) and @pd>"20150614"	US-PGPUB; USPAT	OR	OFF	2016/09/10 23:35
S409	74	S407 not S408	US-PGPUB; USPAT	OR	OFF	2016/09/10 23:35
S408	30	(frame\$1 packet\$1)same (unknown)near6 (classif\$6) and (@rlad @ad)<"20060216" and classif\$6.ab,ti.	US-PGPUB; USPAT	OR	OFF	2016/09/10 23:35
S407	104	(frame\$1 packet\$1)same (unknown)near6 (classif\$6) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2016/09/10 23:35
S406	24	(frame\$1 packet\$1)same (unknown)near6 (classification\$1) and (@rlad @ad) <"20060216"	US-PGPUB; USPAT	OR	OFF	2016/09/10 23:35
S405	93	(frame\$1 packet\$1) near5 (possible possibilit\$3 probabl\$1 potential\$2 candidate\$1 guess\$3) adj2 (classif\$5) and (@rlad @ad) <"20060216"	US-PGPUB; USPAT	OR	OFF	2016/09/10 23:35
S404	126	(frame\$1 packet\$1)same (possible possibilit\$3 probabl\$1 potential\$2 candidate\$1 guess\$3) adj2 (classification\$1) and (@rlad @ad) <"20060216"	US-PGPUB; USPAT	OR	OFF	2016/09/10 23:35
S403	74	packets near5 (analyz\$5 classif\$5) near5 (possibilit\$3 probabl\$1 potential\$2 candidate\$1 guess\$3) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2016/09/10 23:35
S402	26	packets near5 (analyz\$5 classif\$5) near5 (partial\$2) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2016/09/10 23:35
S401	13	packets near5 (possibl\$1 possibilit\$3 probabl\$1 potential\$2 candidate\$1 guess\$3) adj4 classifi\$7 and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2016/09/10 23:35
S400	224	packets near5 (analyz\$5 classif\$5) near5 (possibl\$1 possibilit\$3 probabl\$1 potential\$2 candidate\$1 guess\$3 rul\$3 adj2 out) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2016/09/10 23:35
L19	5	(L18) and @pd>"20160121"	US-PGPUB; USPAT	OR	OFF	2016/09/12 10:09
L18	15	(L8 L9 L10 L11 L12 L13 L14 L15 L16 L17) and @pd>"20150614"	US-PGPUB; USPAT	OR	OFF	2016/09/12 10:09
L17	74	L15 not L16	US-PGPUB; USPAT	OR	OFF	2016/09/12 10:09
L16	30	(frame\$1 packet\$1)same (unknown)near6 (classif\$6) and (@rlad @ad)<"20060216" and classif\$6.ab,ti.	US-PGPUB; USPAT	OR	OFF	2016/09/12 10:09

L15	104	(frame\$1 packet\$1)same (unknown)near6 (classification\$6) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2016/09/12 10:09
L14	24	(frame\$1 packet\$1)same (unknown)near6 (classification\$1) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2016/09/12 10:09
L13	93	(frame\$1 packet\$1) near5 (possible possibilit\$3 probabl\$1 potential\$2 candidate\$1 guess\$3) adj2 (classif\$5) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2016/09/12 10:09
L12	126	(frame\$1 packet\$1)same (possible possibilit\$3 probabl\$1 potential\$2 candidate\$1 guess\$3) adj2 (classification\$1) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2016/09/12 10:09
L11	74	packets near5 (analyz\$5 classif\$5) near5 (possibilit\$3 probabl\$1 potential\$2 candidate\$1 guess\$3) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2016/09/12 10:09
L10	26	packets near5 (analyz\$5 classif\$5) near5 (partial\$2) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2016/09/12 10:09
L9	13	packets near5 (possibl\$1 possibilit\$3 probabl\$1 potential\$2 candidate\$1 guess\$3) adj4 classifi\$7 and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2016/09/12 10:09
L8	224	packets near5 (analyz\$5 classif\$5) near5 (possibl\$1 possibilit\$3 probabl\$1 potential\$2 candidate\$1 guess\$3 rul\$3 adj2 out) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2016/09/12 10:09
L21	33	(h04l43/18 h04l47/2441 h04l47/36 h04l69/22).cpc. and (eliminat\$3 potential suspected) near6 (classification) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2016/09/12 10:16

EAST Search History (Interference)

< This search history is empty >

9/ 12/ 2016 10:21:35 AM**C:\ Users\ kharper\ Documents\ EAST\ Workspaces\ 14087847 packet session analyzer.wsp**

Search Notes 	Application/Control No. 13795283	Applicant(s)/Patent Under Reexamination WEI ET AL.
	Examiner KEVIN C HARPER	Art Unit 2462

CPC- SEARCHED		
Symbol	Date	Examiner
H04L 43/18, 47/2441, 47/36, 69/22	9/12/16	kch

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
inventorship search on PALM	9/28/14	kch
EAST - see printout	9/28/14	kch
updated above searches	1/26/15	kch
updated above searches	6/14/15	kch
updated above searches	1/21/16	kch
updated above searches (CPC of 9/12/16 limited by text)	9/12/16	kch

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/795,283	03/12/2013	Shaohong Wei	FOR-112C3	4507
88268	7590	08/23/2016		
Law Office of Dorian Cartwright P.O. Box 7617 San Jose, CA 95150			EXAMINER HARPER, KEVIN C	
			ART UNIT	PAPER NUMBER
			2462	
			NOTIFICATION DATE	DELIVERY MODE
			08/23/2016	ELECTRONIC

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**UNITED STATES DEPARTMENT OF COMMERCE****U.S. Patent and Trademark Office**

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Alexandria, Virginia 22313-1450

APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
13/795,283	12 March, 2013	WEI ET AL.	FOR-112C3

Law Office of Dorian Cartwright P.O. Box 7617 San Jose, CA 95150		EXAMINER	
		Kevin C. Harper	
		ART UNIT	PAPER
		2462	20160817

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner for Patents

The abandonment mailed 16 August 2016 (paper number 20160811) was done inadvertently. A response from applicant received 08 August 2016 has a certificate of mailing on 29 July 2016 within the 6 month period for reply.

/Kevin C. Harper/
Primary Examiner, Art Unit 2462



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/795,283	03/12/2013	Shaohong Wei	FOR-112C3	4507
88268	7590	08/16/2016		
Law Office of Dorian Cartwright P.O. Box 7617 San Jose, CA 95150			EXAMINER HARPER, KEVIN C	
			ART UNIT 2462	PAPER NUMBER
			NOTIFICATION DATE 08/16/2016	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@cartwrightesq.com
vibrantnet@yahoo.com
eofficeaction@appcoll.com

Notice of Abandonment

Application No.

13/795,283

Examiner

Kevin C. Harper

Applicant(s)

WEI ET AL.

Art Unit

2462

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

This application is abandoned in view of:

1. ☒ Applicant's failure to timely file a proper reply to the Office letter mailed on 29 January 2016.
 - (a) ☐ A reply was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply (including a total extension of time of _____ month(s)) which expired on _____.
 - (b) ☐ A proposed reply was received on _____, but it does not constitute a proper reply under 37 CFR 1.113 to the final rejection.
(A proper reply under 37 CFR 1.113 to a final rejection consists only of: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) if this is utility or plant application, a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. Note that RCEs are not permitted in design applications.)
 - (c) ☐ A reply was received on _____ but it does not constitute a proper reply, or a bona fide attempt at a proper reply, to the non-final rejection. See 37 CFR 1.85(a) and 1.111. (See explanation in box 7 below).
 - (d) ☒ No reply has been received.
2. ☐ Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
 - (a) ☐ The issue fee and publication fee, if applicable, was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).
 - (b) ☐ The submitted fee of \$_____ is insufficient. A balance of \$_____ is due.
The issue fee required by 37 CFR 1.18 is \$_____. The publication fee, if required by 37 CFR 1.18(d), is \$_____.
 - (c) ☐ The issue fee and publication fee, if applicable, has not been received.
3. ☐ Applicant's failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
 - (a) ☐ Proposed corrected drawings were received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply.
 - (b) ☐ No corrected drawings have been received.
4. ☐ The letter of express abandonment which is signed by the attorney or agent of record or other party authorized under 37 CFR 1.33(b). See 37 CFR 1.138(b).
5. ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34) upon the filing of a continuing application.
6. ☐ The decision by the Board of Patent Appeals and Interference rendered on _____ and because the period for seeking court review of the decision has expired and there are no allowed claims.
7. ☐ The reason(s) below:

/Kevin C. Harper/
Primary Examiner, Art Unit 2462

Petitions to revive under 37 CFR 1.137, or requests to withdraw the holding of abandonment under 37 CFR 1.181, should be promptly filed to minimize any negative effects on patent term.



ITW
RCE

PTO/SB/30 (07-14)

Approved for use through 07/31/2016 OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Request for Continued Examination (RCE) Transmittal

Address to:
Mail Stop RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Application Number	13/795,283
Filing Date	03/12/2013
First Named Inventor	Shaohong Wei
Art Unit	2462
Examiner Name	HARPER, KEVIN C
Attorney Docket Number	FOR-112C3

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, to any international application that does not comply with the requirements of 35 U.S.C 371, or to any design application. See Instruction Sheet for RCEs (not to be submitted to the USPTO on page 2.)

1. **Submission required under 37 CFR 1.114** Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

a. ☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

i. ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

ii. ☐ Other _____

b. ☒ Enclosed

i. ☒ Amendment/Reply

ii. ☐ Affidavit(s)/ Declaration(s)

iii. ☐ Information Disclosure Statement (IDS)

iv. ☐ Other _____

2. **Miscellaneous**

a. ☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of _____ months. (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

b. ☐ Other _____

3. **Fees**

The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

The Director is hereby authorized to charge the following fees, any underpayment of fees, or credit any overpayments, to Deposit Account No. _____

a. ☒ RCE fee required under 37 CFR 1.17(e)

ii. ☒ Extension of time fee (37 CFR 1.136 and 1.17)

iii. ☐ Other _____

h. ☐ Check in the amount of \$ _____ enclosed

c. ☒ Payment by credit card (Form PTO-2038 enclosed)

08/09/2016 CCHAU1 00000069 13795283
01 FC:1820 1700.00 DP

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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED			
Signature		Date	July 29, 2016
Name (Print/Type)	Dorian Cartwright	Registration No.	53,853

CERTIFICATE OF MAILING OR TRANSMISSION	
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450 or facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below.	
Signature	
Name (Print/Type)	Dorian Cartwright
Date	July 29, 2016

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor: Shoahong WEI

Confirmation No.: 4507

Serial No.: 13/795,283

Group Art Unit: 2462

Filed: 03/12/13

Examiner: Harper, Kevin

For: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

MAIL STOP AMENDMENT

Commissioner for Patents

P. O. Box 1450

Alexandria, VA 22313-1450

**REQUEST FOR CONTINUED EXAMINATION (RCE) AND AMENDMENT IN
RESPONSE TO FINAL OFFICE ACTION OF JANUARY 29, 2016**

Sir:

In response to the Office Action (final) of January 29, 2016, Applicant submits an extension of time request along with the following amendments and remarks:

Amendments to the Claims begin on page 2 of this paper.

Remarks begin on page 8 of this paper.

08/09/2016 CCHAU1 00000069 13795283

02 FC:1253

1400.00 0P

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions of the claims in the present application:

Listing of Claims:

1. (Currently Amended) A computer-implemented method for determining a type of content for packets of a data network, comprising:

receiving a first packet from the data network that is associated with a first session of packets;
eliminating at least one potential classification from a group of potential classifications for the first packet without identifying a classification for the first packet associated with the first session;
receiving a second packet associated with [[a]] the first session;
determining whether a content type has been determined for another the first packet associated with the session;
when responsive to the content type of another the first packet associated with the session having has been determined, classifying the packet to be the content type based at least in part on the determined content type without expending further classification resources; a result from the act of determining; and
when responsive to the content type of another the first packet has not having been determined, at least one potential classification has been ruled

~~out with regard to another packet associated with the session,~~ classifying the second packet without consideration of the at least one identified potential classification that has been eliminated with respect to the first packet ruled out.

2. (Currently Amended) The method of claim 1, wherein the content type for the ~~other~~ first packet has been determined.

3. (Currently Amended) The method of claim 1, wherein the content type for the ~~other~~ first packet has not been determined, and the method further comprises receiving one or more additional packets.

4. (Original) The method of claim 3, wherein the act of classifying the packet comprises analyzing one of the one or more additional packets to determine if the one or more additional packets satisfy a prescribed criteria.

5. (Currently Amended) The method of claim 1, wherein the content type has been determined for ~~another~~ the first packet associated with the session to not be at least one ruled out classification.

6. (Currently Amended) The method of claim 1, wherein the content type has been determined for ~~another~~ the first packet associated with the session to potentially be of a particular classification.

7. (Currently Amended) A computer product includes a non-transitory computer-readable medium, the non-transitory computer-readable medium having a set of stored instructions, an execution of which causes a ~~process~~ method for determining a type of content for packets of a data network to be performed, the ~~process~~ method comprising:

receiving a first packet from the data network that is associated with a first session of packets;
eliminating at least one potential classification from a group of potential classifications for the first packet without identifying a classification for the first packet associated with the first session;

receiving a second packet associated with ~~[[a]]~~ the first session;

determining whether a content type has been determined for ~~another~~ the first packet associated with the session;

~~when~~ responsive to the content type of another the first packet associated with the session having ~~has~~ been determined, classifying the packet to be the content type based at least in part on the determined content type without expending further classification resources; a result from the act of determining; and

~~when~~ responsive to the content type of another the first packet ~~has~~ not having been determined, at least one potential classification has been ruled out with regard to another packet associated with the session, classifying the second packet without consideration of the at least one

identified potential classification that has been eliminated with respect to the first packet ~~ruled out~~.

8. (Previously Presented) The computer product of claim 7, wherein the content type for the ~~other~~ first packet has been determined.

9. (Previously Presented) The computer product of claim 7, wherein the content type for the ~~other~~ first packet has not been determined, and the method further comprises receiving one or more additional packets.

10. (Original) The computer product of claim 9, wherein the act of classifying the packet comprises analyzing one of the one or more additional packets to determine if the one or more additional packets satisfy a prescribed criteria.

11. (Currently Amended) The computer product of claim 7, wherein the content type has been determined for ~~another~~ the first packet associated with the session to not be at least one ruled out classification.

12. (Currently Amended) The computer product of claim 7, wherein the content type has been determined for ~~another~~ the first packet associated with the session to potentially be of a particular classification.

13. (Currently Amended) A computer-implemented method for determining a type of content for packets of a data network, comprising:

receiving a first packet from a first port, the first port adapted for receiving at least two types of content; and

determining a content type for the first packet with which the first packet is associated is not at least one content type, wherein data representative of the determination that the first packet is not at least one content type is stored and utilized in determining a classification for the session with which the first packet is associated;

eliminating the one content type from the at least two types of content without identifying a classification of the first packet from the first port;

receiving a second packet from the first port;

~~when processing a second packet, the processing of the~~
second packet to determine a content type without
~~not including consideration of the at least one~~
eliminated content type.

14. (Original) The method of claim 13, wherein the content type is determined without using a port number that is associated with the first port.

15. (Original) The method of claim 13, wherein the content type is determined at least in part by analyzing the first packet.

16. (Original) The method of claim 15, wherein the act of analyzing the first packet comprises determining a characteristic associated with the first packet, the

characteristic selected from the group consisting of a string pattern, a session classifier, a packet size, and a port number.

17. (Original) The method of claim 13, further comprising receiving a second packet, wherein the content type is determined by using the first and the second packets.

18. (Original) The method of claim 17, wherein the content type is determined by:

determining whether a characteristic of the first packet matches a first criteria; and
determining whether a characteristic of the second packet matches a second criteria.

REMARKS

Claims 1-18 were pending in the present application. In the Office Action (final) of January 29, 2016, claims 1, 3, 4, 6, 7, 9, 10 and 12-18 were rejected. The claims, as amended, are listed above. No claims have been added. No claims have been deleted. Accordingly, claims 1, 3, 4, 6, 7, 9, 10 and 12-18 remain pending in the present application.

Applicant requests entry of the amendments and responds to the Office Action with the following remarks:

I. Claim Rejections - 35 USC § 102

Claims 1, 3-4, 6-7, 9-10, 12-15 and 17-18 were rejected under pre-AIA 35 USC 102(e) as being anticipated over Yung et al (US Pat. No. 7,664,048, referred to herein as "Yunq").

Applicant respectfully traverses the rejections.

More specifically, claim 1, which is representative of claims 6 and 13, is directed to (in relevant part):

receiving a first packet from the data network that is associated with a first session of packets;

eliminating at least one potential classification from a group of potential classifications for the first packet without identifying a classification for the first packet associated with the first session;

receiving a second packet associated with the first session;

determining whether a content type has been determined for the first packet associated with the session without conclusively identifying a classification for the first packet associated with the first session;

responsive to the content type of the first packet associated with the session having been determined, classifying the packet to be the content type based at least in part on the determined content type without expending further classification resources; and

responsive to the content type of the first packet not having been determined, classifying the second packet without consideration of the at least one potential classification that has been eliminated with respect to the first packet (emphasis added).

However, Yung fails to teach or disclose the limitations as recited in claim 1 for at least the reasons discussed below. Therefore, Applicant respectfully submits that claim 1, similar claims 6 and 13, and all related claims, are patentable over the prior art as applied.

A. Yung Fails to Disclose: Classifying the Second Packet Without Consideration of the at Least One Potential Classification that has been Eliminated with Respect to the First Packet, as Recited in Claim 1

Examiner has misinterpreted the Yung referenced and, therefore, has respectfully erred in rejecting the classifying step based on Yung. Because Yung only eliminates potential classifications with respect to one packet identification process, and does not tie the elimination to other packets, the subsequent packets will be again checked for the eliminated potential classification, in contrast to claim 1 as amended.

In more detail, amended claim 1 recites that responsive to the content type of the first packet not having been determined, the second packet is classified. This classification occurs without consideration of the at least one potential classification that has been eliminated with respect to the first packet. The elimination occurs without identifying a classification for the first packet. The amendments merely clarify the claim language and introduce no new matter.

Yung, discloses steps in FIG. 5A for identifying a suspected application from the first packet of a new flow (i.e., 302 - yes branch). The sub-steps for step 306 of identifying a suspect application based on the first packet are detailed in FIG. 5B. There, Yung identifies a suspected application in step 306 by cycling through potential application matches via loop of steps 332, 342, and 344. Step 344 advances to the next application with respect to the first packet of Yung. A suspected application is eventually returned in step 340 responsive to a protocol match.

Yung, also discloses steps in FIG. 5A for confirming the suspected application with respect to packets subsequent to the first packet (i.e., 302 - no branch).

Examiner relies upon "step 326 and for previous packets steps 314 and 316 - no" and alternatively "steps 316 - yes and 318" in the rejection (see OA 1/29/16, p. 3). Turning to the Yung citations, step 326 confirms the classification of the first packet from subsequent packets as the suspected application when the related flow count is greater than a threshold.

Unfortunately, the claimed elimination of a potential classification of a first packet with respect to the second packet is not disclosed by Yung's cycling through steps 332, 342 and 344 as asserted by Examiner. Although the cycled steps act as a process of elimination with respect to the first packet of a new flow (see Yung, step 302 - yes to 306, then steps 332, 342 and 344 of FIG. 5B within 306), the eliminated applications have no bearing on subsequent packets, as claimed. Because claim 1, explicitly recites classifying the second packet without classification of the first packet, the technique of claim 1 does not rely on any "suspected application" as in Yung. Advantageously, amended claim 1 is able to continue identifying from a group of potential classifications rather than being limited to confirming a suspected one.

Thus, the Yung suspected application fails to teach or suggest classifying a second packet without consideration of classifications eliminated with respect to a first packet, as claimed.

II. Claim Rejections - 35 USC § 103

Claim 16 is rejected under pre-AIA 35 USC 103(a) as being unpatentable over Yung in view of Yoakum et al. (US Pub. No. 2014/0198632, referred to herein as "Yoakum").

In response, Applicant respectfully traverses the rejections. Because claim 16 is each dependent upon an allowable base claim as discussed above, these claims are patentable over the combination of Yung in view of Yoakum for at least the same reasons as the base claim. Moreover, Yoakum fails to cure the deficiencies of Yung concerning the base claim. Furthermore, the dependent claims recite additional limitations that are neither disclosed nor suggested by the cited references. Applicant reserves the right to address these additional limitations separately if need be.

Conclusion

Accordingly, Applicant respectfully requests reconsideration and allowance of the claims as now presented. Applicant's attorney believes this application is in condition for allowance. Should any unresolved issues remain, Examiner is invited to call Applicant's attorney at the telephone number indicated below.

Respectfully submitted,

July 29, 2016

/Dorian Cartwright/
Dorian Cartwright
Reg. No. 53,853

Customer Number 88268
(800) 810-8030

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/795,283	Filing Date 03/12/2013	☐ To be Mailed
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ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	NUMBER FILED (Column 1)	NUMBER EXTRA (Column 2)	RATE (\$)	FEE (\$)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (j), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X \$ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	(Column 1)	(Column 2)	(Column 3)	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
	08/08/2016	CLAIMS REMAINING AFTER AMENDMENT					
	Total (37 CFR 1.16(i))	* 18	Minus	** 20	= 0	X \$80 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X \$420 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	0

AMENDMENT	(Column 1)	(Column 2)	(Column 3)	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
		CLAIMS REMAINING AFTER AMENDMENT					
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
JEFFERY L. OLSEN

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/795,283	03/12/2013	Shaohong Wei	2831.012US4

CONFIRMATION NO. 4507

POA ACCEPTANCE LETTER

88268
Law Office of Dorian Cartwright
P.O. Box 7617
San Jose, CA 95150



Date Mailed: 02/16/2016

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 02/03/2016.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/agizaw/



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/795,283	03/12/2013	Shaohong Wei	2831.012US4

CONFIRMATION NO. 4507

POWER OF ATTORNEY NOTICE



Date Mailed: 02/16/2016

21186

SCHWEGMAN LUNDBERG & WOESSNER, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 02/03/2016.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/agizaw/

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date
13/795,283	3/12/2013

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☒ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above:

88268

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☒ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

Firm or Individual Name				
Address				
City		State		Zip
Country				
Telephone		Email		

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Fortinet, Inc.

- ☐ Inventor or Joint Inventor (title not required below)
- ☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)
- ☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)
- ☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature	Todd Nelson	Date (Optional)	
Name	Todd Nelson		
Title	Vice President & Chief IP Counsel		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☒ Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Electronic Acknowledgement Receipt

EFS ID:	24816169
Application Number:	13795283
International Application Number:	
Confirmation Number:	4507
Title of Invention:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
First Named Inventor/Applicant Name:	Shaohong Wei
Customer Number:	21186
Filer:	Dorian Cartwright/Kym Moore
Filer Authorized By:	Dorian Cartwright
Attorney Docket Number:	2831.012US4
Receipt Date:	03-FEB-2016
Filing Date:	12-MAR-2013
Time Stamp:	22:59:03
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	FOR-112C3_poa.pdf	152001 5776b247737c7b767935dab5259a657510 1c21c9	no	1

Warnings:

Information:

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/795,283	03/12/2013	Shaohong Wei	2831.012US4	4507

21186 7590 01/29/2016
SCHWEGMAN LUNDBERG & WOESSNER, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

EXAMINER

HARPER, KEVIN C

ART UNIT	PAPER NUMBER
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2462

NOTIFICATION DATE	DELIVERY MODE
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01/29/2016

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@slwip.com
SLW@blackhillsip.com

Office Action Summary	Application No. 13/795,283	Applicant(s) WEI ET AL.	
	Examiner Kevin C. Harper	Art Unit 2462	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 19 October 2015.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☒ Claim(s) 1,3,4,6,7,9,10 and 12-18 is/are pending in the application.
5a) Of the above claim(s) ____ is/are withdrawn from consideration.

6) ☐ Claim(s) ____ is/are allowed.

7) ☒ Claim(s) 1,3,4,6,7,9,10 and 12-18 is/are rejected.

8) ☐ Claim(s) ____ is/are objected to.

9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10) ☐ The specification is objected to by the Examiner.

11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some** c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. ____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
Paper No(s)/Mail Date ____.

3) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.

4) ☐ Other: ____.

The present application is being examined under the pre-AIA first to invent provisions.

Response to Arguments

Applicants' arguments filed 19 October 2015 concerning the claim objection and the rejection under 35 U.S.C. 112 have been fully considered and are persuasive. The objection and rejection have been withdrawn.

Applicants' remaining arguments have been fully considered but they are not persuasive. Applicants argued Yung does not disclose the claimed invention. However, Examiner disagrees.

Fig. 5A teaches a method of determining the content type of a session (steps 306, 310 326) based on several packets of the flow (col. 12, lines 66 through col. 13, line 1). Figs. 5B-5D are related to fig. 5A and each provides further details (step 306 relates to fig. 5B - col. 12, lines 41-45; step 310 relates to fig. 5C - col. 12, lines 49-55; step 314 relates to fig. 5D - col. 13, lines 60-65).

A first packet matches a suspected application (steps 306 and 310) which involves ruling out at least one potential classification (fig. 5B, steps 332 - No, 342 - No, 332 (for another application) - Yes, and 340). Each subsequent packet is compared only to the suspected application (steps 302 - No, 304 - Yes, 312 - No, 314 and 316 - No; fig. 5D; note: the subsequent packet is considered for only the suspected application and not other applications that have been ruled out for the first packet in step 306 / fig. 5B). Eventually a packet and its flow are classified according to the suspected application (steps 312 - Yes, 324 - Yes, and 326) with no consideration of the applications that have been ruled out (col. 14, lines 16-19).

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 3-4, 6-7, 9-10, 12-15 and 17-18 are rejected under pre-AIA 35 U.S.C. 102(e) as being anticipated by Yung et al. (US 7,664,048).

1. Regarding claims 1, 3-4, 6-7, 9-10, 12-13, 15 and 17-18, Yung discloses a method for determining a type of content (fig. 5A, steps 306 and 326; col. 18, lines 29-30; note: packet content based on an application as determined by the packet size - fig. 5B). The method comprises receiving a packet associated with a session (step 302; note: flow), determining whether a content type of the session has been determined for another packet of the session (step 304; col. 13, lines 40-43), when the content type of another packet has been determined classifying the packet to be the content type based on the determining (steps 318 or 326 and steps 304 and 305; col. 13, lines 46-53), and when the content type of another packet has not been determined (steps 304 - Yes and 312 - Yes) but at least one potential classification has been ruled out with regard to another packet associated with the session (fig. 5B, flowchart loop of step 332 - No and steps 344 and 340), classifying the packet without consideration of the at least one potential classification that has been ruled out (step 326 and for previous packets steps 314 and 316 - No; fig. 5D; col. 14, lines 60-62 and col. 15, lines 2-5; alternatively, steps 316 - Yes and 318; note: only the suspected application is considered). Further regarding claim 7, the method is implemented by a computer product (col. 6, lines 60-64). Further regarding claim 13, the monitoring device includes a network port (fig. 1, items 71-72). Regarding claim 14, a port

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number of a port on the monitoring device is not used to determine the content type (fig. 1; figs. 5B and 5D; col. 8, lines 15-24).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 16 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Yung in view of Yoakum et al. (US 2014/0198632).

2. Yung does not disclose analyzing a packet based on a characteristic selected from the group consisting of a string pattern, a session classifier, a packet size and a port number. However, Yoakum discloses analyzing a packet base on any packet attributes as desired (para. 24, last sentence). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to analyze a packet based on a specific group of packet characteristics in the invention of Yung in order to classify a packet as desired, as is known in the art (Yoakum, para. 24).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

Art Unit: 2462

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Harper whose telephone number is 571-272-3166. The examiner can normally be reached weekdays from 11:00 AM to 7:00 PM ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yemane Mesfin, can be reached at 571-272-3927. The centralized fax number for the Patent Office is 571-273-8300. For non-official communications, the examiner's personal fax number is 571-273-3166 and the examiner's e-mail address is kevin.harper@uspto.gov.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications associated with a customer number is available through Private PAIR only. For more information about the PAIR system, see portal.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin C. Harper/

Primary Examiner, Art Unit 2462

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)	<i>Complete if Known</i>	
	Application Number	13/795,283
	Filing Date	March 12, 2013
	First Named Inventor	Shaohong Wei
	Group Art Unit	2462
	Examiner Name	Kevin Harper
Sheet 1 of 1	Attorney Docket No: 2831.012US4	

US PATENT DOCUMENTS			
Examiner Initial *	USP Document Number	Publication Date	Name of Patentee or Applicant of cited Document

FOREIGN PATENT DOCUMENTS			
Examiner Initial *	Foreign Document Number	Publication Date	Name of Patentee or Applicant of cited Document
			T 1

OTHER DOCUMENTS – NON PATENT LITERATURE DOCUMENTS		
Examiner Initial *	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T 1
	"Application Serial No. 14/087,791, Appeal Brief filed 08-13-15", 23 pgs	
	"Application Serial No. 14/087,791, Decision on Pre-Appeal Brief Request mailed 06-23-15", 2 pgs	
	"Application Serial No. 14/087,791, Pre-Appeal Brief Request filed 05-14-15", (5 pgs.)	

EXAMINER

/Kevin Harper/ (01/21/2016)

DATE CONSIDERED

* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant is to place a check mark here if English language Translation is attached

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /KCH/

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	223	packets near5 (analyz\$5 classif\$5) near5 (possibl\$1 possibilit\$3 probabl\$1 potential\$2 candidate\$1 guess\$3 rul\$3 adj2 out) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2016/01/21 22:42
L2	13	packets near5 (possibl\$1 possibilit\$3 probabl\$1 potential\$2 candidate\$1 guess\$3) adj4 classifi\$7 and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2016/01/21 22:42
L3	26	packets near5 (analyz\$5 classif\$5) near5 (partial\$2) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2016/01/21 22:42
L4	73	packets near5 (analyz\$5 classif\$5) near5 (possibilit\$3 probabl\$1 potential\$2 candidate\$1 guess\$3) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2016/01/21 22:42
L5	126	(frame\$1 packet\$1)same (possible possibilit\$3 probabl\$1 potential\$2 candidate\$1 guess\$3) adj2 (classification\$1) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2016/01/21 22:42
L6	91	(frame\$1 packet\$1) near5 (possible possibilit\$3 probabl\$1 potential\$2 candidate\$1 guess\$3) adj2 (classif\$5) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2016/01/21 22:42
L7	24	(frame\$1 packet\$1)same (unknown)near6 (classification\$1) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2016/01/21 22:42
L8	102	(frame\$1 packet\$1)same (unknown)near6 (classif\$6) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2016/01/21 22:42
L9	30	(frame\$1 packet\$1)same (unknown)near6 (classif\$6) and (@rlad @ad)<"20060216" and classif\$6.ab,ti.	US-PGPUB; USPAT	OR	OFF	2016/01/21 22:42
L10	72	L8 not L9	US-PGPUB; USPAT	OR	OFF	2016/01/21 22:42
L11	10	(L1 L2 L3 L4 L5 L6 L7 L8 L9 L10) and @pd>"20150614"	US-PGPUB; USPAT	OR	OFF	2016/01/21 22:42

1/ 21/ 2016 10:46:30 PM

C:\Users\kharper\Documents\EAST\Workspaces\14087847 packet session analyzer.wsp

Search Notes 	Application/Control No. 13795283	Applicant(s)/Patent Under Reexamination WEI ET AL.
	Examiner KEVIN C HARPER	Art Unit 2462

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
inventorship search on PALM	9/28/14	kch
EAST - see printout	9/28/14	kch
updated above searches	1/26/15	kch
updated above searches	6/14/15	kch
updated above searches	1/21/16	kch

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY DOCKET NO	TOT CLAIMS	IND CLAIMS
13/795,283	03/12/2013	2462	1740	2831.012US4	18	3

21186
SCHWEGMAN LUNDBERG & WOESSNER, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

CONFIRMATION NO. 4507 REPLACEMENT FILING RECEIPT



Date Mailed: 12/10/2015

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Shaohong Wei, Sunnyvale, CA;
Zhong Qiang Chen, Sunnyvale, CA;
Ping Ng, Milpitas, CA;
Gang Duan, San Jose, CA;

Applicant(s)

Fortinet, Inc., Sunnyvale, CA;

Power of Attorney: The patent practitioners associated with Customer Number 21186

Domestic Priority data as claimed by applicant

This application is a CON of 13/409,141 03/01/2012 PAT 8639752
which is a CON of 12/503,100 07/15/2009 PAT 8204933
which is a CON of 11/357,654 02/16/2006 PAT 7580974

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: No

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 04/15/2013

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/795,283**

Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No
Title

SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Preliminary Class

370

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications:

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

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Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

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This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/795,283	03/12/2013	Shaohong Wei	2831.012US4

CONFIRMATION NO. 4507

POA ACCEPTANCE LETTER



Date Mailed: 12/10/2015

21186

SCHWEGMAN LUNDBERG & WOESSNER, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 02/12/2015.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/agizaw/

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date
13/795,283	3/12/2013

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☒ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above:

88268

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☒ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

Firm or Individual Name				
Address				
City		State		Zip
Country				
Telephone		Email		

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Fortinet, Inc.

- ☐ Inventor or Joint Inventor (title not required below)
- ☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)
- ☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)
- ☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature	<i>Todd Nelson</i>	Date (Optional)	
Name	Todd Nelson		
Title	Vice President & Chief IP Counsel		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☒ Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt

EFS ID:	24288738
Application Number:	13795283
International Application Number:	
Confirmation Number:	4507
Title of Invention:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
First Named Inventor/Applicant Name:	Shaohong Wei
Customer Number:	21186
Filer:	Dorian Cartwright
Filer Authorized By:	
Attorney Docket Number:	2831.012US4
Receipt Date:	08-DEC-2015
Filing Date:	12-MAR-2013
Time Stamp:	02:15:57
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	FOR-112C2_power_of_attorney.pdf	164343 3448d1d5f7474f97af74515407df4f0a88a780bf	no	1

Warnings:

Information:

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

S/N 13/795,283

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s):	Shaohong Wei et al.	Examiner:	Kevin Harper
Serial No.:	13/795,283	Group Art Unit:	2462
Filed:	March 12, 2013	Docket No.:	2831.012US4
Customer No.:	21186	Confirmation No.:	4507
Title:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		

AMENDMENT & RESPONSE UNDER 37 C.F.R. § 1.111

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

In response to the Office Action dated June 19, 2015, please amend the application as follows:

This response is accompanied by a Petition, as well as the appropriate fee, to obtain a one-month extension of the period for responding to the Office action, thereby moving the deadline for response from September 19, 2015 to October 19, 2015.

IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A method for determining a type of content, comprising:
 receiving a packet associated with a session;
 determining whether a content type of the session has been determined for another packet associated with the session;
 when the content type of another packet of the session has been determined, classifying the packet to be the content type based at least in part on a result from the act of determining; and
 when the content type of another packet of the session has not been determined but at least one potential classification has been ruled out with regard to another packet associated with the session, classifying the packet without consideration of the at least one potential classification that has been ruled out.
2. (Canceled)
3. (Previously Presented) The method of claim 1, wherein the content type for the other packet has not been determined, and the method further comprises receiving one or more additional packets.
4. (Original) The method of claim 3, wherein the act of classifying the packet comprises analyzing one of the one or more additional packets to determine if the one or more additional packets satisfy a prescribed criteria.
5. (Canceled)
6. (Previously Presented) The method of claim 1, wherein the content type has been determined for another packet associated with the session to potentially be of a particular classification.

7. (Currently Amended) A computer product includes a non-transitory computer-readable medium, the non-transitory computer-readable medium having a set of stored instructions, an execution of which causes a process to be performed, the process comprising:

- receiving a packet associated with a session;
- determining whether a content type of the session has been determined for another packet associated with the session;
- when the content type of another packet of the session has been determined, classifying the packet to be the content type based at least in part on a result from the act of determining; and
- when the content type of another packet of the session has not been determined but at least one potential classification has been ruled out with regard to another packet associated with the session, the classifying the packet without consideration of the at least one potential classification that has been ruled out.

8. (Canceled)

9. (Previously Presented) The computer product of claim 7, wherein the content type for the other packet has not been determined, and the method further comprises receiving one or more additional packets.

10. (Original) The computer product of claim 9, wherein the act of classifying the packet comprises analyzing one of the one or more additional packets to determine if the one or more additional packets satisfy a prescribed criteria.

11. (Canceled)

12. (Previously Presented) The computer product of claim 7, wherein the content type has been determined for another packet associated with the session to potentially be of a particular classification.

13. (Currently Amended) A method for determining a type of content, comprising:

receiving a first packet from a first port, the first port adapted for receiving at least two types of content; and

determining a content type for the first packet of a session with which the first packet is associated is not at least one content type, wherein data representative of the determination that the first packet of the session is not at least one content type is stored and utilized in determining a classification for the session ~~with which the first packet is associated~~ when processing a second packet of the session, the processing of the second packet of the session not including consideration of the at least one content type.

14. (Original) The method of claim 13, wherein the content type is determined without using a port number that is associated with the first port.

15. (Original) The method of claim 13, wherein the content type is determined at least in part by analyzing the first packet.

16. (Original)The method of claim 15, wherein the act of analyzing the first packet comprises determining a characteristic associated with the first packet, the characteristic selected from the group consisting of a string pattern, a session classifier, a packet size, and a port number.

17. (Original) The method of claim 13, further comprising receiving a second packet, wherein the content type is determined by using the first and the second packets.

18. (Original) The method of claim 17, wherein the content type is determined by:
determining whether a characteristic of the first packet matches a first criteria; and
determining whether a characteristic of the second packet matches a second criteria.

REMARKS

This responds to the Office Action dated June 19, 2015.

Claims 1, 7, and 13 are amended, claims 2, 5, 8, and 11 are canceled, and no claims are added; as a result, claims 1, 3-4, 6-7, 9-10, and 12-18 remain pending in this application.

Claim Objections

Claims 13-18 are objected to because in claim 13, "with which the first packet is associated" is redundant and should be removed. Appropriate correction is required. Applicant is amended as suggested in the Office Action. This amendment does not modify the scope of the claim as this amendment merely removes redundant language. This amendment to claim 13 also address the objections to claims 14-18 due to their dependence from amended independent claim 13. Thus, withdrawal of the objections to claims 13-18 are respectfully requested.

The Rejection of Claims Under § 112

Claims 2, 5, 8 and 11 are rejected under 35 U.S.C. § 112(d) or pre-AIA 35 U.S.C. § 112, 4th paragraph, as being of improper dependent form for failing to further limit the subject matter of the claim upon which it depends, or for failing to include all the limitations of the claim upon which it depends.

Claims 2, 5, 8, and 11 are canceled.

The Rejection of Claims Under § 102

Claims 1-15 and 17-18 are rejected under pre-AIA 35 U.S.C. § 102(e) as being anticipated by Yung et al. (US 7,664,048; hereinafter "Yung").

Applicant respectfully disagrees with the rejections of independent claims 1, 7, and 13. Each of independent claims 1, 7, and 13 similarly include classifying packets of a session based in part on classification activity with regard to other packets in the session, such as an affirmative classification or a classification that indeterminate, but eliminates at least one potential classification of the session from consideration. The Office Action asserts portion of FIG. 5A

and 5B of Yung as providing such teaching or suggestions. However, FIG. 5A and 5B illustrate two distinct methods of classification and considering them jointly as a single teaching departs from what is actually set forth in the Yung. As such, Yung fails to provide a teaching or suggestion of all the claim elements in a single embodiment as claimed.

Regardless, the assertion of FIG. 5B is incorrect. For example, similarly in each of the independent claims, when a classification of another packet of a session has not been determined but at least one potential classification has been ruled out, a subsequently received packet of the session is then classified taking this into account. The method of Fig. 5B is with regard to a first packet that is received, such as in block 334 where the 1st packet is considered for matching a size pattern. That might be taking into account a previously packet classification, which applicant does not admit, but it certainly does not take into account a classification or an eliminated classification possibility of a packet within the session. Further, there is no removal of a potential classification from consideration when processing a subsequent packet as set forth in the claims.

Applicant therefore respectfully submits that Yung is deficient in providing a teaching or suggestion of all the claim elements of each of the independent claim. Regardless, Applicant has amended each of independent claims 1, 7, and 13 to clarify that the processing is with regard to packets of a session.

Thus, Applicant respectfully requests entry of the amendments, withdrawal of the 35 U.S.C. § 102(e) rejections, and allowance of claims 1, 3-4, 6-7, 9-10, 12-15, and 17-18.

The Rejection of Claims Under § 103

Claims 16 is rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Yung in view of Yoakum et al. (US 2014/0198632; hereinafter “Yoakum”).

Yoakum is asserted for purposes of showing the additional elements of claim 16. However, Yoakum fails to cure the deficiencies of Yung as discussed above with regard to the patentable independent claims, in particular patentable independent claim 13 from which claim 16 indirectly depends. Thus, Applicant respectfully submits that claim 16 is also patentable due

at least to its dependence from a patentable independent claim. Withdrawal of the 35 U.S.C. § 103(a) rejection and allowance of claim 16 are therefore respectfully requested.

CONCLUSION

Applicant respectfully submits that claims 1, 3-4, 6-7, 9-10, and 12-18 remain pending, are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone the undersigned at (612) 373-6938 to facilitate prosecution of this application.

If necessary, please charge any additional fees or deficiencies, or credit any overpayments to Deposit Account No. 19-0743.

Respectfully submitted,

SCHWEGMAN LUNDBERG & WOESSNER, P.A.
P.O. Box 2938
Minneapolis, MN 55402--0938
(612) 373-6938

Oct 19, 2015
Date _____

By 1 *James D. Hallenbeck* 1
James D. Hallenbeck
Reg. No. 63,561

Electronic Patent Application Fee Transmittal				
Application Number:		13795283		
Filing Date:		12-Mar-2013		
Title of Invention:		SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		
First Named Inventor/Applicant Name:		Shaohong Wei		
Filer:		Gregory M. Stark/John Gustav-Wrathall		
Attorney Docket Number:		2831.012US4		
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension - 1 month with \$0 paid	1251	1	200	200
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
Total in USD (\$)				380

Electronic Acknowledgement Receipt

EFS ID:	23819613
Application Number:	13795283
International Application Number:	
Confirmation Number:	4507
Title of Invention:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
First Named Inventor/Applicant Name:	Shaohong Wei
Customer Number:	21186
Filer:	Gregory M. Stark/John Gustav-Wrathall
Filer Authorized By:	Gregory M. Stark
Attorney Docket Number:	2831.012US4
Receipt Date:	19-OCT-2015
Filing Date:	12-MAR-2013
Time Stamp:	13:09:51
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$380
RAM confirmation Number	10506
Deposit Account	190743
Authorized User	HALLENBECK, JAMES
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)					
Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)					
Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)					
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2831012US4_resp_101915.pdf	2819741	yes	12
			c1bc3ce659814295674b69b4e9dec464d4b085eb		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Miscellaneous Incoming Letter		1	1	
	Transmittal Letter		2	3	
	Information Disclosure Statement (IDS) Form (SB08)		4	4	
	Extension of Time		5	5	
	Amendment/Req. Reconsideration-After Non-Final Reject		6	6	
	Claims		7	9	
	Applicant Arguments/Remarks Made in an Amendment		10	12	
	Warnings:				
Information:					
2	Non Patent Literature	2831012US5_ABRF_08-13-15.pdf	844971	no	23
			5dedcc082562d0a6a805ca9258756bd2f63e9e34		
Warnings:					
Information:					
3	Non Patent Literature	2831012US5_DPRB_06-23-15.pdf	68355	no	2
			19a80bfa809666caa190a33d460ffe0d2c097658		
Warnings:					
Information:					
4	Non Patent Literature	2831012US5_PABR_05-14-15.pdf	121708	no	5
			27e6c8d23b970777a4d72238e31946bd685bab8f		
Warnings:					
Information:					

5	Fee Worksheet (SB06)	fee-info.pdf	32903	no	2
			1a949489bbfd74aaf5728e3b6143b8b49dc17f05		
Warnings:					
Information:					
Total Files Size (in bytes):				3887678	
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Shaohong Wei et al.

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Docket No.: 2831.012US4

Serial No.: 13/795,283

Filed: March 12, 2013

Due Date: September 19, 2015

Examiner: Kevin Harper

Group Art Unit: 2462

Customer No.: 21186

Confirmation No.: 4507

Mail Stop Amendment

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

We are transmitting herewith the following attached items (as indicated with an "X"):

- X Amendment and Response under 37 C.F.R. § 1.111 (7 pgs.)
- X Petition for Extension of Time (1 pg.)
- X Authorization to charge Deposit Account 19-0743 in the amount of \$200.00 to cover the Extension of Time Fee.
- X Supplemental Information Disclosure Statement (2 pgs.), Form 1449 (1 pg.) Copies of Cited References (3).
- X Authorization to charge Deposit Account 19-0743 in the amount of \$180.00 to cover the fee for consideration of Information Disclosure Statement under 37 C.F.R. § 1.97(c).

If not provided for in a separate paper filed herewith, please consider this a **PETITION FOR EXTENSION OF TIME** for sufficient number of months to enter these papers and please charge any additional fees or credit overpayment to Deposit Account No. 19-0743. If applicable, any papers or fees supplied herewith are considered to be timely filed pursuant to 37 C.F.R. § 1.7(a), the response period falling on a Federal Holiday, Saturday or Sunday being extended to the next succeeding business day.

SCHWEGMAN LUNDBERG & WOESSNER, P.A.

Customer No.: 21186

/ James D. Hallenbeck /

James D. Hallenbeck

Reg. No. 63,561

S/N 13/795,283

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Shaohong Wei et al.

Examiner: Kevin Harper

Serial No.: 13/795,283

Group Art Unit: 2462

Filed: March 12, 2013

Docket: 2831.012US4

Customer No.: 21186

Confirmation No.: 4507

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

MS Amendment

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

In compliance with the duty imposed by 37 C.F.R. § 1.56, and in accordance with 37 C.F.R. §§ 1.97 *et. seq.*, the enclosed materials are brought to the attention of the Examiner for consideration in connection with the above-identified patent application. Applicants respectfully request that this Information Disclosure Statement be entered and the documents listed on the attached PTO 1449 Form be considered by the Examiner and made of record. Pursuant to the provisions of MPEP 609, Applicants request that a copy of the PTO 1449 Form, initialed as being considered by the Examiner, be returned to the Applicants with the next official communication.

Pursuant to 37 C.F.R. § 1.97(c)(2), Applicants hereby authorize the Commissioner to charge the fee of \$180.00 as set forth in 37 C.F.R. § 1.17(p), to Deposit Account No. 19-0743. Please charge any additional fees or deficiencies, or credit any overpayment to Deposit Account No. 19-0743.

Pursuant to 37 C.F.R. § 1.98(a)(2), copies of cited U.S. Patents and Published Applications, and Non-Published Applications identifiable by USPTO Serial Number, are no longer required to be provided to the Office. Applicants acknowledge the requirement to submit copies of foreign patent documents and non-patent literature in accordance with 37 C.F.R. § 1.98(a)(2).

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Serial Number: 13/795,283

Filing Date: March 12, 2013

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Page 2

Dkt: 2831.012US4

The Examiner is invited to contact the undersigned at the telephone number indicated if there are any questions regarding this communication.

Respectfully submitted,

SCHWEGMAN LUNDBERG & WOESSNER, P.A.

P.O. Box 2938

Minneapolis, MN 55402

(612) 373-6938

Date Oct 19, 2015

By / *James D. Hallenbeck* /
James D. Hallenbeck
Reg. No. 63,561

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)	<i>Complete if Known</i>	
	Application Number	13/795,283
	Filing Date	March 12, 2013
	First Named Inventor	Shaohong Wei
	Group Art Unit	2462
	Examiner Name	Kevin Harper
Sheet 1 of 1	Attorney Docket No: 2831.012US4	

US PATENT DOCUMENTS			
Examiner Initial *	USP Document Number	Publication Date	Name of Patentee or Applicant of cited Document

FOREIGN PATENT DOCUMENTS			
Examiner Initial *	Foreign Document Number	Publication Date	Name of Patentee or Applicant of cited Document
			T 1

OTHER DOCUMENTS – NON PATENT LITERATURE DOCUMENTS		
Examiner Initial *	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T 1
	"Application Serial No. 14/087,791, Appeal Brief filed 08-13-15", 23 pgs	
	"Application Serial No. 14/087,791, Decision on Pre-Appeal Brief Request mailed 06-23-15", 2 pgs	
	"Application Serial No. 14/087,791, Pre-Appeal Brief Request filed 05-14-15", (5 pgs.)	

EXAMINER

DATE CONSIDERED

* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant is to place a check mark here if English language Translation is attached

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s):	Shaohong Wei et al.	Examiner:	Kevin Harper
Serial No.:	13/795,283	Group Art Unit:	2462
Filed:	March 12, 2013	Docket:	2831.012US4
Customer No.:	21186	Confirmation No.:	4507
Title:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		

PETITION FOR A ONE-MONTH EXTENSION OF TIME

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

In accordance with the provision of 37 C.F.R § 1.136(a), it is respectfully requested that a one-month extension of time be granted in which to respond to the Office Action mailed June 19, 2015, said period of response being extended from September 19, 2015 to October 19, 2015.

Please charge Deposit Account No. 19-0743 in the amount of \$200.00 to cover the required extension fee. Please charge any additional fees or credit overpayment to deposit Account No. 19-0743.

Respectfully submitted,

SCHWEGMAN LUNDBERG & WOESSNER, P.A.
P.O. Box 2938
Minneapolis, MN 55402
(612) 373-6938

Oct 19, 2015
Date _____

By 1 James D. Hallenbeck 1
James D. Hallenbeck
Reg. No. 63,561

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/795,283	Filing Date 03/12/2013	☐ To be Mailed
---	---	----------------------------------	---------------------------------------

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	NUMBER FILED (Column 1)	NUMBER EXTRA (Column 2)	RATE (\$)	FEE (\$)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (j), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X \$ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	10/19/2015	CLAIMS REMAINING AFTER AMENDMENT	MINUS	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(i))	* 14	Minus	** 20	= 0	X \$80 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X \$420 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	0

AMENDMENT	(Column 1)	CLAIMS REMAINING AFTER AMENDMENT	MINUS	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/ADRIENE SELLMAN/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/795,283	03/12/2013	Shaohong Wei	2831.012US4	4507

21186 7590 06/19/2015
SCHWEGMAN LUNDBERG & WOESSNER, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

EXAMINER

HARPER, KEVIN C

ART UNIT	PAPER NUMBER
----------	--------------

2462

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

06/19/2015

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@slwip.com
SLW@blackhillsip.com

Office Action Summary	Application No. 13/795,283	Applicant(s) WEI ET AL.	
	Examiner Kevin C. Harper	Art Unit 2462	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 23 April 2015.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☒ Claim(s) 1-18 is/are pending in the application.
5a) Of the above claim(s) ____ is/are withdrawn from consideration.

6) ☐ Claim(s) ____ is/are allowed.

7) ☒ Claim(s) 1-18 is/are rejected.

8) ☐ Claim(s) ____ is/are objected to.

9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10) ☐ The specification is objected to by the Examiner.

11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some** c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. ____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
Paper No(s)/Mail Date ____.

3) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.

4) ☒ Other: AFCP 2.0 Decision (PTOL-2323).

The present application is being examined under the pre-AIA first to invent provisions.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 23 April 2015 has been entered.

Response to Arguments

Applicant's arguments have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Yung.

Terminal Disclaimer

The terminal disclaimers filed on 12 February 2015 have been reviewed and is accepted. The terminal disclaimers have been recorded.

Claim Objections

1. Claims 13-18 are objected to because in claim 13, "with which the first packet is associated" is redundant and should be removed. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of 35 U.S.C. 112(d):

(d) REFERENCE IN DEPENDENT FORMS.—Subject to subsection (e), a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), fourth paragraph:

Subject to the [fifth paragraph of 35 U.S.C. 112 (pre-AIA)], a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.

Claims 2, 5, 8 and 11 are rejected under 35 U.S.C. 112(d) or pre-AIA 35 U.S.C. 112, 4th paragraph, as being of improper dependent form for failing to further limit the subject matter of the claim upon which it depends, or for failing to include all the limitations of the claim upon which it depends.

2. Regarding claims 2, 5, 8 and 11, the limitations of these claims have been previously recited in the parent claims (note: Examiner considers “the other packet” to be “another packet” of the independent claims). Applicant may cancel the claim(s), amend the claim(s) to place the claim(s) in proper dependent form, rewrite the claim(s) in independent form, or present a sufficient showing that the dependent claim(s) complies with the statutory requirements.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-15 and 17-18 are rejected under pre-AIA 35 U.S.C. 102(e) as being anticipated by Yung et al. (US 7,664,048).

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3. Regarding claims 1-13, 15 and 17-18, Yung discloses a method for determining a type of content (fig. 5A, step 306). The method comprises receiving a packet associated with a session (step 302; note: flow), determining whether a content type has been determined for another packet of the session (step 302, Yes; note: a new flow is not yet classified; fig. 5C, steps 352 and 356; step 302, No; note: a previous packet of the flow has been classified (steps 308 and 310), when the content type of another packet has been determined classifying the packet to be the content type based on the determining (steps 304 and 305; col. 13, lines 40-48), and when the content type of another packet has not been determined (step 305) but at least one potential classification has been ruled out with regard to another packet associated with the session (fig. 5B, flowchart loop of step 332 {No} and steps 344 and 340), classifying the packet without consideration of the at least potential classification that has been ruled out (step 326 and for previous packets steps 314 and 316 {No}; fig. 5D; col. 14, lines 60-62 and col. 15, lines 2-5; alternatively, steps 316 {Yes} and 318; note: only the suspected application is considered). Further regarding claim 7, the method is implemented by a computer product (col. 6, lines 60-64). Further regarding claim 13, the monitoring device includes a network port (fig. 1, items 71-72).
4. Regarding claim 14, a port number of a port on the monitoring device is not used to determine the content type (fig. 1; fig. 5B; col. 8, lines 15-24).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 16 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Yung in view of Yoakum et al. (US 2014/0198632).

5. Yung does not disclose analyzing a packet based on a characteristic selected from the group consisting of a string pattern, a session classifier, a packet size and a port number. However, Yoakum discloses analyzing a packet base on any packet attributes as desired (para. 24, last sentence). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to analyze a packet based on a specific group of packet characteristics in the invention of Yung in order to classify a packet as desired, as is known in the art (Yoakum, para. 24).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Harper whose telephone number is 571-272-3166. The examiner can normally be reached weekdays from 11:00 AM to 7:00 PM ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yemane Mesfin, can be reached at 571-272-3927. The centralized fax number for the Patent Office is 571-273-8300. For non-official communications, the examiner's personal fax number is 571-273-3166 and the examiner's e-mail address is kevin.harper@uspto.gov.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications associated with a customer number is available through Private PAIR only. For

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more information about the PAIR system, see portal.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin C. Harper/

Primary Examiner, Art Unit 2462

Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)	<i>Complete if Known</i>	
	Application Number	13/795,283
	Filing Date	March 12, 2013
	First Named Inventor	Shaohong Wei
	Group Art Unit	2462
	Examiner Name	Kevin Harper
Sheet 1 of 14		Attorney Docket No: 2831.012US4

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	"Exhibit F-12, U.S. Patent No. 7,979,543, Invalidity Claim Chart based on U.S. Patent No. 7,379,993 to Valdes", (3/2/15), 1-24	
	"Exhibit F-13, U.S. Patent No. 7,979,543, Invalidity Claim Chart based on Brin", (3/2/15), 1-20	
	"Exhibit F-14, U.S. Patent No. 7,979,543, Invalidity Claim Chart based on WO 01/55905 to Kessinger et al.", (3/2/15), 1-20	
	"Exhibit F-15, U.S. Patent No. 7,979,543, Invalidity Claim Chart based on U.S. Patent No. 7,814,089 to Skrenta et al.", (3/2/15), 1-18	

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	Group Art Unit	2462
	Examiner Name	Kevin Harper
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Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)	<i>Complete if Known</i>	
	Application Number	13/795,283
	Filing Date	March 12, 2013
	First Named Inventor	Shaohong Wei
	Group Art Unit	2462
	Examiner Name	Kevin Harper
Sheet 13 of 14		Attorney Docket No: 2831.012US4

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AFCP 2.0 Decision

Application No.

13/795,283

Applicant(s)

WEI ET AL.

Examiner

Kevin C. Harper

Art Unit

2462

This is in response to the After Final Consideration Pilot request filed 23 April 2015.

1. **Improper Request** – The AFCP 2.0 request is improper for the following reason(s) and the after final amendment submitted with the request will be treated under pre-pilot procedure.

- ☐ An AFCP 2.0 request form PTO/SB/434 (or equivalent document) was not submitted.
- ☐ A non-broadening amendment to at least one independent claim was not submitted.
- ☒ A proper AFCP 2.0 request was submitted in response to the most recent final rejection.
- ☐ Other:

2. Proper Request

- A. After final amendment submitted with the request will not be treated under AFCP 2.0.

The after final amendment cannot be reviewed and a search conducted within the guidelines of the pilot program.

- ☐ The after final amendment will be treated under pre-pilot procedure.

- B. Updated search and/or completed additional consideration.

The examiner performed an updated search and/or completed additional consideration of the after final amendment within the time authorized for the pilot program. The result(s) of the updated search and/or completed additional consideration are:

- ☐ 1. All of the rejections in the most recent final Office action are overcome and a Notice of Allowance is issued herewith.
- ☐ 2. The after final amendment would not overcome all of the rejections in the most recent final Office action. See attached interview summary for further details.
- ☐ 3. The after final amendment was reviewed, and it raises a new issue(s). See attached interview summary for further details.
- ☐ 4. The after final amendment raises new issues, but would overcome all of the rejections in the most recent final Office action. A decision on determining allowability could not be made within the guidelines of the pilot. See attached interview summary for further details, including any newly discovered prior art.
- ☐ 5. Other:

Examiner Note: Please attach an interview summary when necessary as described above.

EAST Search History**EAST Search History (Prior Art)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S334	26	packets near5 (analyz\$5 classif\$5) near5 (partial\$2) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2015/06/13 22:49
S335	69	packets near5 (analyz\$5 classif\$5) near5 (possibilit\$3 probabl\$1 potential\$2 candidate\$1 guess\$3) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2015/06/14 00:26
S342	90	(frame\$1 packet\$1) near5 (possible possibilit\$3 probabl\$1 potential\$2 candidate\$1 guess\$3) adj2 (classif\$5) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2015/06/14 00:30
S363	24	(frame\$1 packet\$1)same (unknown)near6 (classification\$1) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2015/06/14 12:39
S362	9	(frame\$1 packet\$1)same (unknown) adj2 (classification\$1) and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2015/06/14 12:39
S365	30	(frame\$1 packet\$1)same (unknown)near6 (classif\$6) and (@rlad @ad)<"20060216" and classif\$6.ab,ti.	US-PGPUB; USPAT	OR	OFF	2015/06/14 12:40
S373	16	(frame\$1 packet\$1)same partial\$2 near6 (classif\$6).clm. and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2015/06/14 13:07
S372	13	(frame\$1 packet\$1)same (unknown)near6 (classif\$6).clm. and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2015/06/14 13:07

EAST Search History (Interference)

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6/ 15/ 2015 2:14:15 AM**C:\ Users\ kharper\ Documents\ EAST\ Workspaces\ 14087847 packet session analyzer.wsp**

Search Notes 	Application/Control No. 13795283	Applicant(s)/Patent Under Reexamination WEI ET AL.
	Examiner KEVIN C HARPER	Art Unit 2462

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
inventorship search on PALM	9/28/14	kch
EAST - see printout	9/28/14	kch
updated above searches	1/26/15	kch
updated above searches	6/14/15	kch

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

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	Examiner Name	Kevin Harper
Sheet 1 of 14		Attorney Docket No: 2831.012US4

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	"Exhibit A-2, U.S. Patent No. 8,056,135, Invalidity Claim Chart based on U.S. Patent No. 6,782,527 to Kouznetsov", (3/2/15), 1-26	
	"Exhibit A-3, U.S. Patent No. 8,056,135, Invalidity Claim Chart based on U.S. Patent No. 7,577,721 to Chen", (3/2/15), 1-21	
	"Exhibit A-4, U.S. Patent No. 8,056,135, Invalidity Claim Chart based on Jun Li et al., Resilient Self-Organizing Overlay Networks for Secutiry Update Delivery, 22 IEEE Journal on Selected Areas Communications 189 (January 2004)", (3/2/15), 1-32	
	"Exhibit A-5, U.S. Patent No. 8,056,135, Invalidity Claim Chart based on Fortinet Prior Art System", (3/2/15), 1-65	
	"Exhibit A-6, U.S. Patent No. 8,056,135, Invalidity Claim Chart based on Symantec Prior Art System", (3/2/15), 1-53	
	"Exhibit A-7, U.S. Patent 8, 056,135, Invalidity Claim Chart based on the McAfee Prio Art System", (3/2/12), 1-67	
	"Exhibit A-8, U.S. Patent No. 8,056,135, Invalidity Claim Chart based on Trend Micro Prior Art System", (3/2/15), 1-38	
	"Exhibit A-9, U.S. Patent No. 8,056,135, Invalidity Claim Chart based on U.S. Patent No. 8,108,429 to Sim-tang et al.", (3/2/2015), 1-37	
	"Exhibit B-1, U.S. Patent No. 8,276,205, Invalidity Claim Chart based on U.S. Patent No. 6,484,315 to Ziese", (3/2/15), 1-43	
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	"Exhibit B-6, U.S. Patent No. 8,276,205, Invalidity Claim Chart based on Symantec Prior Art System", (3/2/15), 1-61	
	"Exhibit B-7, U.S. Patent No. 8,276,205, Invalidity Claim Chart based on the McAfee Prior Art System", (3/2/15), 1-62	
	"Exhibit B-8, U.S. Patent No. 8,276,205, Invalidity Claim Chart based on Trend Micro Prior Art System", (3/2/15), 1-45	
	"Exhibit B-9, U.S. Patent No. 8,276,205, Invalidity Claim Chart based on U.S. Patent No. 8,108,429 to Sim-tang et al.", (3/2/15), 1-50	
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	"Exhibit C-2, U.S. Patent No. 8,051,483, Invalidity Claim Chart based on U.S. Patent No. 6,782,527 to Kouznetsov", (3/2/15), 1-41	
	"Exhibit C-3, U.S. Patent No. 8,051,483, Invalidity Claim Chart based on U.S. Patent No. 7,577,721 to Chen", (3/2/15), 1-37	
	"Exhibit C-4, U.S. Patent No. 8,051,483, Invalidity Claim Chart based on Jun Li et al., Resilient Self-Organizing Overlay Networks for Security Update Delivery, 22 IEEE Journal on Selected Areas Communications 189 (January 2004)", (3/2/15), 1-39	
	"Exhibit C-5, U.S. Patent No. 8,051,483, Invalidity Claim Chart based on the Fortinet Prior Art System", (3/2/15), 1-64	
	"Exhibit C-6, U.S. Patent No. 8,051,483, Invalidity Claim Chart based on the Symantec Prior Art System", (3/2/15), 1-33	
	"Exhibit C-7, U.S. Patent No. 8,051,483, Invalidity Claim Chart based on the McAfee Prior Art System", (3/2/15), 1-37	
	"Exhibit C-8, U.S. Patent No. 8,051,483, Invalidity Claim Chart based on the Trend Micro Prior Art System", (3/2/15), 1-39	
	"Exhibit C-9, U.S. Patent No. 8,051,483, Invalidity Claim Chart based on U.S. Patent No. 8,108,429 to Sim-tang et al.", (3/2/15), 1-45	
	"Exhibit D-1, U.S. Patent No. 7,580,974, Invalidity Claim Chart based on U.S. Patent No. 6,651,099 to Dietz et al.", (3/2/15), 1-21	
	"Exhibit D-2, U.S. Patent No. 7,580,974, Invalidity Claim Chart based on U.S. Patent No. 7,600,257 to Dubrovsky et al.", (3/2/15), 1-18	
	"Exhibit D-3, U.S. Patent No. 7,580,974, Invalidity Claim Chart based on U.S. Patent No. 7,292,531 to Hill", (3/2/15), 1-20	

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	"Exhibit D-4, U.S. Patent No. 7,580,974, Invalidity Claim Chart based on U.S. Patent No. 7,664,048 to Yung", (3/2/15), 1-25	
	"Exhibit D-5, U.S. Patent No. 7,580,974, Invalidity Claim Chart based on U.S. Patent Publication 2002/0009079 to Jungck et al.", (3/2/15), 1-21	
	"Exhibit D-6, U.S. Patent No. 7,580,974, Invalidity Claim Chart based on U.S. Patent No. 7,681,032 to Peled et al.", (3/2/15), 1-28	
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	"Exhibit F-1, U.S. Patent No. 7,979,543, Invalidity Claim Chart based on the MINDS Prior Art System.", (3/2/15), 1-26	
	"Exhibit F-10, U.S. Patent No. 7,979,543, Invalidity Claim Chart based on U.S. Patent No. 6,161,130 to Horvitz", (3/2/15), 1-27	
	"Exhibit F-11, U.S. Patent No. 7,979,543, Invalidity Claim Chart based on U.S. Patent No. 7,774,839 to Nazzal", (3/2/15), 1-27	
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	"Exhibit F-3, U.S. Patent No. 7,979,543, Invalidity Claim Chart based on the McAfee Prior Art System", (3/2/15), 1-40	
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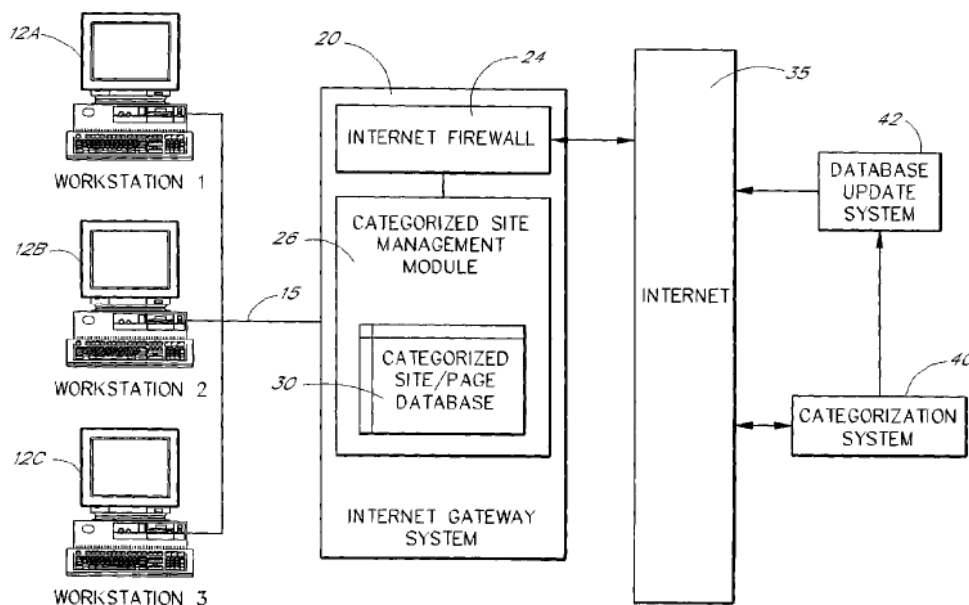
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(54) Title: AUTOMATED CATEGORIZATION OF INTERNET DATA



(57) Abstract: A method and system for automatically categorizing Internet sites is described. The system (20) first assigns rel-
evances of word pairs and word adjacencies to particular categories (30). New Internet pages to be categorized are then parsed so
that each word pair and adjacencies on the New Internet page (100A, 100B, 100C), a determination can be made whether the new
site (100A, 100B, 100C) should be associated with one or more category (42). The system can then allow users (12A, 12B, 12C)
selective access to only sites that are within (or outside of) specific categories (30).

AUTOMATED CATEGORIZATION OF INTERNET DATABackground of the InventionField of the Invention

5 This invention relates to systems and methods for selectively blocking access to particular Internet websites and pages. More specifically, embodiments of this invention relate to systems and methods for automatically categorizing Internet sites and pages so that users can be blocked from accessing specific categories of information.

Description of the Related Art

10 The Internet is a global system of computers that are linked together so that the various computers can communicate seamlessly with one another. Internet users access server computers in order to download and display informational pages. Once a server has been connected to the Internet, its informational pages can be displayed by virtually anyone having access to the Internet.

15 The easy access and inexpensive cost of retrieving Internet pages has led to several problems for restricting access to inappropriate information, such as pornography. Several solutions to this problem have been proposed, including rating systems similar to that used for rating movies so that a parent or employer could restrict access to Internet servers, or pages, that have a particular rating. Unfortunately, this mechanism requires each person running an Internet server to voluntarily rate their site. Because of the free-wheeling nature of the Internet, this type of voluntary rating scheme is unlikely to be very efficient for preventing access to sites, such as those containing pornography, that most parents or businesses desire to block.

20 In addition to a rating scheme, others have developed databases that contain the uniform resource locator (URL) address of sites to be blocked. These databases are integrated into network computer systems and Internet firewalls so that a person wishing access to the Internet first has their URL request matched against the database of blocked sites. Any URL found in the database cannot be accessed by the user. One such system is described in U.S. Patent No. 5,678,041 to Baker et al. Unfortunately, such systems rely on the database of accessed sites to be complete. Because new servers are being added to the Internet on a daily basis, as well as current servers being updated with new information, these databases do not provide a complete list of sites that should be blocked.

25 Thus, what is needed in the art is a system for restricting access to Internet sites in view of the constantly changing content appearing on Internet servers. The present invention provides such a system.

30

Summary of the Invention

 One embodiment of the invention is a computerized system for controlling access to Internet sites. This embodiment includes: a first module that categorizes an Internet site into predefined subject-matter categories; a second module that stores the address of the Internet site and its associated category to a database; and a third

module that controls access to the Internet site, the third module comprising instructions that block access to the Internet site if the Internet site is within a particular category.

Another embodiment of the invention includes a method for creating a database of categorized Internet addresses. This embodiment provides a method of: retrieving a first Internet page; parsing the Internet page to determine the lexical elements on the page; comparing the lexical elements to a table of category relevancies to determine the relevance of each lexical element to a subject matter category; determining the subject matter category of the Internet page based on the relevance of each lexical element to a category; and storing the address and subject matter category of the Internet page to a database.

Yet another embodiment is a method of controlling access to an Internet site, that includes comprising: categorizing a first Internet site into a predefined subject-matter category; storing the address of the Internet site and its associated category to a database; capturing a user request to view the site; and determining whether the user has permission to view the category of sites and, responsive to the determination, controlling access to the site.

Still another embodiment is a method of controlling access to Internet sites. This embodiment includes a method of: providing a training database, the training database comprising lexical elements and their relevance to subject matter categories; determining the relevance of a plurality of Internet pages to subject matter categories; storing the address of the plurality of Internet pages and their relevance to subject matter categories to a categorized database; comparing the Internet address of pages requested by users with the categorized database to determine if said users have permission to view the pages.

Brief Description of the Drawings

Figure 1 is a block diagram providing an overview of one embodiment of a system for blocking access to Internet sites.

Figure 2 is a block diagram illustrating the categorization system found in Figure 1.

Figure 3 is a block diagram of the tables within the training database described in Figure 2.

Figure 4 is a flow diagram illustrating the process of a user requesting access to an Internet page.

Figure 5 is a flow diagram illustrating the "Analyze Word Content of Page" process found in Figure 4.

Figure 6 is a flow diagram illustrating the process of training data that is performed within the training module of Figure 2.

Figure 7 is a flow diagram illustrating one embodiment of a process for retrieving pages performed by the site/page retrieval module of Figure 2.

Detailed Description

Embodiments of the invention include systems and methods for automatically categorizing Internet pages to create and update a database of categorized sites. This categorized database is then used within an Internet access control system to control user's access to Internet sites within certain categories. For example, if the system

described herein assigns a particular Internet page to a "Sports" category, users that are restricted from viewing sports pages on the Internet will not be granted access to the requested site. In one embodiment, the system is installed within an Internet Gateway computer that controls traffic from the user to the Internet. Because the system described herein becomes more accurate with each page that is scored, minimal user intervention is required to assign pages to categories.

As will be described in detail below, embodiments of this system include a training database that is created by analysis of lexical elements appearing on Internet sites that are strongly associated with a particular category. In this context, a lexical element is a word or plurality of words that appear on the site under analysis. Examples of lexical elements include individual words, word pairs, adjacent words, and triplets of words. Thus, in order to train a "Sports" category, for example, a site for a football team would be fed into the system.

As a first step, each category, such as Sports, is trained to recognize words, words pairs and word adjacencies that are particularly relevant to their category. As discussed herein, a word pair means any two words that appear anywhere on a page. In contrast, a word adjacency is any two words that appear next to one another. Thus, the word adjacency "football team" would be given a strong relevance score to the Sports category. However, this same word adjacency would be given a low relevance score to the Internet Commerce category.

Once a training database has been created of word pairs and word adjacencies, along with their relevance score for each predefined category, any new pages appearing on the Internet can then be analyzed based on the relevance of word pairs/adjacencies appearing in the new pages. For example, a new Internet page having the word adjacency "football team" would be scored highly for the Sports category, but have a low relevance to the Internet Commerce category.

Moreover, by continuing to train each category with pages that have been confirmed to be within a particular category, the system can become increasingly accurate. With each training session, the relevance scores of lexical elements within each page are either increased to indicate a higher relevance to the category, or decreased to indicate a lower relevance to the category.

By using an automated Internet site retrieval program, embodiments of the system provide a database of categorized Internet sites and pages that is constantly updated with new Internet pages as they appear on the World Wide Web. Thus, embodiments of the system provide an efficient system for scoring and categorizing Internet pages.

Overview of the Process

An embodiment of the automated categorization system, as described below, includes computer instructions that, when run, evaluate the source page of an Internet site and categorize the given URL into one of several categories. The system includes three equations that score for:

- | | |
|-----------------------------|---|
| 1. Single Word Relevance | Example: In Category 2, "sex" = 4040. |
| 2. Word Pair Relevance | Example: In Category 2, "sex" and "porn" = 6005 |
| 3. Word Adjacency Relevance | Example: In Category 2, "hardcore sex" = 8050 |

In addition, in other embodiments, equations which score for multiple word associations, such as word pairs, word adjacencies and combinations of higher degrees (triplet, quadruplets, etc.) can be implemented.

The categorization system is first trained by collecting a representative number of Internet sites that best represent the various facets of a given category. These sites are run through a training algorithm that assigns a relevance score to the words, word pairs and word adjacencies found in the Internet sites to the selected category. The result of the training process is a composite of the Internet sites called a "category prototype." The category prototype is a collection of the single word, word pair, and word adjacency relevance scores.

Once a category prototype has been generated for each category, the words, word pairs and word adjacencies from new Internet sites are tested against the category prototypes to determine if the new page should be categorized within any particular category. For example, if the word "sex" occurs on a source page, the computer checks the category prototype and retrieves a relevance score of 4040 for this word within Category 2 (Sex). If the word pair, "sex, porn" occurs on a source page, the computer checks the category prototype and retrieves the score of 6005 within Category 2 (Sex) for the word pair "sex, porn". This process is repeated for every word pair and word adjacency on the retrieved page. These scores are then used to calculate a category rating for the retrieved page.

The category rating is used to evaluate the probability that a page should be placed in a given category. For instance, if a URL has a category rating of 5000 within category two, then its associated probability of being within that category might be .99. This means that if there were 100 sites, each with a category two rating of 5000, then 99 of those sites belong in category two. In general, as the category rating increases, the probability that the corresponding site belongs to that category also increases. Consequently, it is possible to use this feature to establish a cut-off point that maintains 99% accuracy (or any other accuracy).

One goal of the process is to obtain two cut-off points within each category: the alpha point and the beta point. These two points create benchmarks against which decisions concerning a site's categorization can be made. The alpha point is chosen to maintain a sorting accuracy of, for example, 99%. As is known, the sorting accuracy is simply the computer's ability to correctly sort sites into a specific category. The Alpha point can be calculated for any category by using the following equation:

$$Ap = M7 + 4 (SD7),$$

where, **Ap** = alpha point, **M7** = the average category rating of the incorrectly sorted sites within the specific category, and **SD7** = the standard deviation of the category rating for the incorrectly sorted sites within the specific category. This ensures 99 percent sorting accuracy because we are calculating four standard deviations away from the mean score, and should generalize to the Internet at large for the given category.

The beta point's sorting accuracy will undoubtedly vary between categories. However, it may generally maintain a sorting accuracy between the ranges of 75 to 85 percent. The beta point can be found using the equation:

$$Bp = M7 + 1 (SD7),$$

where, **Bp** = beta point, **M7** = the average category rating of incorrectly sorted sites within the specific category and **SD7** = the standard deviation of the category rating for the incorrectly sorted sites within the specific category. Sites that fall between the beta point and the alpha point will be placed into a Suggest Database to be viewed by Web Analysts or technicians. It should be noted that each category will be assigned its own unique alpha and beta points.

As discussed below, embodiments of the system include the one or more modules. These modules include software instructions that are run on processors within the computer system. The modules can also include storages, such as Random Access Memory (RAM), Read Only Memory (ROM), Electrically Erasable Programmable Read Only Memory (EEPROM), hard disks or other computer storage devices.

Figure 1 provides an overview of a system 10 for controlling access to particular sites on the Internet. As shown, a plurality of workstations 12A-C are connected through a local area network 15 to an Internet gateway system 20. The workstations 12A-C are preferably Intel Pentium class personal computers operating under the Microsoft Windows Operating System. Of course, it should be realized that any conventional personal computer, such as those manufactured by Apple, IBM, Compaq, Dell, Digital Equipment Corp. (DEC) or other system can be used in a similar manner.

The local area network 15 is preferably an Ethernet 10baseT topology, but can be based on any well-known networking protocol, including wireless networks, token ring networks and the like. The local area network 15 communicates with the Internet Gateway system 20 in order to provide the workstations 12 A-C with TCP/IP communication to sites on the Internet 35. Such gateways are well known in the art and normally communicate through routers or other data packet switching technology for translating Internet TCP/IP protocols into the proper protocols for communicating across the local area network 15.

Within the Internet gateway system 20 is an Internet firewall module 24 that monitors data packets flowing to and from the Internet 35. The firewall module 24 controls access between the workstations 12A-C and the Internet so that unauthorized users cannot gain access to computer resources on the local area network 15. Thus, all communication between the Internet and the network server 15 first passes through the firewall 24. Many firewall software programs are available, such as Firewall-1 (Check Point software, Redwood City, California). However, it should be realized that while the embodiment described in Figure 1 relies on a firewall to control access of data packets between the Internet and the workstations 12A-C, other similar access control systems are available. For example, the Microsoft proxy server (Microsoft Corp., Redwood City, WA), Netscape proxy server (Netscape Corp) and the Open Server implementation of Cisco's Pix Firewall (Cisco Corp.) are currently available and can be implemented in place of the firewall 24.

Within the Internet gateway system 20, and communicating with the firewall 24 is a categorized site management module 26 that includes instructions for analyzing Internet site requests from the workstations 12A-C and then comparing those Internet site requests with a categorized site/page database 30. If the requested page is found within the database 30, it will either be blocked or allowed depending on the access rights granted to the user

within the management module 26. As illustrated, the categorized site management module 26 communicates with the firewall 24 to control access to the Internet 35.

Also connected to the Internet 35 is a categorization system 40 that, as described below, categorizes websites and pages in order to create the categorized site database 30. Once sites on the Internet have been categorized by the categorization system 40, a database update system 42 thereafter routinely copies the updated database from the categorization system 40 to the Internet gateway system 20. As can be imagined, the system can include hundreds of gateway systems, each of which is updated regularly by the database update system 42 to provide an updated database of blocked Internet sites. Moreover, the database update system 42 can preferably only transfer portions of the database to the gateway system 20 so that the entire database does not need to be transmitted.

Overall, Figure 1 illustrates one embodiment of a system for providing controlled access of workstation computers to the Internet. Each request from a workstation for an Internet address (e.g.: page or site) is first compared to a categorized database of Internet addresses. If the requested address is found within the categorized database, a management module accesses a user permissions table to determine if the requesting user has rights to view sites within the category that is associated with the requested page. If the user has access rights to view pages within the category, the page request is sent to the Internet. However, if the user does not have any access rights, the user is blocked from receiving the requested page from the Internet.

Referring to Figure 2, the categorization system 40 (Figure 1) is explained in more detail. As illustrated, Internet pages 100A, B and Internet site 100C are retrieved by a site/page retrieval module 110. Within the site/page retrieval module 110 are instructions for searching and retrieving Internet pages and sites from the Internet. One exemplary method for retrieving such sites is illustrated below in Figure 7.

Once an Internet site or page has been retrieved by the retrieval module 110, it is forwarded to an analysis module 120 in order to determine which category (or categories) is most strongly related to the retrieved site. The process for analyzing an Internet page for its relevance to one or more categories is explained in more detail below in Figure 5.

As illustrated, the analysis module 120 is linked to a copy of the categorized database 30' and a training database 125. The analysis module 120 calculates the relevance of the retrieved Internet page to each of the predefined categories by analyzing the word pairs and word adjacencies within the page. In order to provide this analysis, the training database 125, as explained below, includes category relevance scores for each word pair and word adjacency that might be found on the page. Thus, by comparing the word pairs and word adjacencies within the retrieved page to the scores for those word pairs and adjacencies within the training database, a total relevance score for the page within each category can be determined. Once a page relevance score has been calculated for the page in each category, a determination is made whether the relevance score for each category is high enough to warrant assigning the retrieved score to any category.

As discussed below, the determination of whether to assign a retrieved page to a particular category is made by comparing the page's relevance score for a particular category with a predetermined alpha value. If the page relevance score is higher than the alpha value for the category, the page is assigned to that category. If the score is lower than the alpha value, but greater than a beta value, the page is forwarded to a manual scoring system wherein technicians view the retrieved page and determine whether or not to include the page within the category. If the relevance of the page for a category is below the beta value, the page address is stored to a database of analyzed sites, and the system continues to score additional addresses.

The data within the training database 125 is created by providing training data 130 to a training module 135, as illustrated. The training data 130 includes Internet pages strongly associated with each category to be trained. For example, in order to train a Sports category, the training data might include the Internet address of a sports franchise or other sports website. The training module 135 then parses the word pairs and word adjacencies for each page within the given sports site. Any unique word pairs and word adjacencies, as described below, are then assigned high relevance scores in the Sports category within the training database. Thus, similar words and word pairs appearing on new pages will be given high relevance scores to the Sports category.

Referring to Figure 3, one embodiment of a training database 125 is illustrated. Within the training database 125 is a word identification table 200 that includes lists of words and a corresponding ID number for each word. This table allows every word pair or word adjacency referenced in the database to be represented by two numbers instead of two words. Since, in general, the number of characters in the ID number is less than the number of characters in the word itself, much less data storage space is required within the training database to store numerical representations of each word instead of the word itself. In addition, well-known words, such as "the" and "and" can be represented by single-digit numbers so that only one byte of data is taken to represent these common words. However, as discussed below, such common words are normally discarded prior to scoring an Internet page so that the lexical elements on each page will be more readily differentiated from every other Internet page. This provides a more advantageous page scoring system.

In addition to the word identification table 200 is a category identification table 205 that provides a category ID number for each category within the system. The category identification table 205 also includes an alpha and beta score that provide the cut-off values for assigning a particular page to the selected category. For example, as illustrated in Figure 3, the Sports category includes an alpha score of 920 and beta score of 810. If an Internet page is found to have a page relevance score of greater than 920 for the Sports category, it will be assigned to the Sports category. However, if the Internet page is found to have a page relevance score of between 810 and 920, it will be flagged for manual follow-up by a technician to determine whether or not it belongs within the Sports category. If the Internet page is found to have a page relevance score of below 810 for the Sports category, then it will not be flagged as being related to the Sports category. By using these values, the system determines whether or not to assign a particular page to one of the predefined categories.

Also within the training database 125 is a word relevance table 210 that provides the relevance scores of word pairs and word adjacencies with particular categories in the system. For example, the word "Cleveland" (ID No. 234) and the word "Browns" (ID No. 198) are illustrated with a word adjacency relevance score of 900 to category 1 (Sports). Because, in this illustration, the maximum relevance score is 1,000, the word adjacency "Cleveland Browns" is very strongly associated with the Sports category. Thus, any Internet page having the words "Cleveland Browns" adjacent one another will have their total page score raised in the Sports category due to the strong relevance of these words to sports.

Note that the words "diamond" (ID No. 755) and "jewelry" (ID No. 1345) only have a relevance score of 290 within the Sports category. However, the word pair "diamond" and "jewelry" is illustrated with a relevance score of 940 in category 3 (Shopping). Thus, as illustrated, any page having both of these words will be more strongly associated with the shopping category, and more weakly associated with the Sports category.

Referring to Figure 4, an overall process 300 of requesting access to an Internet page or site is illustrated. The process 300 begins at a start state 302 and then moves to a state 306 wherein an Internet browser on a workstation computer 12A-C requests an address on the Internet. Well-known browsers include Microsoft Explorer and Netscape Navigator. The browser request is normally made after a user has entered a desired URL into their browser software.

The user's request is then sent across the local area network 15 to the Internet Gateway system 20. The process 300 then moves to a state 308 wherein the requested Internet address is matched against the categorized database 30. It should be noted that the address can be a single page within an Internet site, or the default address of the site (e.g.: www.company.com).

A determination is then made at a decision state 310 whether an address match has been made with any address stored in the categorized database. If no match was found within the categorized database 30, the requested page is retrieved from the Internet at a state 312 and the process terminates at an end state 314.

However, if an address match between the requested address and the categorized database is found, the process 300 moves to a decision state 315 wherein a determination is made whether the current user has restricted access rights to specific categories of Internet pages. This determination can be made by reference to a list of network users, and an associated permissions table for each category found within the categorized database. Thus, a particular user may be restricted from access to all Sports and Pornography categories but not restricted from Internet Commerce or Travel categories. An exemplary list of Internet categories is provided below in Table 1.

Table 1
Listing of Categories

Category	Description
Abortion Advocacy	Abortion advocacy, pro or con.
Activist Groups	Organizations with a cause. This is a broad category that can include environmental groups and any other activist group not covered under other categories. Note: No special exceptions are made for Freedom of Speech activist sites.
Adult Entertainment	Full or partial nudity of individuals. This might include strip clubs, lingerie, adult-oriented chat rooms, erotica, sex toys, light adult humor and literature, escort services, password-verification sites, prostitution, and so forth. Sexually explicit language describing acts that would fit into this category are also categorized here.
Alcohol/Tobacco	Any site promoting, containing, or selling liquor or tobacco products, or their accessories.
Alternative Journals	Online equivalents to supermarket tabloids, or non-mainstream periodicals. Note: This category may contain materials that are sexual in nature.
Cult/New Age	Promoting or containing information on witchcraft, black arts, voodoo, spirituality, horoscopes, alternative religions, cult, UFOs. All religions not covered under the Religion category.
Drugs	Promotion of illegal drugs and/or drug culture information, or drug-related contraband. Note: As legality of drugs varies by country, the drug laws of the United States are used.
Entertainment	Sites promoting/containing information on movies, radio, television, books, theater, sedentary hobbies, magazines (non-business related), music, pets, humor/jokes, and sites containing downloadable software of an entertaining nature. Note: Computer magazines containing technical information are not included in this category.
Gambling	Any site that promotes gambling or allows online gambling.
Games	Information about or advocacy of board games, electronic games, video games, computer games, or on-line games. Includes both hardware and software.
Gay/Lesbian Lifestyles	Information about gay and lesbian lifestyles that does not contain sexually explicit images or text. Dating services and shopping sites that cater to gay or lesbian customers.
Hacking	Any site promoting questionable or illegal use of equipment and/or software to hack passwords, create viruses, gain access to other computers, and so on. Does not include security information sites.
Illegal	Promotion or information describing how to commit non-violent, illegal activity such as drunk driving, mail fraud, picking locks, white or blue collar crime of a non-technical nature. Note: U.S. laws are used as a guide.
Job Search	Personal job/career search sites.
Militancy	Any site promoting or containing information on militia operations, terrorist activity, war, riots, rebellion groups. Advocates of violence to overthrow governments.
Personals/Dating	People meeting other people, personal ads, mail order brides. Sites combining heterosexual and gay personals on the same site are included here. Dating and personals sites that accommodate only gay and lesbian lifestyles are categorized

Category	Description
.	under Gay/Lesbian Lifestyles.
Politics	Political advocacy of any type. Any site promoting or containing information on any political party, pro or con. This includes all registered and otherwise officially recognized political parties. Excludes all official government sites.
Racism/Hate	Ethnic impropriety, hate speech, anti-Semitism, racial clubs/conflict.
Religion	Religious advocacy, pro and con. Limited to: Atheism, Buddhism, Christianity, Hinduism, Islam, Judaism and Shintoism.
Sex 1	Heterosexual activity involving one or two persons, hard-core adult humor and literature. Sexually explicit language describing acts that would fit into this category are also categorized here.
Sex 2	Heterosexual acts involving more than two people, homosexual and bisexual acts, orgies, swinging, bestiality, sadism/masochism, child pornography, fetishes and related hardcore adult humor and literature. Sexually explicit language describing acts that would fit into this category are also categorized here.
Shopping	Consumer-oriented online shopping. Includes real estate shopping. Excludes sites that sell sex toys, weapons, alcohol, tobacco, vehicles and vehicle parts or travel services. Note: The entire site is screened if the intent of the site is selling.
Sports	Sports and sports-related recreation. Team or individual activities, indoor or outdoor, with a physical component. For example, body building, hiking, camping, and football.
Tasteless	Offensive or useless sites, grotesque depictions caused by "acts of God."
Travel	Sites promoting or containing information on travel, leisure, vacation spots, transportation to vacation destinations.
Vehicles	Any site promoting vehicles, including: cars, vans, trucks, boats/water craft, ATV's, trains, planes and any other personal vehicles and vehicle parts. Vehicles within this category do not carry weapons.
Violence	Any site promoting or containing information on violent acts, murder, rape, violent criminal activity, gangs, gross depictions caused by acts of man, excess profanity.
Weapons	Any site promoting/containing information on guns, knives, missiles, bombs, or other weapons.
Web Chat	Chat sites via http protocol, chat rooms (non-IRC), forums and discussion groups. Home pages devoted to IRC.

Once a determination has been made at the decision state 315 that the user has restricted categories, the process 300 moves to a state 316 to determine which categories have been blocked for this particular user. This determination is made by reference to permissions list associated with the user.

5

The process 300 then moves to a decision state 320 to determine whether the requested page is within any of the restricted categories for this particular user. This determination is made by first determining the category of the requested address from the categorized database, and then comparing that result with the restricted categories for the user. If a determination is made that the requested page is not within one of the user's restricted categories, the revised page is retrieved at a state 324 and the process terminates at the end state 314.

If a determination is made at the decision state 320 that the requested page is within one of the user's restricted categories, the process 300 moves to a state 340 wherein access to the page is blocked. This blocking can occur by discarding the packet request from the user to the Internet, or simply closing the connection that was requested by the Internet browser to the requested page. The process 300 then returns an appropriate page notifying the user that their request has been denied. The process 300 then terminates at the end state 314.

Thus, Figure 4 provides an overview of one process for requesting and blocking access to particular Internet addresses based on whether the requested page appears within the categorized database 30. Figure 5 provides a method for creating the categorized database 30 by analyzing the content of word pairs and word adjacencies within Internet pages.

Referring to Figure 5, a process 328 of analyzing the word content of pages to determine their relevance to particular categories is illustrated. The process 328 begins at a start state 400 and then moves to a state 402 wherein the first word in an Internet page is retrieved. As used herein, the term "word adjacency" includes words that are directly adjacent one another. The term "word pair" includes any two words that are located on the same Internet page.

Once a first word from the page has been retrieved at the decision state 402, the process 328 moves to a state 404 wherein the relevance of every word pair that contains the first word in the page is determined for each of the defined categories. Thus, the first word and the third word in the page are determined, and that word pair is compared against the word relevancy table 210 in the training database to determine its relevance score in each of the listed categories. This relevance score is determined by reference to the word relevance table 210 (Figure 3) which lists each word pair and its associated relevance to every category. In one embodiment, the relevance score of a word pair within a particular category varies from 0 to 1,000, with 1,000 being a word pair that is perfectly associated with a category. Of course, various scoring systems can be developed that reflect the relevance of a particular word pair to a category. It should also be understood that a maximum distance between any two words within a word pair can be set. For example, the system may only analyze word pairs that are 10, 20, 30, 40 or more words apart, and then move to begin analyzing the next word in on the page.

The determined word pair relevance scores are then stored to a memory for later manipulation. The first word is then paired with the fifth word in the page to determine the new word pair's relevance to each category. This process is repeated for every possible two-word pair in the page that includes the first word.

The process 328 then moves to a state 405 wherein the relevance of the word adjacency of the first word and the second word is calculated by matching these words to the word relevance table 210 in the training database to determine their relevance to each category.

Once the relevance score for the retrieved word adjacency has been determined for every category, the process 328 moves to a state 408 wherein the relevance scores determined at the state 404 for each of the word pairs is added to the total page score for each category.

Thus, if the word pair "Cleveland" and "Browns" returned a relevancy score of 900 from the word relevancy table in the Sports category, the numerical value 900 would be added to the total page score for category 1 (Sports). Thus, word pairs having higher relevance scores in a category will result in a higher overall page relevance score in the current category for that page. Similarly, word pairs having lower relevance scores in a particular category will reduce the overall page relevance score to that category.

Once the word pair relevancy scores for the page have been added to the total page relevance score, the process 328 moves to a state 409 wherein the word adjacency relevancies that were determined at state 405 for each category are added to the page relevance category scores for the current Internet page.

Now that the page scores for each category have been calculated, a determination is made at a decision state 416 whether more words exist on the page to be analyzed. If a determination is made that no more words are available for analysis on the retrieved Internet page, the process 328 moves to a state 420 wherein the total page relevance score for each category is normalized to take into account the fact that pages with more words will have higher scores. For example, since page scores are determined by adding the relevancies of word pairs and word adjacencies, a page with 500 words will have a substantially higher score in each category than a page with 100 words. Thus, for example, dividing the page relevance score within each category by the total number of words on the page will normalize the page score so that pages of differing lengths will have approximately the same page score in each category. It should be noted that categories having higher average relevance scores for each word pair and word adjacency will have a higher page score than those categories having word pairs with lower relevance scores.

Once a normalized page score has been determined in each category for the retrieved page, the process 328 moves to a decision state 422 to determine whether the page relevance score for the category is greater than the alpha relevance score for that category. This determination is made by reference to the category ID table 205 in the training database 125. If the page relevance score is not greater than the alpha score, the process 328 moves to a decision state 424 to determine if the page relevance score is greater than the beta score for the category. If a determination is made that the page relevance score is not greater than the beta score, the process 328 moves to a state 426 wherein the retrieved site is stored to a table and flagged as having been analyzed, but not within any category. The process 328 then terminates at an end state 430.

If a determination is made at the decision state 422 that the page relevance score is above the alpha score for the category, the process 328 moves to a state 432 wherein the retrieved address is added to the categorized database 30. It should be noted that the categorized database 30 includes not only the address of the Internet addresses to block, but also the category that the Internet site is associated with so that a determination can be made whether a user having particular permissions should be provided access to the site, even though it is categorized within the database.

In an alternative embodiment, if a determination is made that the page score is greater than the alpha score for the category, the system may run instructions that access the current page on the Internet. The instructions then begin to score the hierarchical pages of the site while moving towards the main domain address

(e.g.:www.company.com). If a determination is made that any of higher nodes on the site are also above the alpha score for the same category, those sites are also added to the database. This provides the system with a mechanism for not only rating an individual page, but also the plurality of pages that appear below a specific node on an Internet site.

5 In one embodiment, the number of words that are considered on any page is limited to a predetermined number. For example, the system might be limited to only considering the first 100, 250, 500 or 1000 words on any page. Any words that follow the predetermined number would not be considered.

10 If a determination is made at the decision state 424 that the page relevance score is greater than the beta score, but lower than the alpha score, the process 328 moves to a state 434 wherein this address is flagged for further analysis by a technician. The process then terminates at the end state 430.

15 If a determination is made at the decision state 416 that more words are left to be analyzed in the retrieved page, the process 328 moves to a state 436 wherein the next word in the page is selected as the first word for each word pair and word adjacency. In this manner, the system "walks" across the page by analyzing each word in the page in conjunction with every other word. This provides a complete analysis of every possible word pair and word adjacency in the page.

20 Through the process 328 illustrated in Figure 5, a newly retrieved Internet page is scored and associated with one or more categories within the system. Each page that is found to have relevancy score within any category that is greater than the alpha score for that category is added to the categorized database 30 for the categories that it is associated with. In addition, any page that is found to have a relevancy score that is greater than the less stringent beta score is flagged for analysis by a technician so that it can be manually added to the categorized database, if necessary. Through this mechanism, new Internet pages are added to the system on a regular basis.

25 Referring to Figure 6, a process 500 for creating the word relevance table 210 within the training database 125 is described. The process 500 begins at a start state 502 and then moves to a state 504 wherein a first category to train is selected. The category might be, for example, the Sports category. The process 500 then moves to a state 508 wherein web pages that have been predetermined to be within the chosen category (e.g., sports) are retrieved. Thus, because these pages are known to be within the category selected at state 504, the relevance of each word pair and word adjacency within the chosen page can be assigned a high relevance to the current category.

30 Once web pages within the chosen category are retrieved, the process 500 moves to a state 510 wherein a target page score is determined for the currently selected page. Normally, a page that is highly relevant to a particular category is given a score of, for example, 1,000. However, it should be realized that any similar type of scoring scale that is used to relate words to a category can similarly be implemented. Once the target page score is determined at the state 510, the process 500 moves to a state 516 wherein the first page of the retrieved pages is selected for analysis.

35 The number of words on the selected page is then counted at the state 520 and the process thereafter moves to a state 526 wherein the number of unique word pairs are divided by the target page score (1000) so that if

the word pairs were re-scored, the total page relevance score would be 1000. Similarly, the target page score (1000) is divided by the number of unique word adjacencies to result in a word adjacency score that, if added together, would result in a page relevancy score of 1000 (extremely high relevance to the trained category). It should be noted that common words such as "a", "the" and "and" are ignored to minimize processing time and increase the accuracy of the scoring process. Moreover, computer language instructions and hypertext headers are also ignored in order to increase the accuracy of scoring the pages.

The process then moves to a state 530 wherein the current score for each word pair and word adjacency (1000) is averaged with the same word pair and word adjacency scores already stored in the word relevance table. Thus, if we are training the Sports category, and the word adjacency "Cleveland Browns" is found within the current page, it might be assigned a word adjacency value of 105 in the Sports category. However, if the term "Cleveland Browns" is already scored within the Sports category at a value of 89, the 105 value and the 85 value would be averaged to normalize the word adjacency score to the Sports category. This system therefore allows words that are used over and over within certain categories to be "up-trained" so that their relevance score with the chosen category will go up as they appear on more pages that are scored. In addition, it should be understood that the system is capable of parallel processing of a plurality of sites simultaneously.

The process 500 then moves to a state 534 wherein the alpha and beta scores for the category being trained are determined. The alpha score is the numerical score that, when exceeded, indicates that the selected page is clearly within a category. The beta score is the numerical score that, when exceeded, indicates that the selected page may be within a category. As discussed above, the alpha score is normally chosen so that 99% of the pages having that score are within the chosen category. The beta score is normally chosen so that 75-85% of the pages having that score are within the chosen category. These scores are determined by analyzing the average score of the trained pages in the category to determine cut-off values for new pages.

The word relevance scores are then saved to the word relevance table 210 in the training database 125 at a state 536. A determination is then made at a decision state 540 whether more pages that need to be trained are available. If no more pages are available, the process 500 terminates at an end state 544. If a determination is made that more pages do exist, the process 500 moves to a state 550 wherein the next page to be analyzed is selected. The number of words are then counted on the page at the state 520 and the process continues as described above.

Through the process 500 described above, a word relevance table is developed which includes normalized word relevances for every word pair and word adjacency that might be found in an Internet page. By analyzing new pages and by adding together the relevances of each word within the page, an automated system is provided for assigning a page relevance score for a particular page to each of the predetermined categories within the system. Thus, once a particular category has been trained by analysis of a large number of pages, the system can rapidly analyze new pages for their relevance to each of the predetermined categories.

As described above in Figure 2, a page retrieval module 110 is utilized for retrieving new Internet pages and sending them to the analysis module 120 for scoring. Figure 7 provides an illustration of a process 600 for retrieving pages from the Internet.

The process 600 begins at a start state 602 and then moves to a state 606 wherein the address of the first site to categorize is determined by random access of an address from the categorized web database 30. Once an address of a first site to categorize is determined at the state 606, the process 600 moves to a state 610 wherein the first page of the Internet site is read. The process then moves to a state 612 wherein the page that has been read is forwarded to the analysis module 120 so that the word pairs and word adjacencies on the page are analyzed for their relevance to a predetermined category.

The process 600 then moves to a decision state 616 in order to determine whether more pages exist on the current site to be analyzed. If no more pages exist on the current site, the process 600 moves to a decision state 620 to determine whether any sites on the Internet reference the currently analyzed site. If no more sites reference the current site, the process 600 terminates at an end state 624.

If more pages do exist to be analyzed at the decision state 616, the process 600 moves to a state 630 wherein the next page on the current site is read. The process then continues to state 612 wherein the new page is sent to the analysis module 120.

If a determination is made at the decision state 620 that there are sites that reference the current site, the process 600 moves to a state 632 wherein the system points to the address of the first referenced site. The process 600 then returns to the state 610 in order to read the first page on the newly retrieved Internet site.

EXAMPLE 1 Normalizing Training Data

As discussed above, the source pages of different web sites have different numbers of words on them. This can affect the word pair and word adjacency training process since Internet sites with fewer words on them can force higher relevancies on word pairs and word adjacencies than sites with fewer words. For instance, consider two pages, A and B, with 10 and 500 words pairs on their source pages respectively. Assuming each site has a current page score (*Sc*) of 0 and a target page score (*St*) of 1000. The current training algorithm takes the form of the following equation:

$$(E1) \quad W_{rn} = W_{rc} + I,$$

where *W_{rn}* is the new word pair relevance and *W_{rc}* is the current word pair relevance and *I* is the amount that the each word pair relevance should be incremented such that if the page were immediately re-scored its score would equal the target score. *I* can be found by taking the current score, subtracting it from the target score and dividing it by the total number of word pairs (*Wt*) on the page. The equation is as follows:

$$(E2) \quad I = (St - Sc) / Wt$$

Finding the new word pair relevance requires adding the current relevance to the increment value. The new word pair
 5 relevance equation then becomes:

$$(E3) \quad Wrn = Wrc + (St - Sc) / Wt$$

Using the equation above to calculate the word pair relevances for sites A and B we find:

$$(E4) \quad Wrn(A) = 0 + (1000 - 0) / 10 = 100 \quad (\text{note: } I = 100)$$

$$(E5) \quad Wrn(B) = 0 + (1000 - 0) / 500 = 2 \quad (\text{note: } I = 2)$$

15 Interpreting these results, the 10 word pairs on site A would each have a relevance of 100 while the 500 word pairs on site B would each have a relevance of 2 to the chosen category after one round of training.

If these two sites were determined to be equally "qualified" to train a particular category, then logically they should influence word pairs from other pages to a similar degree. However, at this point, this is not the case. Instead, a site with 10 word pairs can influence the weight of words found up to as much as 5000% more than a site with 500
 20 word pairs. Instead, a system that increments word pairs "evenly", regardless of the number of words that occur on the page is desired.

A method for normalizing the amount that each word pair is incremented is advantageous. Using the results from E4 and E5, the minimum and maximum amount that each word pair can be incremented is 100 and 2 respectively. Since, we want the minimum relevance score and the maximum relevance score to approach each other, we can take
 25 their average using the midpoint theorem:

$$Mp = (p1 + p2) / 2, \text{ where } Mp \text{ is midpoint, } p1 \text{ is point 1, and } p2 \text{ is point 2}$$

We find that the midpoint between the min and max increment is:

$$(E6) \quad Mp = (I(A) + I(B)) / 2$$

Using the values from E4 and E5,

$$(E7) \quad Mp = (100 + 2) / 2 = 102 / 2 = 51$$

Thus, determining the "*adjustment constants*" that should be used to adjust the relevance scores towards the midpoint score for each site relies on the following two equations:

$$(E8) \quad I(A) * AdjCon(A) = Mp \quad or \quad AdjCon(A) = Mp / I(A)$$

$$5 \quad (E9) \quad I(B) * AdjCon(B) = Mp \quad or \quad AdjCon(B) = Mp / I(B)$$

Substituting in,

$$(E10) \quad AdjCon(A) = 51 / 100 = .51$$

$$10 \quad (E11) \quad AdjCon(B) = 51 / 2 = 25.5$$

Therefore, with ten words, the increment should be multiplied by .51 to reach the midpoint value of 51. Similarly, with 500 words, the increment value needs to be multiplied by 25.5 to reach the midpoint value of 51. This logic can be used to formulate the training normalization constant, *Nt*. The equation for calculating *Nt* is:

15

$$(E12) \quad Wt(X) * Nt = AdjCon(X) \quad or \quad Nt = AdjCon(X) / Wt(X)$$

With a min of 10 words ($Wt(A) = 10$) and max of 500 words ($Wt(B) = 500$), the training normalization constant is:

20

$$(E13) \quad Nt = AdjCon(A) / Wt(A) = .51 / 10 = .051$$

$$(E14) \quad Nt = AdjCon(B) / Wt(B) = 25.5 / 500 = .051$$

The training normalization constant with a range of words between 10 and 500 words is .051. The importance of this constant can now be illustrated. The total score, *Sn*, for the pages in our example after one round of training can be found using the equation:

25

$$(E15) \quad Sn = Wt * Nt * (St - Sc) / Tp ,$$

30 where *Tp* is the total number of possibilities of word combinations.

It should be noted that the total number of possibilities is dependent upon such things as groupings and the manner in which the words are cycled through. For example, if the page has 100 words, we can take groups of 10 words and cycle through them in increments of 5. Taking such things into account the equation for *Tp* becomes:

35

$$Tp = (Wt / Wi - 1) * (Wg)! / ((Wg - k)! (k)!)$$

Where k is the k -set: $k = 1$ for single words, $k = 2$ for word pairs, $k = 3$ for word triplets, etc. Wg is word groupings, Wt is word total, and Wf is word increment (or cycling). In the examples in discussed below, Wt is equal to Tp . While this simplifies the examples provided herein, it is not necessarily the case when $k > 1$.

In the special case where $Wt = Tp$, the amount that the relevance score for each word will be raised is:

$$(E16) \quad Nt * (St - Sc) \quad \text{or} \quad .051 * (St - Sc)$$

This is a simplified example, but illustrates the basic principles of normalizing word scores in the training process. Note that for $k > 1$ (or anything other than single word counts), Wt is not equal to Tp .

It should also be appreciated that this normalization process can be used to not only train lexical elements to be associated with a particular sites (up-train), it can also be used to train lexical elements to not be associated with a particular site (down-train). During an up-training session, the word relevance scores of lexical elements on a page are increased within the designated category to indicate that they are more strongly associated with the category.

During a down-training session, the word relevance scores of lexical elements on a page are reduced to indicate that they are less strongly associated with a chosen category. Accordingly, it should be realized that to down train a page, the normalization constant would be calculated to move the score of each page downward to, for example, a score of 500. Thus, each lexical element on the page would be multiplied by a normalization constant that resulted in a lowered value for the page relevance score.

However, in either case, it is advantageous to normalize the amount that each word relevance score changes so that a page with fewer lexical elements does not more greatly affect the word relevancies found on that page.

Example 2

Normalizing Internet Page Scoring

If words, word pairs and word adjacencies are "trained up" by approximately the same value so that each has a gradually greater relevance score, then how does that affect the page scoring process. Assume two sites A and B, have 10 and 500 words on them respectively. Each has a score of 0 before one round of training and the target score is 1000. Since we are dealing with single words, $k = 1$, then $Wt = Tp$. Using equation 16, we find that the amount each word will be incremented is:

$$(E17) \quad .051 * (St - Sc) = .051 * (1000 - 0) = 51$$

If each word was raised 51 points, then the score of each page after one round of training would be 51 times the number of words on that page. The score for each page is:

(E18) $Score(A) = 10 * 51 = 510$

(E19) $Score(B) = 500 * 51 = 25500$

Obviously, these scores are not close to each other. Judging solely upon the numbers, it would seem that site B was much more relevant to a category than site A. However, we used them both to train the same category. Consequently, they should have similar values after one round of training. We need a system that takes into account the skew that pages with varying numbers of words can create.

What we want to accomplish is to create some means of normalizing scores of pages based on the number of words that occur on them. Using equations 18 and 19, we can approximate the maximum and minimum scores for sites. Since we want the min and max to approach each, we can find their midpoint using the midpoint formula:

(E20) $(510 + 25500) / 2 = 13005$

Finding the "adjustment variables" for this set of data requires dividing the midpoint score by the real score:

(E21) $Ns(A) = 13005 / 510 = 25.5$ (note: $Wt = 10$)

(E22) $Ns(B) = 13005 / 25500 = .51$ (note: $Wt = 500$)

We now know the points (10 words, 25.5) and (500 words, .51). If we find a few more points (255, 1), (132, 1.931818), and (378, 0.674603) and plot them, we get an ordered data set with a trendline that has the equation:

(E23) $y = 255 * x^{-1}$

Substituting in the $Ns(Wt)$ for y (which is the score normalizer, given a set number of words) and Wt (total words) for x . We get the equation:

(E24) $Ns(Wt) = 255 * (Wt)^{-1}$

For our sites A and B with 10 and 500 words:

(E25) $Ns(10) = 255 * (10)^{-1} = 25.5$

(E26) $Ns(500) = 255 * (500)^{-1} = .51$

In general, the scoring equation becomes:

(E27)
$$\text{Normalized Score}(\text{Site } X) = \text{Ns}(\text{Wt}(\text{Site } X)) * \text{Original Score}(\text{Site } X) .$$

Using the results from equations 18 and 19, the scores of site A and site B were 510 and 25,500, respectively. Using the normalized score technique, after one round of training the scores of these sites would be:

(E28)
$$\text{Normalized Score}(A) = \text{Ns}(\text{Wt}(A)) * \text{Score}(A) = 25.5 * 510 = 13005$$

(E29)
$$\text{Normalized Score}(B) = \text{Ns}(\text{Wt}(B)) * \text{Score}(B) = .51 * 25500 = 13005$$

The sites have the same score after training. This supports the logic that sites that are used to train a category should have similar scores. These equations, in combination with the normalization of training data, as shown in Example 1, minimizes the error caused by having sites with different numbers of words on them in a training set.

Example 3

Scoring a Page

Approximately 8000 samples were collected from sites from the Category Two (or Sex 2) of the Suggest Database. These potential category two sites had previously been checked by Web Analysts to determine whether they were, in fact, Internet sites that were primarily sexual or pornographic in nature. A score of 8 was assigned to a site that was verified as a sex site and a score of 7 to those sites that were determined not to be sex sites. The categorization system had assigned a category rating for category two to all 8000 Sites.

The purpose of the study was to determine whether the categorization system could distinguish between sites rated as 8's and 7's, or accepted sites and deleted sites, respectively. It should be noted that a deleted site is one that should not have been categorized within the Sex category and an accepted site is one that was confirmed to be within the category. The hypothesis was that the mean score for the sites rate as 8's would be statistically different from the mean score for sites rated as 7's. As suspected, the mean for the accepted sites (8's) were significantly higher than the mean for the deletions (7's). However, there was an overlap between the two groups. This result suggests that the use of a cutoff point could be used to minimize the error involved.

	Mean Score	Standard Deviation	Median
7's (deletions)	929	482	842

Alpha Point = $A_p = M7 + 4 (SD7) = 929 + 4 (482) = 2857$

Beta Point = $B_p = M7 + 1 (SD7) = 929 + 1 (482) = 1411$

Using an alpha point of 2857 we found a sorting accuracy of 99% or above. There were only 9 sites that were above the alpha score, but did not belong within the Sex category. Seven of them were simple errors, perhaps attributable to poor training of the Category 2 sites.

Two of them were purposeful tricks, meaning that the Internet sites used sex-related terms to attract attention in their metatags. The exact percentage for the sorting accuracy, using the alpha point of 2857, was therefore 99.30%. Thus, according to this test, if a thousand sites were entered with a score above this alpha point there will be, on average, only 7 mistakes and 993 correctly sorted sites.

However, because the alpha point is set very high, many sites that are, in fact, sexually oriented, will not be categorized at all. Using an alpha point of 2857, the inclusion level of accepted sites is only 49.80%. This means that out of a thousand sites that should be placed in category two, 498 would be found and 502 missed.

For this reason, the system also monitors sites that have a lower relevance to each category through creation of a beta point. Using a beta point of 1411, the inclusion level rises from 49.80% to 81.76%. The number of sites missed falls from 502 to 183 sites, and the number caught rises from 498 to 817. Thus, the use of both the alpha and beta points results in more accurate scoring of any new site.

Example 4

Normalizing Training Data by Increments

Another embodiment of a method for normalizing training data is explained below. First, we define I_s = initial score and T_s = target score for the page being trained.

1) Begin with a test increment value of, for example, 1. Increment the values of the relevance of all lexical values by the test value. (e.g.: all lexical values existing on the page).

2) Calculate the resulting page relevance score after this test addition.

3) If the new score = M_s , the increment value, I , (for all lexical elements) =

$$I = (T_s - I_s) / (M_s - I_s)$$

Thus, the difference between the target score and the current score, divided by the effect on the score when each elements relevance is incremented by 1 is the correct number to increment each element to achieve the target score.

Accordingly, if the I_s = 500, and T_s = 1000 incrementing all relevancies by 1 will result in a page score of 550 and:

$$I = (1000 - 500) / (550 - 500).$$

Therefore, to increment the page to result in a page score of 1000, we need to use an increment value is 10 for each lexical element.

In general the relevance for a value will be incremented by the Increment constant (I) * the # of occurrences of that element on the page. This follows from the notion that the more often an element appears on a page the more relevant it is. However, this process resulted in large fluctuations in the relevance of elements that would occur frequently, but were not common words. For this reason, in one embodiment, each value was only allowed to increment by a maximum 5 * increment constant (I).

5

WHAT IS CLAIMED IS:

1. A computerized system for controlling access to Internet sites, comprising:
a first module that categorizes an Internet site into predefined subject-matter categories;
a second module that stores the address of said Internet site and its associated category to a
5 database; and

a third module that controls access to said Internet site, said third module comprising instructions
that block access to said Internet site if said Internet site is within a particular category.

2. The computerized system of Claim 1, wherein said first module categorizes said Internet site by
determining the relevance of lexical elements within said site to a subject-matter category.

10 3. The computerized system of Claim 2, wherein said lexical elements are selected from the group
consisting of: words, word pairs and word adjacencies.

4. The computerized system of Claim 2, wherein the relevance of said lexical elements to said subject
matter category is determined by comparing said lexical elements to a training database comprising a plurality of
lexical elements and their associated relevancies to subject matter categories.

15 5. The computerized system of Claim 1, wherein said subject matter categories are selected from the
group consisting of: sex, drugs, sports, shopping, alcohol, gambling, politics, religion, travel and violence.

6. The computerized system of Claim 1, wherein said third module comprises a permissions table for
determining whether a user has access rights to Internet sites within a particular category.

7. A database of categorized Internet addresses, produced by the method of:
20 retrieving a first Internet page;
parsing said Internet page to determine the lexical elements on said page;
comparing said lexical elements to a table of category relevancies to determine the relevance of
each lexical element to a subject matter category;

determining the subject matter category of said Internet page based on the relevance of each
25 lexical element to a category; and

storing the address and subject matter category of said Internet page to a database.

8. The database of Claim 7, wherein said lexical elements are selected from the group consisting of:
words, word pairs and word adjacencies.

9. The database of Claim 7, wherein the relevance of said lexical elements to said subject matter
30 category is determined by comparing said lexical elements to a training database comprising a plurality of lexical
elements and their associated relevancies to subject matter categories.

10. The database of Claim 7, wherein the table of category relevancies is produced by obtaining an
Internet page from within a known subject matter category and storing lexical elements from said page to said table
along with relevance scores indicating that said lexical elements are associated with said category.

35 11. A method of controlling access to an Internet site, comprising:

categorizing a first Internet site into a predefined subject-matter category;
storing the address of said Internet site and its associated category to a database;
capturing a user request to view said site; and
determining whether said user has permission to view said category of sites and, responsive to said
5 determination, controlling access to said site.

12. The method of Claim 11, wherein said Internet site is categorized by determining the relevance of
lexical elements within said site to a subject-matter category.

13. The method of Claim 12, wherein said lexical elements are selected from the group consisting of:
words, word pairs and word adjacencies.

10 14. The method of Claim 12, wherein the relevance of said lexical elements to said subject matter
category is determined by comparing said lexical elements to a training database comprising a plurality of lexical
elements and their associated relevancies to subject matter categories.

15. The method of Claim 11, wherein said subject matter category is selected from the group
consisting of: sex, drugs, sports, shopping, alcohol, gambling, politics, religion, travel and violence.

15 16. The method of Claim 11, wherein determining whether said user has permission to view said
category of sites comprises referring to a permissions table that stores user identifications and access rights to
subject matter categories.

17. A method of controlling access to Internet sites, comprising:
providing a training database, said training database comprising lexical elements and their relevance
20 to subject matter categories;
determining the relevance of a plurality of Internet pages to subject matter categories;
storing the address of said plurality of Internet pages and their relevance to subject matter
categories to a categorized database; and
comparing the Internet address of pages requested by users with said categorized database to
25 determine if said users have permission to view said pages.

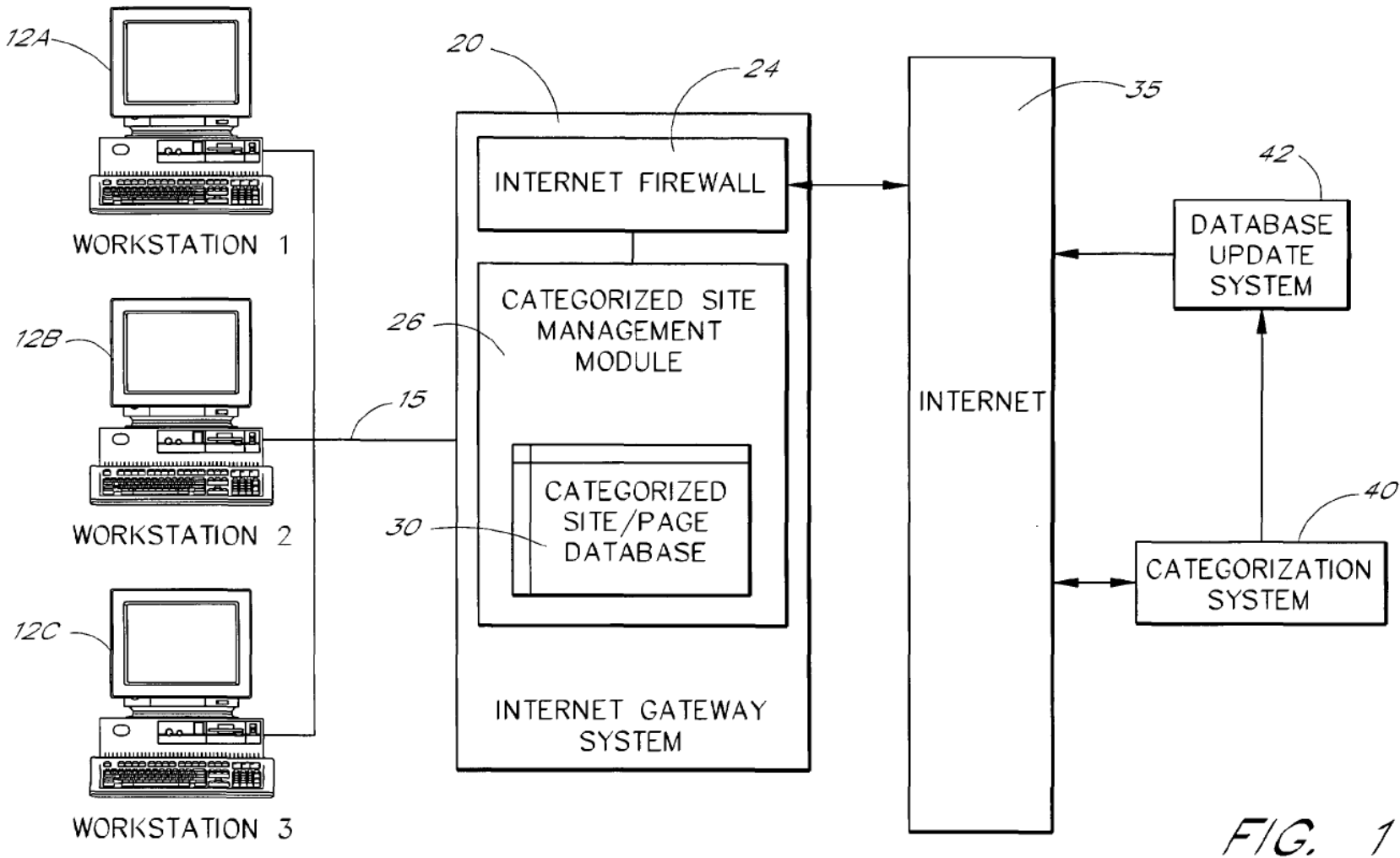
18. The method of Claim 17, wherein said Internet pages are categorized by determining the relevance
of lexical elements within said site to a subject-matter category.

19. The method of Claim 18, wherein said lexical elements are selected from the group consisting of:
words, word pairs and word adjacencies.

30 20. The method of Claim 18, wherein the relevance of said lexical elements to said subject matter
category is determined by comparing said lexical elements to a training database comprising a plurality of lexical
elements and their associated relevancies to subject matter categories.

21. The method of Claim 17, wherein said subject matter categories are selected from the group
consisting of: sex, drugs, sports, shopping, alcohol, gambling, politics, religion, travel and violence.

22. The method of Claim 17, wherein determining whether said user has permission to view said category of sites comprises referring to a permissions table that stores user identifications and access rights to subject matter categories.



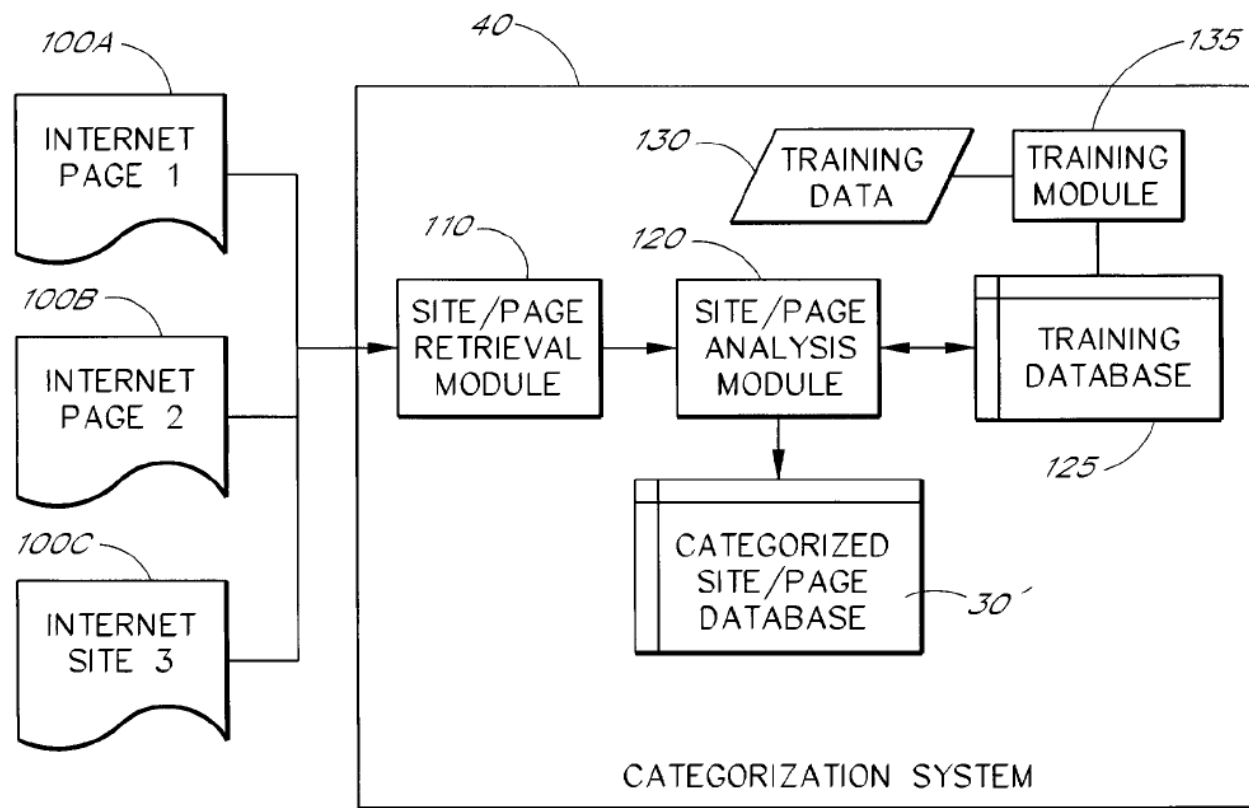


FIG. 2

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125

WORD ID TABLE

WORD	ID NUMBER
THE	1
AND	2
CLEVELAND	234
BROWNS	198
DIAMOND	755
JEWELRY	1345

CATEGORY ID TABLE

CATEGORY	ALPHA SCORE	BETA SCORE	DESCRIPTION
1	920	810	SPORTS
2	860	705	SEX
3	880	740	SHOPPING
4	710	630	PORNOGRAPHY
5	940	865	LEISURE
6	860	690	RELIGION

WORD RELEVANCE TABLE

FIRST WORD ID	SECOND WORD ID	CATEGORY	RELEVANCE SCORE	PAIR	ADJACENT
234	198	1	900	N	Y
755	1345	1	290	N	Y
755	1345	3	940	Y	N
234	1345	1	250	N	Y

TRAINING DATABASE

FIG. 3

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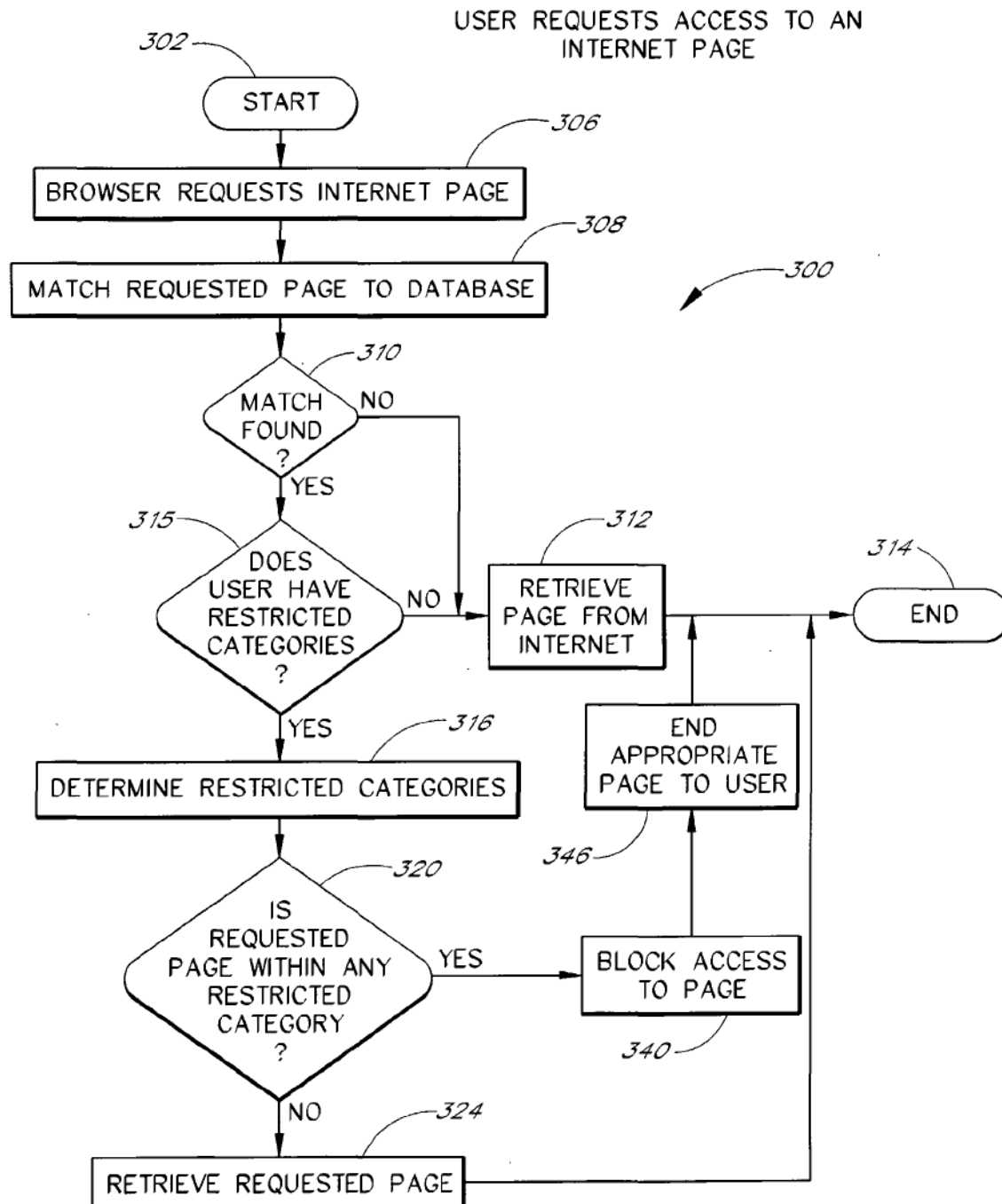


FIG. 4

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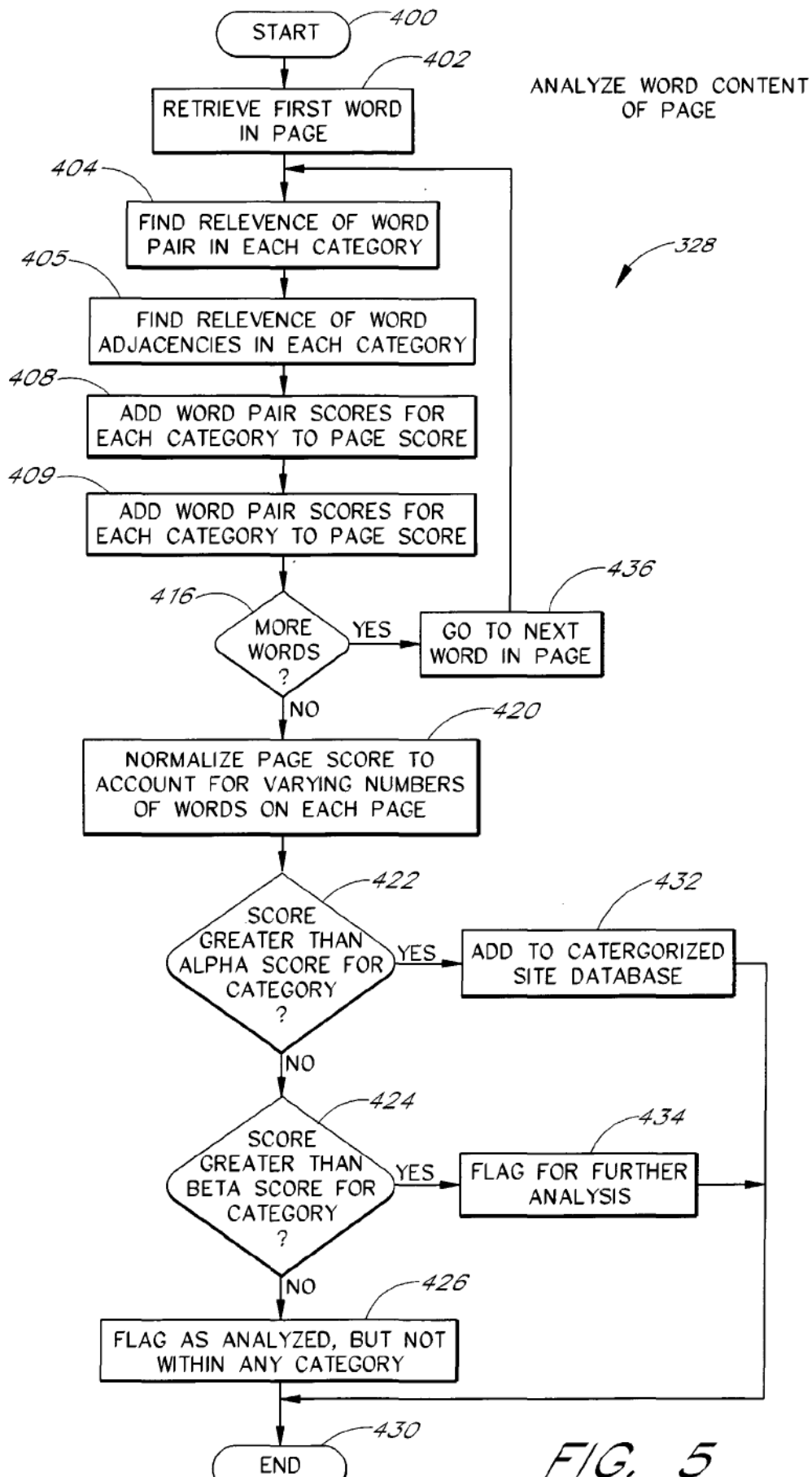
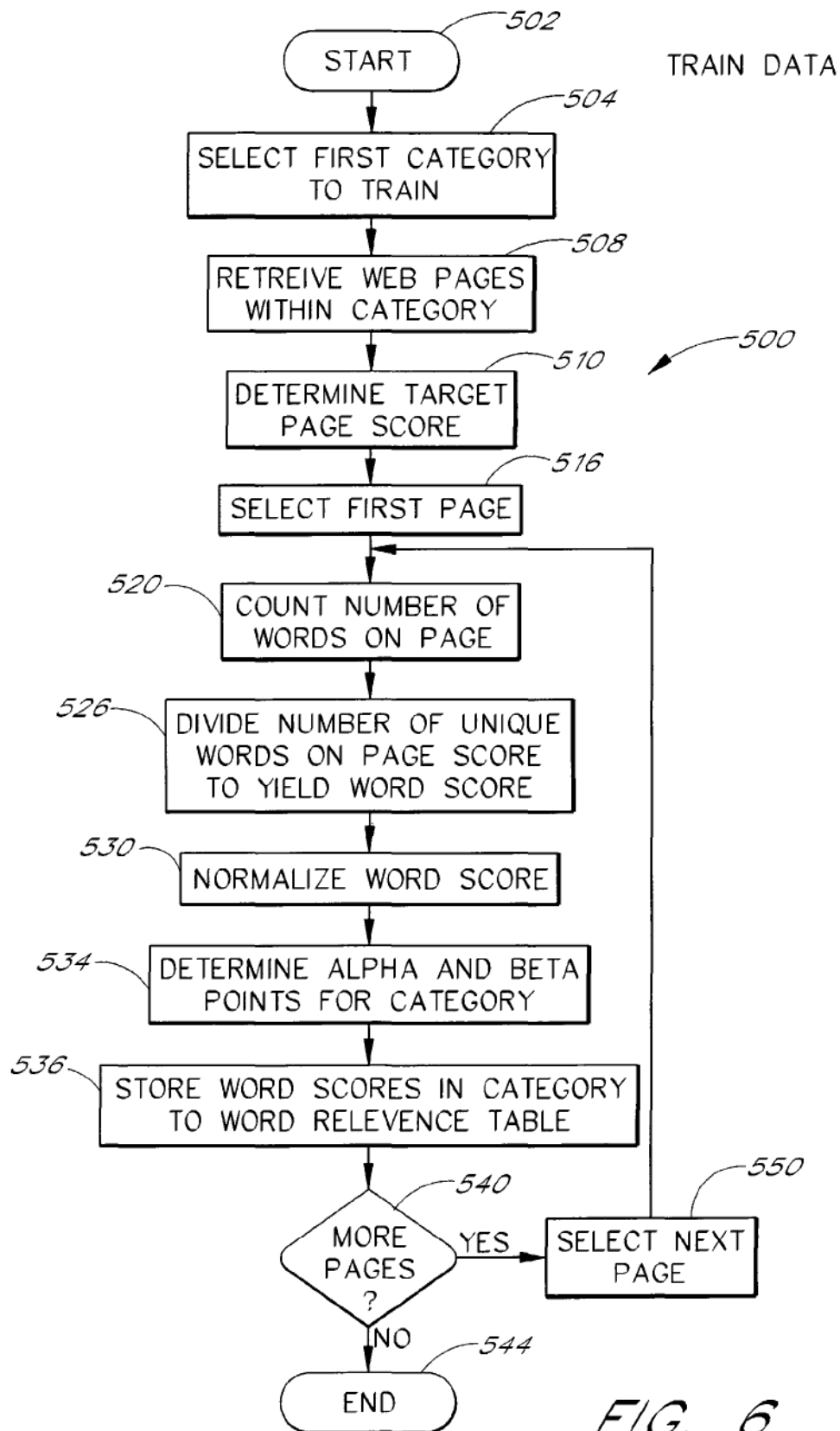


FIG. 5

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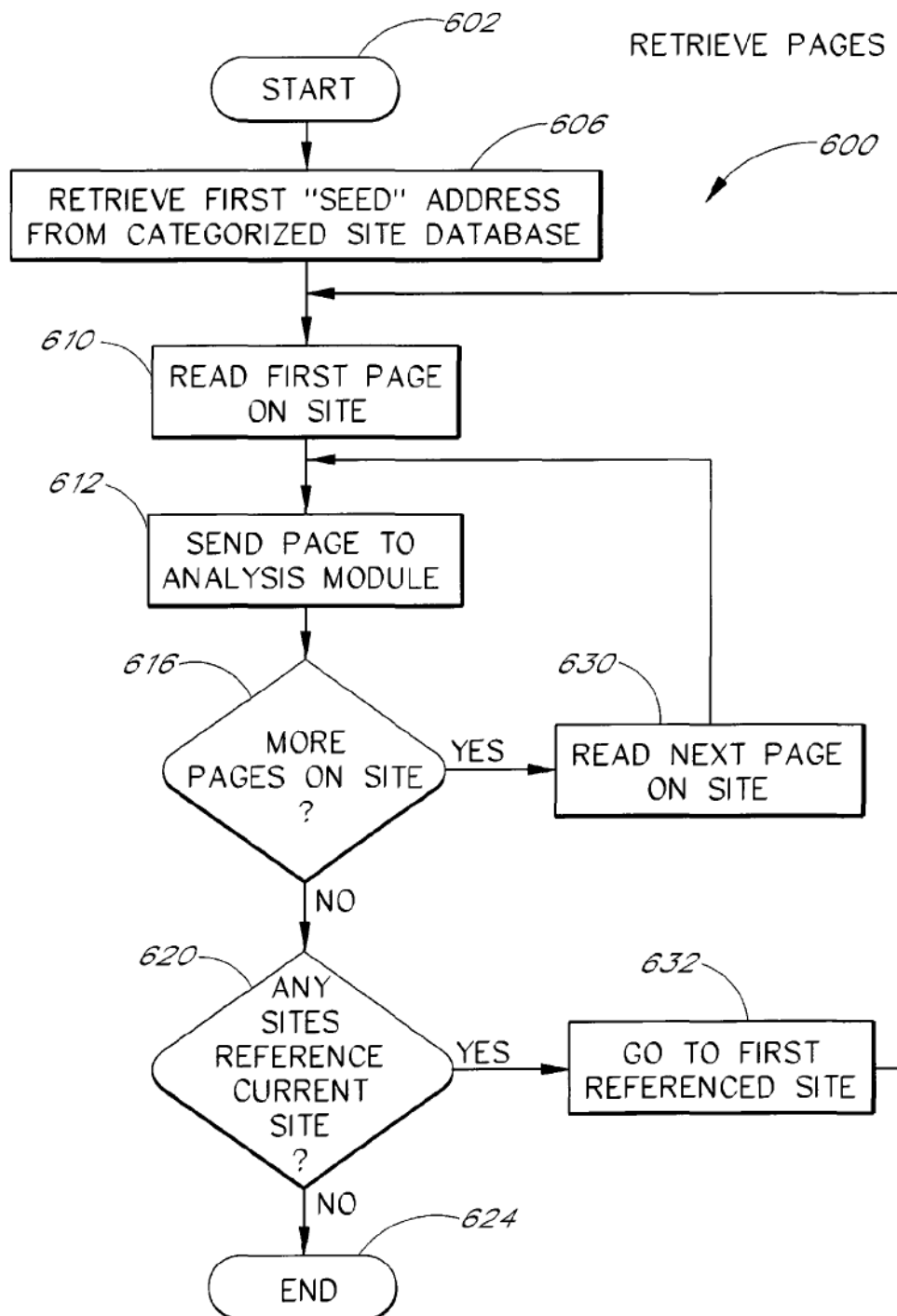


FIG. 7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/02280

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06F 17/30, G06F 11/00

US CL : 707/9, 10; 709/203, 217, 221, 255

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 707/9, 10; 709/203, 217, 221, 255

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Microsoft Dictionary, IEEE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

STN, WEST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,832,212 A (CRAGUN et al) 03 November 1998, abstract, fig.1, col.3 line 30 to col.4 line 30, col.5 line 35 to col.6 line 10.	1-22
Y	US 5,835,722 A (BRADSHAW et al) 10 November 1998, abstract, figs.1, 2, col.7 lines 8-65, col.9 lines 1-31, col.10 lines 4-46.	1-22
A	US 5,848,412 A (ROWLAND et al) 08 December 1998, fig.1, col.3 line 36 to col.4 line 29.	1-22

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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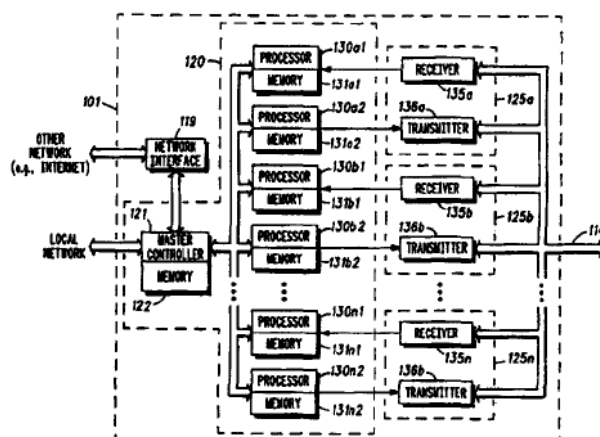
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(54) Title: APPARATUS AND METHOD FOR SPECTRUM MANAGEMENT IN A MULTIPPOINT COMMUNICATION SYSTEM



(57) Abstract

The apparatus (101) and method for spectrum management in a multipoint communication system controls upstream channel usage for secondary stations (110) transmitting information to a primary station (101) and downstream channel usage for secondary stations (110) receiving information from a primary station (101). The preferred apparatus (101) embodiment includes a processor arrangement (120) having a master controller (121) and a plurality of processors (130), with the processor arrangement connected to a channel interface (125). The apparatus (101) and method controls channel load balancing, channel congestion, and channel assignment in a multipoint communication system, and controls upstream channels independently from downstream channels. Factors and parameters utilized in such channel control and allocation include error parameters, channel noise parameters, transmit and receive loading factors, and congestion parameters.

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APPARATUS AND METHOD FOR SPECTRUM MANAGEMENT IN A MULTIPOINT COMMUNICATION SYSTEM

Field of the Invention

5

This invention relates, in general, to data communications and data communications systems and devices and, more specifically, to an apparatus and method for spectrum management in a multipoint communication system.

10

Background of the Invention

With the advent of multimedia communications, data transmission has become increasingly complex. For example, multimedia communications applications such as real time transmission of digitally encoded video, voice, and other forms of data, may require new forms and systems for data communication and data transmission. One such new communication system is the CableComm™ System currently being developed by Motorola, Inc. In the CableComm™ System, a hybrid optical fiber and coaxial cable is utilized to provide substantial bandwidth over existing cable lines to secondary stations such as individual, subscriber access units, for example, households having new or preexisting cable television capability. These coaxial cables are further connected to fiber optical cables to a central location having centralized, primary (or "head end") controllers or stations having receiving and transmitting capability. Such primary equipment may be connected to any variety of networks or other information sources, from the Internet, various on line services, telephone networks, to video/movie subscriber service. With the CableComm™ System, digital data may be transmitted both in the downstream direction, from the primary station or controller (connected to a network) to the secondary station of an individual user (subscriber access unit), and in the upstream

35

direction, from the secondary station to the primary station (and to a network).

In the CableCommTM System, downstream data is currently intended to be transmitted using 64 quadrature amplitude modulation ("QAM") at a rate of 30 M bps (megabits per second), at 5 M symbols/second utilizing 6 bits/symbol, over channels having 6 MHz bandwidth in the frequency spectrum of 50 - 750 MHz. Anticipating asymmetrical requirements with large amounts of data tending to be transmitted in the downstream direction rather than the upstream direction, less capacity is provided for upstream data transmission, using $\pi/4$ differential quadrature phase shift keying ($\pi/4$ -DQPSK) modulation in the frequency band from 5 - 42 MHz with a symbol rate of 384 k symbols/sec with 2 bits/symbol. In addition, the communication system is designed to have a multipoint configuration, i.e., many end users (secondary stations, also referred to as subscriber access units) transmitting upstream to a primary station, with one or more primary stations transmitting downstream to the secondary stations. The communication system is also designed for asynchronous transmission, with users transmitting and receiving packets of encoded data, such as video or text files. In addition, it is also highly likely that transmission may be bursty, with various users receiving or transmitting data at indeterminate intervals over selected channels in response to polling, contention, or other protocols from the primary station, rather than transmitting a more continuous and synchronous stream of information over a dedicated or circuit switched connection.

For such a communication system having a multipoint configuration, with multiple upstream and downstream channels, it is highly desirable to provide for appropriate or optimal spectrum management, providing for load balancing across various transmit and receive channels, channel (or spectrum) allocation under various types of noise or other

error conditions, and for channel (or spectrum) allocation under various types of congestion conditions. Prior art in other fields, such as telephone networks and wireless voice networks, have not been concerned with such spectrum management because these issues typically do not arise for such networks. For example, noise conditions may typically be tolerated in a voice (rather than data) environment. Other fields, such as typical wireline data, are not concerned with channel assignment issues. Wireless voice and data fields, moreover, tend to be concerned about overall system capacity and are not concerned about congestion management and load balancing within channels, as those channels are circuit switched, dedicated channels. Accordingly, a need has remained to provide for spectrum management in emerging multipoint communications systems, such as the CableComm™ system, providing for load balancing, channel assignment, and congestion management within the multipoint communication system.

Brief Description of the Drawings

FIG. 1 is a block diagram illustrating a communication system in accordance with the present invention.

FIG. 2 is a block diagram illustrating a primary station apparatus in accordance with the present invention.

FIG. 3 is a block diagram illustrating a secondary station apparatus in accordance with the present invention.

FIG. 4 is a flow chart illustrating upstream spectrum management under noise conditions in accordance with the present invention.

FIG. 5 is a flow chart illustrating downstream spectrum management under noise conditions in accordance with the present invention.

FIG. 6 is a flow chart illustrating upstream channel loading for secondary devices entering the communication system in accordance with the present invention.

5 FIG. 7 is a flow chart illustrating downstream channel loading for secondary devices entering the communication system in accordance with the present invention.

FIG. 8 is a flow chart illustrating upstream channel loading for active secondary devices of the communication system in accordance with the present invention.

10 FIG. 9 is a flow chart illustrating downstream channel loading for active secondary devices of the communication system in accordance with the present invention.

FIG. 10 is a flow chart illustrating upstream congestion management for active secondary devices of the communication system in accordance with the present invention.

FIG. 11 is a flow chart illustrating downstream congestion management for active secondary devices of the communication system in accordance with the present invention.

FIG. 12 is a flow chart illustrating upstream and downstream spectrum management in accordance with the present invention.

25 Detailed Description of the Invention

As mentioned above, a need has remained to provide for spectrum management in emerging multipoint communications systems, such as the CableCommTM system. Such spectrum management, in accordance with the present invention, includes channel allocation (and assignment) on the basis of error parameters, loading conditions, and congestion management. FIG. 1 is a block diagram illustrating a communication system 100 in accordance with the present invention, such as a multipoint communication system. As

illustrated in FIG. 1, a primary station 101, also referred to as a primary transceiver unit 101, is coupled to a plurality of secondary stations 110_a through 110_n, via communication media 115 and 116. In the preferred embodiment, communication media 115 and 116 are hybrid optical fiber and coaxial cable. In other embodiments, the communication media may be coaxial cable, fiber optic cable, twisted pair wires, and so on, and may also include air, atmosphere or space for wireless and satellite communication. The primary station 101 is also coupled to a network 105, which may include networks such as the Internet, on line services, telephone and cable networks, and other communication systems. The secondary stations 110_a through 110_n are illustrated in FIG. 1 as connected to the primary station 101 on two segments or branches of a communication medium, such as communication media 115 and 116. Equivalently, the secondary stations 110_a through 110_n may be connected to more than one primary station, and may be connected to a primary station (such as primary station 101) utilizing more or fewer branches, segments or sections of any communication medium.

Continuing to refer to FIG. 1, in the preferred embodiment, the communication medium, such as communication media 115 and 116, has or supports a plurality of communication channels. For ease of reference, the communication channels in which a primary station, such as the primary station 101, transmits information, signals, or other data to a secondary station, such as secondary station 110_n, are referred to as downstream channels or downstream communication channels. Also for ease of reference, the communication channels in which a secondary station, such as secondary station 110_n, transmits information, signals, or other data to a primary station, such as primary station 101, are referred to as upstream channels or upstream communication channels. These various upstream and downstream channels may, of course, be the same physical

channel or may be separate physical channels, for example, through time division multiplexing or frequency division multiplexing. These various channels may also be logically divided in other ways, in addition to upstream and downstream directions. As mentioned above, in the preferred embodiment of the CableComm™ System, the communication medium is hybrid fiber coaxial cable, with downstream channels in the frequency spectrum of 50 - 750 MHz, and with upstream channels in the frequency band from 5 - 42 MHz.

FIG. 2 is a block diagram illustrating a primary station 101 in accordance with the present invention. The primary station 101 (also referred to as a primary transceiver) is coupled to a communication medium 114 for upstream and downstream communication to one or more secondary stations (not illustrated), and is coupleable to a network, such as the Internet, through a network interface 119. The primary station includes a processor arrangement 120 which is connected to a plurality of channel interfaces, channel interface 125_a through channel interface 125_n, for communication over the communication medium 114. The processor arrangement 120 includes a master controller 121 having or connected to memory 122, and one or more additional processors 130_{a1} through 130_{n2} and corresponding associated memories 131_{a1} through 131_{n2}. In the preferred embodiment, the master controller 121 is a Motorola M68040 processor, and the memory 122 is 16 MB RAM. The master controller 121 performs a variety of higher level functions in the preferred embodiment, such as the spectrum management of the present invention, plus other functions such as routing, management of secondary stations, and communication protocol management (such as SNMP management). The master controller 121 is connected to a plurality of other processors, collectively referred to as processors 130 and separately illustrated as processor 130_{a1}, processor 130_{a2}, through processor 130_{n1} and processor 130_{n2}. Each of these processors, processor

130_{a1}, processor 130_{a2}, through processor 130_{n1} and processor 130_{n2}, is also coupled to or contains corresponding memory circuits, memory 131_{a1}, memory 131_{a2}, through memory 131_{n1} and memory 131_{n2}. In the preferred

5 embodiment, each of these processors 130 are also Motorola M68040 processors, while the corresponding memory circuits, memory 131_{a1} through memory 131_{n2}, are 4 MB RAM. In the preferred embodiment, the processors 130 perform such

10 functions related to upstream and downstream data protocols, such as sending a poll message or an acknowledgment message downstream. Each of these processors 130_{a1} through 130_{n2} of the processor arrangement 120 are connected to corresponding receivers and transmitters of the channel interfaces, channel interface 125_a through channel interface 125_n (collectively

15 referred to as channel interfaces 125), namely, receiver 135_a through receiver 135_n (collectively referred to as receivers 135) and transmitter 136_a through transmitter 136_n (collectively referred to as transmitters 136). In the preferred embodiment, depending upon the functions

20 implemented, each of the receivers 135_a through 135_n may include a Motorola M68302 processor, a Motorola 56000 series digital signal processor, a ZIF SYN integrated circuit, and an LSI Logic L64714 (Reed-Solomon decoder), for demodulation and for decoding forward error correction and cyclic

25 redundancy checks. In the preferred embodiment, also depending upon the functions implemented, each of the transmitters 136_a through 136_n may include a Motorola M68302 processor, a Motorola 56000 series digital signal processor, a ZIF SYN integrated circuit, and an LSI Logic

30 L64711 (Reed-Solomon encoder), for modulation and for coding for forward error correction and cyclic redundancy checks. As a consequence, as used herein, the channel interfaces 125 may be considered to perform the functions of data and other signal reception and transmission, regardless of the specific

35 hardware implementations and additional functions which may

or may not be implemented. The various memories illustrated, such as memory 122 or 131_{a1}, may also be embodied or contained within their corresponding processors, such as master controller 121 or processor 130_{a1}. The functions of these various components with respect to the present invention are explained in greater detail below with reference to FIGs. 4 -12.

In the preferred apparatus embodiment illustrated in FIG. 2, the spectrum management method discussed below with reference to FIGs. 4 through 12 may be programmed and stored, as a set of program instructions for subsequent execution, in the processor arrangement 120, and more particularly, in the master controller 121 and its associated memory 122 of a primary station, such as primary station 101 illustrated in FIG. 2. Information from secondary stations, which are discussed below with reference to FIG. 3, such as downstream channel bit error and packet error rates, may be obtained from forward error correction encoders and/or decoders, such as the LSI Logic L64711 and L64714 integrated circuits, included in the channel interface circuit 160. Similar information for upstream channel bit error and packet error rates may be obtained from forward error correction encoders and/or decoders, such as the LSI Logic L64711 and L64714 integrated circuits, included in the channel interface circuits 125.

FIG. 3 is a block diagram illustrating a secondary station 110_n in accordance with the present invention. The secondary station 110_n includes a processor 150, with the processor 150 having or coupled to a memory 155. In the preferred embodiment, the processor 150 is a Motorola M68302 processor (also known as an integrated multiprotocol processor), and the memory 155 is 256 K RAM. The processor 150 is coupled to an interface 170, such as an ethernet port or an RS232 interface, for connection to a computer, a workstation, or other data terminal equipment. The processor 150 is also coupled to a channel interface 160 for

communication over the communication medium 114. The channel interface 160, in the preferred embodiment, depending upon the functions implemented, includes a Motorola M68HC11 integrated circuit, a ZIF SYN integrated circuit, a Broadcom
5 BCM3100 QAMLink integrated circuit, a Motorola TxMod integrated circuit, and LSI Logic L64711 and L64714 integrated circuits, and performs such functions as forward error correction encoding and decoding, QAM demodulation (for downstream reception), $\pi/4$ -DQPSK modulation (for upstream
10 transmission), transmit level and frequency adjustment, for data and other signal reception and transmission. As a consequence, as used herein, the channel interface 160 may be considered to perform the functions of data and other signal reception and transmission, regardless of the specific
15 hardware implementations and additional functions which may or may not be implemented. The memory illustrated as memory 155 may also be embodied or contained within the corresponding processor 150. The additional functions of these components of the secondary station 110_n with respect
20 to the invention are also described in greater detail below with reference to FIGs. 4 - 12.

As discussed in greater detail below, the apparatus and method of the present invention provides for spectrum management, namely, channel allocation (or assignment), to
25 optimize overall performance of a communication system 100 and to optimize performance to end users, typically consumers, who are utilizing secondary stations 110_a-110_n, under a variety of conditions. The first set of conditions, discussed with reference to FIGs. 4 and 5, concern various types of noise
30 conditions, such as ingress noise and impulse noise. The second set of conditions, discussed with reference to FIGs. 6 and 7, concern channel loading conditions as devices such as secondary stations enter or come on line in the communication system 100, because as such devices come on line, there may
35 be sudden bursts of activity (data transmission and reception),

which should be considered in performance optimization. The third set of conditions, discussed with reference to FIGs. 8 and 9, concern channel loading conditions for active devices, such as secondary stations, any of which may utilize large or small portions of any given channel at any given time, with concomitant potential to overuse or monopolize available bandwidth, impacting data throughput and system responsiveness. The fourth set of conditions, discussed with reference to FIGs. 10 and 11, concern congestion conditions, which also impacts data throughput and system responsiveness. Lastly, in FIG. 12, overall spectrum management utilizing all four types of conditions is illustrated. It should be understood that these various processes, routines or subroutines illustrated may be and most likely will be repeated, on an ongoing basis, for overall spectrum management. As a consequence, when a particular portion of the spectrum management method is terminated, as described below, it should be understood to mean that the particular iteration is terminated, as the process may be continually repeated. In addition, various steps, such as steps 710 and 810 of congestion management, are event driven, rather than poll driven, i.e., the congestion parameters are continually monitored, so that when a congestion condition occurs, it is an event which automatically causes the remaining congestion alleviation activities. As a consequence, no limitation should be inferred or implied, for any given step, concerning whether it is event or poll driven.

Throughout the specification, channel assignment, reassignment or allocation, and transferring of receivers and transmitters to other channels, are frequently discussed. As illustrated in FIGs. 2 and 3, such channel assignment, reassignment or allocation, and transferring of receivers and transmitters to other channels, should be understood to include or refer to the underlying physical or apparatus activities, such as the transfers of the corresponding transmitters and

receivers. For example, when a transmitter of a secondary station is transferred from an unusable upstream channel to another, second upstream channel, a corresponding primary station receiver will also be transferred to the second channel, and similarly, when a receiver of a secondary station is transferred, a corresponding primary station transmitter may also be transferred, depending upon the circumstances.

Also throughout the specification, various thresholds are frequently employed to describe how an outcome of a comparison, such as a branching of a method, may occur. While referred to as thresholds, it should be understood that such thresholds may have a variety of forms, and may also include allowable or desirable tolerances and variances. In addition, the thresholds may not only be fixed or predetermined, the thresholds may be adaptive and vary over time, depending upon external conditions and depending upon desired levels of performance.

FIG. 4 is a flow chart illustrating upstream spectrum management under noise conditions in accordance with the present invention. Based upon various noise conditions on a given (or first) upstream channel, in accordance with the present invention, secondary devices operating on that given upstream channel may be switched to another (or second) channel having better conditions, to increase data throughput and optimize communication system performance. Beginning with start step 200, an error parameter for a given (or first) channel is monitored (or measured), step 205. In the preferred embodiment, the packet error rate is monitored by each processor 130_{n1} in the primary station 101, based upon the forward error correction performed by the corresponding receiver 125_n (*i.e.*, errors in the packet which could not be corrected through the use of a selected forward error correction methodology). In other embodiments, other error parameters may be monitored or measured, such as bit error rates, block error rates, burst error rates, frame error rates,

noise levels (such as levels of impulse noise or ingress noise), other interference, or other parameters or factors which could be correlated with channel quality. For example, monitoring an error rate may comprise monitoring a set of error rate

5 parameters of a plurality of sets of error rate parameters in which the plurality of sets of error rate parameters consist of any of a plurality of combinations of a bit error rate, a packet error rate, a burst error rate, a block error rate, and a frame error rate. Next, in step 210, the error parameter is compared

10 with a first predetermined or adaptive threshold, and if the error parameter is not greater than the first threshold, indicating that the error parameter is sufficiently or acceptably low, then nothing further needs to be performed with regard to upstream channel allocation under noise

15 conditions and this portion of the method may terminate, return step 250. In the preferred embodiment, the first threshold is empirically determined, and may be predetermined (such as fixed) or adaptive, varying based upon historical information of the system and also vary according to the

20 performance requirements of any given installation of the communication system 100. In step 210, however, if the error parameter is greater than the first predetermined threshold, indicating that the error parameter is unacceptably high, then based upon the presumption that the error is due to noise,

25 distortion or other interference on the given channel, the method determines or measures a channel noise parameter for the given upstream channel, while it is idle (all coupled secondary stations not transmitting upstream), and for all idle upstream channels, step 215. In the preferred embodiment, the

30 channel noise parameter is the received signal strength which, when measured while the channel is idle, provides an indication of noise levels, and is referred to as the received signal strength indicator ("RSSI"). The channel noise parameter may also be measured or determined utilizing other

35 indicators, such as mean square error, phase or gain hits,

nonlinear distortion, phase error, signal to noise ratios, and narrow band interference. Next, in step 220, the channel noise parameter for the given (or first) channel is compared to a second threshold. The second threshold may also be
5 empirically determined, and may also vary over time and vary based upon any data accumulated over time for a given communication system 100 (historical data).

In step 220, if the channel noise parameter, such as the RSSI, is greater than the second threshold, the channel noise is
10 considered to be ingress noise, and if the channel noise parameter, such as the RSSI, is less than the second threshold, the channel noise is considered to be impulse noise. Utilizing RSSI as the channel noise parameter, impulse noise is assumed to form a low average (or average out) over time, resulting in a
15 lower noise parameter compared to ingress noise, which may be more constant or have a more constant level over time. The selection of other channel noise parameters may result in a different comparison result in step 220. For example, a different channel parameter, when compared to a
20 corresponding threshold, may indicate ingress noise if less than the threshold and impulse noise if greater than the threshold. Accordingly, the method only requires that the channel noise parameter be utilized in such a way, such as through comparison to a particular threshold level, so as to
25 distinguish or differentiate impulse noise from other types or characterizations of noise, such as ingress noise. As a consequence, in step 220, when the channel noise is considered to be ingress noise (e.g., the channel noise parameter, such as the RSSI, is greater than the second threshold), as explained in
30 greater detail below, the method will attempt to find another (second) channel having less overall noise, and reallocate secondary stations to this other (second) channel. If in step 220, however, the channel noise is considered to be impulse noise (e.g., the channel noise parameter, such as the RSSI, is
35 less than the second threshold), as explained in greater detail

below, the method will attempt to find another (second) channel having a higher frequency than the current, given channel, based upon the consideration that impulse noise tends to diminish or roll off at higher frequencies.

5 Continuing to refer to FIG. 4, when the channel noise parameter indicates ingress noise in step 220, the method selects an idle channel having the lowest channel noise parameter, step 230, such as the idle channel having the lowest RSSI (as determined in step 215). Because of overhead
10 (such as service disruption) associated with switching secondary stations or devices from one upstream channel to another upstream channel, in accordance with the present invention, secondary stations will only be switched to another channel if that channel is considerably better, i.e., secondary
15 stations will not be switched from a bad channel to a bad (but somewhat better) channel. As a consequence, prior to switching any secondary stations from the given (first) channel to this selected (second) channel having the lowest channel noise parameter of the available idle channels, the
20 channel noise parameter of the selected (second) channel is compared to a minimum acceptable level or threshold, step 235. If the channel noise parameter (such as the RSSI) of the selected (second) channel is less than the minimum acceptable level in step 235, then secondary stations or devices currently
25 assigned to the given (first) channel will be reassigned to the selected (second) channel, step 240, along with the corresponding receiver and transmitter of the primary station. Once the devices have been transferred, upstream data transmission (or traffic) may resume, step 245, and this
30 portion of the method may end, return step 250). In the preferred embodiment, this is accomplished by the transmission of a message from the primary station 101 to each of the secondary stations 110_a-110_n which have been operating on the given upstream channel.

Following step 235, if the channel noise parameter (such as the RSSI) of the selected (second) channel (which is the lowest channel noise parameter of the available idle channels), however, is not less than the minimum acceptable level in step 235, then the method determines whether receivers other than the given receiver for the given channel (such as any of the receivers 135_a-135_n) are available for the secondary devices which are utilizing the given channel, step 255. If other receivers are available in step 255, then the secondary devices currently assigned to the given channel and given receiver are reassigned to the other receivers (and channels), and the current (given) receiver is idled, step 260. The idled current receiver may then be utilized to measure channel noise parameters (such as RSSI) on all the idle channels of the system, so that other receivers do not need to perform this task, step 265, and will monitor the idle channels for future use or reuse if and when the idle channels once again meet minimal requirements. This portion of the spectrum management methodology may then terminate, return step 250. If other receivers are not available in step 255, however, the method will continue to utilize the current, given channel, step 270, as no reasonable alternatives are available. In these circumstances, the method will provide a communication system warning, step 275, followed by terminating this portion of the method, return step 250.

Continuing to refer to FIG. 4, when the channel noise parameter indicates impulse noise in step 220, the method selects an idle channel having the highest available frequency because, while impulse noise may have an effect over a wide frequency band, impulse noise tends to diminish at higher frequencies, step 280. The channel noise parameter of the selected, higher frequency channel is compared to the channel noise parameter of the current, given channel, step 285. If in step 285 the channel noise parameter of the selected, higher frequency channel is not worse than the channel noise

parameter of the current, given channel by a predetermined amount (i.e., the channel noise parameter of the selected, higher frequency channel is better than the combination consisting of the channel noise parameter of the current channel plus the predetermined amount), then secondary devices assigned to the current, given channel are switched to the selected, higher frequency channel, step 240 (followed by steps 245 and 250). The predetermined amount, such as 2 dB, may be empirically determined. This comparison step involves a balance or trade, namely, avoiding impulse noise, even if the avoidance results in slightly worse ingress noise. If in step 285 the channel noise parameter of the selected, higher frequency channel is worse than the channel noise parameter of the current, given channel plus the predetermined amount (i.e., the channel noise parameter of the selected, higher frequency channel is worse than the combination consisting of the channel noise parameter of the current channel plus the predetermined amount), then an idle channel is selected having the next highest frequency (higher than the frequency of the current channel), step 290. The comparison process of step 285 is repeated until either an acceptable higher frequency channel is found, or all available channels having a higher frequency have been examined (and none are better), step 295, and this iteration of the upstream channel allocation portion of the spectrum management method terminates, return step 250.

As indicated above, the channel noise parameter may be any number or type of indicator, and is an RSSI in the preferred embodiment, measured when the selected channel has been idled. In the preferred embodiment, the RSSI measurement is made utilizing an average of eight sets of samples, where each sample spans 16 symbols (with a symbol rate of 384,000 and 2 bits/symbol). In addition to utilization of a statistical average (mean) other statistical information may be applied to evaluate the channel noise parameter indications such as, for

example, the mean and standard deviation (or other measure of variance). For example, a high standard deviation within the samples may indicate a narrow peak of noise, indicative of impulse noise rather than ingress noise. In addition, depending
5 upon the type of statistical information to be gathered, the number of samples and the duration of the samples may also be varied.

FIG. 5 is a flow chart illustrating downstream spectrum management under noise conditions in accordance with the
10 present invention. Based upon various noise conditions on a given (or first) downstream channel, in accordance with the present invention, secondary devices operating on that given downstream channel may be switched to another (or second) channel having better noise conditions, to increase data
15 throughput and optimize communication system performance. Beginning with start step 300, downstream error rate data is collected (via upstream channels) from all secondary stations connected and active (powered on and periodically or frequently receiving information or other data) on the current,
20 given downstream channel, step 305, such as the packet error rate seen by each active secondary station. Next, in step 310, the method determines the number of secondary stations having error rates greater than a predetermined threshold. The predetermined threshold may be empirically determined, or
25 may be based upon system data gathered over time (historical information or data). If the number of secondary stations having high error rates is not greater than a predetermined percentage (or adaptive threshold) of all connected secondary stations in step 315, indicating that most secondary devices
30 are not experiencing excessively high error rates, then nothing further needs to be performed currently with regard to downstream channel allocation under noise conditions and this portion of the method may terminate, return step 330. If the number of secondary stations having high error rates is greater
35 than the predetermined percentage (or adaptive threshold) of

all connected secondary stations in step 315, indicating that a sufficient number or percentage of secondary devices are experiencing excessively high error rates, then the current, given downstream channel is unacceptable, and secondary stations are reassigned to other downstream channels, if any are available, step 320. Alternatively, it may be the case that when one downstream channel is unacceptable that all other downstream channels may be experiencing similar noise or other interference problems and, in which case, step 320 may be omitted. Next, a system notification or warning is issued, step 325, followed by terminating this iteration of the downstream channel allocation portion of the spectrum management methodology, return step 330.

As indicated above, the predetermined threshold utilized in step 315 may also be adaptive. In the communication system 100, it is anticipated that downstream channels may be subject to minimum standards or other governmental regulation. As a consequence, it may be more likely that a particular secondary station connected to the downstream channel, or a section or a branch of a downstream channel, are experiencing high error rates, rather than an entire downstream channel. A high error rate experienced by one or only a few secondary stations on a downstream channel, first, may provide topological information concerning the communication system 100 and, second, distinguishes a possibly malfunctioning secondary station from a possibly malfunctioning downstream channel. As a consequence, prior to designating a downstream channel as malfunctioning or unacceptable, a predetermined or adaptive percentage of secondary stations should be having high error rates, rather than a few isolated secondary stations. This threshold level may be adaptive as well, varying in light of communication system activity, topological information, and historical information.

Other historical information may also be influential in development of the various thresholds referred to above, and for determinations of various communication system performance and quality metrics and other evaluations. In addition, as discussed in greater detail below, such historical information may also have predictive value, for example, to enhance the decision methodology employed in channel reallocation, such as in congestion management. As an example, it may be undesirable to add additional secondary stations to a particularly channel, if there is historical (or database) information indicating that the channel is likely to become congested. Relevant historical or database information may include, for example, system performance based upon the time of day, and especially during times in which there may be greater or additional sources of noise or other interference. Such time of day information may include early morning use of hair dryers, neighboring amateur radio antenna leakage at a particular time of the day, evening interference from televisions, or other sources of interference such as electric motors. As this historical information may be developed, it may be useful in distinguishing communication system performance, such as a malfunction, from other potential causes of error and system degradation.

Such historical information may also be utilized to distinguish impulse noise from ingress noise, useful for step 220 of FIG. 4. For example, a continuous degradation of a channel may be indicative of ingress noise, whereas a satisfactory channel with a sudden increase in error may be indicative of impulse noise. Such historical information may also be useful for making channel noise parameter measurements, such as an RSSI. For example, historical information may be useful to adaptively control the time window or duration of samples and the number of samples performed.

FIG. 6 is a flow chart illustrating upstream channel loading for secondary devices entering or coming on line in the communication system in accordance with the present invention. As secondary stations or devices are powered up and come on line, they will be assigned an upstream channel connected to a particular receiver 135_n of the primary station 101, and the upstream channel loading for the various receivers will be varied or balanced in accordance with this portion of the spectrum management methodology. Beginning with start step 340, a receive loading factor will be determined for each receiver 135_n. In the preferred embodiment, for each receiver 135_n, a packet rate (packets/second) will be determined in step 345, a bit rate (bits/second) will be determined in step 350, and a cycle time will be determined in step 355. The cycle time is a measure of the time taken to reach every secondary station (connected to the particular receiver) according to the particular protocol. In the preferred embodiment, utilizing a polling protocol, the cycle time is the average time to perform one iteration of polling all secondary stations (with the corresponding acknowledgment messages transmitted upstream by each of the secondary stations), and measures how long the system will take to respond to a given secondary station (with corresponding potential impact on consumer satisfaction). Other factors may also be utilized in the determination of the receive loading factor. In addition, the receive loading factor may be a weighted combination of these factors such as cycle time, packet and bit rates. Next, in step 360, the receive loading factor is determined which, in the preferred embodiment, is a weighted sum of the cycle time, the bit rate and the packet rate. In some circumstances, the cycle time may also be the predominant or sole measurement forming the receive loading factor. Next, in step 365, the process returns to step 345, repeating steps 345 - 360 for each receiver, until receive loading factors have been determined for all receivers.

If the receive loading factors indicate initial system start up or initialization in step 370, such as all or most receivers having low or negligible loading factors, then entering secondary devices are assigned to the receivers in a "round robin" fashion, with each entering secondary station sequentially assigned to the receivers of the primary station, step 380. If the receive loading factors do not indicate initial system start up or initialization in step 370, such as all or most receivers having non-negligible loading factors, then each entering secondary device is assigned to the currently least loaded receiver, step 375. This iteration of the upstream loading portion of the spectrum management method may then terminate, return step 385, or may continue with step 515 discussed below with reference to FIG. 8.

FIG. 7 is a flow chart illustrating downstream channel loading for secondary devices entering the communication system in accordance with the present invention. As secondary stations or devices are powered up and come on line, they will be assigned a downstream channel connected to a particular transmitter 136_n of the primary station 101, and the downstream channel loading for the various primary station transmitters will be varied or balanced in accordance with this portion of the spectrum management methodology. Beginning with start step 400, a transmit loading factor will be determined for each transmitter 136_n . In the preferred embodiment, for each transmitter 136_n , a packet rate (packets/second) will be determined in step 405, a bit rate (bits/second) will be determined in step 410, and a queue depth will be determined in step 415. The queue depth is a measure of a backlog, if any, of the number of data or information packets or frames waiting to be transmitted downstream to all of the various secondary stations. In the preferred embodiment, downstream messages are broadcast to all secondary stations, with identification information for reception by the intended secondary station, such that queue

depth is a measure of how long each secondary station must wait to receive its requested information (with corresponding potential impact on consumer satisfaction). Other factors may also be utilized in the determination of the transmit loading factor. In addition, the transmit loading factor may be a weighted combination of these factors such as queue depth, packet and bit rates. Next, in step 420, the transmit loading factor is determined which, in the preferred embodiment, is a weighted sum of the queue depth, the bit rate and the packet rate. In some circumstances, the queue depth may also be the predominant or sole measurement forming the transmit loading factor. Next, in step 425, the process returns to step 405, repeating steps 405 - 420 for each transmitter, until transmit loading factors have been determined for all transmitters. If the transmit loading factors indicate initial system start up or initialization in step 430, such as all or most transmitters having low or negligible transmit loading factors, then entering secondary devices are assigned to the transmitters in a "round robin" fashion, with each entering secondary station sequentially assigned to the transmitters of the primary station, step 440. If the transmit loading factors do not indicate initial system start up or initialization in step 430, such as all or most transmitters having non-negligible transmit loading factors, then each entering secondary device is assigned to the currently least loaded transmitter, step 435. This iteration of the downstream loading portion of the spectrum management method may then terminate, return step 445, or may continue with step 615 discussed below with reference to FIG. 9.

FIG. 8 is a flow chart illustrating upstream channel loading for active secondary devices of the communication system in accordance with the present invention. In accordance with this portion of the spectrum management method, if a receiver of a primary station is comparatively overloaded, namely, having too many active secondary stations

transmitting on an upstream channel, some of the secondary station transmitters will be transferred to other, less loaded primary station receivers (operating on other upstream channels). Beginning with start step 500, receive loading

5 factors are determined for each primary station receiver, step 505, until receive loading factors have been determined for all receivers of a primary station 101, step 510. When these determinations may have been made during steps 345 - 365 discussed above, this portion of the spectrum management

10 method may also directly proceed beginning with step 515. In step 515, the variation in the receive loading factors (for all primary station receivers) is determined. If the variation in receive loading factors is not greater than a predetermined (or adaptive) threshold, step 520, indicating that all primary

15 station receivers have similar loading within a particular range (or variance), then no further adjustments need to be made with regard to the upstream channel loading for active secondary devices, and this iteration of the upstream channel loading portion of the spectrum management method may

20 terminate, return step 570. If the variation in receive loading factors is greater than a predetermined (or adaptive) threshold in step 520, indicating that all primary station receivers do not have similar loading within a particular range (or variance), then primary station receivers (of the plurality of

25 primary station receivers 135) are selected which have receive loading factors which are greater than the mean receive loading factor, step 525. Secondary station transmitters will then be transferred from heavily loaded primary station receivers to more lightly loaded primary

30 station receivers, depending upon various conditions. For example, only secondary station transmitters which would have an impact if transferred, namely, decreasing the receive loading factor for the given primary station receiver, will be transferred, provided that the transfer does not result in

35 overloading yet another primary station receiver. Moreover, to

avoid excessive service disruptions, excessive transfers of secondary stations (either or both transmitter and receiver) should also be avoided.

As a consequence, in step 530, for the primary station receiver having the highest receive loading factor, an impact level of a transfer, for each corresponding transmitter (of the secondary stations), is determined. For example, a transfer of a secondary station transmitter which is transmitting very little information upstream may have a negligible impact on decreasing the receive loading factor of the selected primary station receiver and, therefore, little would be gained by transferring the secondary station transmitter. Next, in step 535, the secondary station transmitter having the highest impact level, if transferred, is selected. To avoid transferring the same secondary station transmitter an excessive number of times, with concomitant potential service disruption, in step 540, if the historical information for the selected secondary station transmitter is greater than a predetermined or adaptive threshold, e.g., the selected secondary station transmitter has already been transferred recently, then another (second) secondary station transmitter having the next highest impact level is selected, step 545. The second secondary station transmitter having the next highest impact level is also evaluated for possible transfer, returning to step 540. If in step 540 the historical information for the selected secondary station transmitter is not greater than the predetermined or adaptive threshold, e.g., the selected secondary station transmitter has not been transferred recently, then the selected secondary station transmitter is evaluated to determine whether protocol information indicates that a transfer of the selected secondary station transmitter would be allowable, step 550. For example, protocol information may indicate that the particular secondary station (having the transmitter) is heavily involved in a particular application, such as a downstream file transfer requiring the

upstream transmission of acknowledgment messages as packets are received, and as a consequence, because a transfer of upstream channels may excessively impact the downstream application, this secondary station transmitter may not be a good candidate for upstream channel transfer. In addition, other protocol information, such as previously transmitted upstream information requesting a file transfer or other application, may also indicate that this secondary station transmitter may not be a good candidate for upstream channel transfer. Accordingly, if such protocol information indicates that a transfer of the selected transmitter of the secondary station would be inadvisable in step 550, another secondary station transmitter (having the next highest impact level if transferred) is selected, returning to step 545.

Continuing to refer to FIG. 8, if the protocol information indicates that a transfer of the selected secondary station transmitter would be allowable in step 550, then a second primary station receiver, having a receive loading factor less than the mean receive loading factor, is selected in the primary station (or in another primary station servicing the same secondary station), step 555, for evaluation as a candidate primary station receiver (to which the secondary station transmitter from the selected, heavily loaded primary station receiver may be transferred) (step 560). In the preferred embodiment, the primary station receiver having the smallest receive loading factor is selected as the second (or candidate) primary station receiver. Other information may also be pertinent in the selection of the candidate primary station receiver; for example, other historical information, such as error rate and noise levels, may indicate that additional secondary station transmitters should not be transferred to the candidate primary station receiver, or an excessively high error rate may result. In step 560, if the candidate primary station receiver would, with the proposed transfer (i.e., with the additional impact of the selected

secondary station transmitter), have a new receive loading factor which is still less than (or equal to) the mean receive loading factor, then the selected secondary station transmitter may be transferred to this candidate primary station receiver, step 565. Following such a transfer in step 565, the process may be repeated, returning to step 515, to continue to balance the upstream channel loading across all the receivers of the primary stations. In step 560, however, if the candidate primary station receiver would, with the proposed transfer (i.e., with the additional impact of the selected secondary station transmitter), have a new receive loading factor which is greater than the mean receive loading factor, potentially overloading the candidate primary station receiver, then the selected secondary station transmitter should probably not be transferred to this candidate primary station receiver. Protocol information and other predictive information may also indicate, in step 560, that a transfer may be ill advised because, while the candidate primary station receiver may currently (with the additional impact of the selected secondary station transmitter) have a receive loading factor less than the mean, anticipated traffic (based upon protocol information) may indicate that the receive loading factor soon will be greater than the mean, and the selected secondary station transmitter should probably not be transferred. In these cases, when the selected secondary station transmitter should probably not be transferred to this candidate primary station receiver in step 560, the method may proceed to step 545, to select another (second or third) secondary station transmitter having the next highest impact level for evaluation for possible transfer. Alternatively, if the primary station receiver having the smallest receive loading factor was not already selected in step 555 and evaluated in step 560, then the method may select another (second) candidate primary station receiver for evaluation for possible transfer of the selected secondary station transmitter, returning to step 555.

As may be apparent from the above discussion, as this portion of the spectrum management process continues to iterate, transmitters of secondary stations will be transferred from heavily loaded primary station receivers to less loaded primary station receivers, resulting in receive loading factors moving toward the mean and balanced loading across upstream channels.

FIG. 9 is a flow chart illustrating downstream channel loading for active secondary stations of the communication system in accordance with the present invention. In parallel with the methodology discussed above with reference to FIG. 8, in accordance with this portion of the spectrum management method, if a transmitter of a primary station is comparatively overloaded, namely, having too many active secondary stations receiving on a downstream channel, some of the secondary stations will be transferred to other, less loaded primary station transmitters (operating on other downstream channels). Referring to FIG. 9, beginning with start step 600, transmit loading factors are determined for each primary station transmitter 136_n, step 605, until transmit loading factors have been determined for all transmitters 136 of a primary station 101, step 610. When these determinations may have been made during steps 405 - 425 discussed above, this portion of the spectrum management method may also directly proceed beginning with step 615. In step 615, the variation in the transmit loading factors (for all primary station transmitters) is determined. If the variation in transmit loading factors is not greater than a predetermined (or adaptive) threshold, step 620, indicating that all primary station transmitters have similar loading within a particular range (or variance), then no further adjustments need to be made with regard to the downstream channel loading for active secondary devices, and this iteration of the downstream channel loading portion of the spectrum management method may terminate, return step 670. If the variation in transmit

loading factors is greater than a predetermined (or adaptive) threshold in step 620, indicating that all primary station transmitters do not have similar loading within a particular range (or variance), then primary station transmitters (of the plurality of primary station transmitters 136) are selected which have transmit loading factors which are greater than the mean transmit loading factor, step 625. Secondary station receivers will then be transferred from heavily loaded primary station transmitters to more lightly loaded primary station transmitters, depending upon various conditions. For example, only secondary station receivers which would have an impact if transferred, namely, decreasing the transmit loading factor for the given primary station transmitter, will be transferred, provided that the transfer does not result in overloading yet another primary station transmitter. Moreover, to avoid excessive service disruptions, excessive transfers of secondary station receivers (and transmitters) should also be avoided.

As a consequence, in step 630, for the primary station transmitter having the highest transmit loading factor, an impact level of a transfer, for each corresponding receiver (of the secondary stations), is determined. For example, a transfer of a secondary station receiver which is receiving very little information on a downstream channel may have a negligible impact on decreasing the transmit loading factor of the selected primary station transmitter and, therefore, little would be gained by transferring the secondary station receiver. Next, in step 635, the secondary station receiver having the highest impact level, if transferred, is selected. To avoid transferring the same secondary station receiver an excessive number of times, with concomitant potential service disruption, in step 640, if the historical information for the selected secondary station receiver is greater than a predetermined or adaptive threshold, e.g., the selected secondary station receiver has already been transferred

recently, then another (second) secondary station receiver having the next highest impact level is selected, step 645. The second secondary station receiver having the next highest impact level is also evaluated for possible transfer, returning
5 to step 640. If in step 640 the historical information for the selected secondary station receiver is not greater than the predetermined or adaptive threshold, e.g., the selected secondary station receiver has not been transferred recently, then the selected secondary station receiver is evaluated to
10 determine whether protocol information indicates that a transfer of the selected secondary station receiver would be allowable, step 650. For example, protocol information may indicate that because the particular secondary station (having the receiver) is or is about to become heavily involved in a
15 particular application, such as a downstream file transfer, this secondary station may not be a good candidate for downstream channel transfer. Accordingly, if such protocol information indicates that a transfer of the selected receiver of the secondary station would be inadvisable in step 650,
20 another secondary station receiver (having the next highest impact level if transferred) is selected, returning to step 645.

Continuing to refer to FIG. 9, if the protocol information indicates that a transfer of the selected secondary station receiver would be allowable in step 650, then a second primary
25 station transmitter, having a transmit loading factor less than the mean transmit loading factor, is selected in the primary station (or in another primary station servicing the same secondary station), step 655, for evaluation as a candidate primary station transmitter (to which a secondary station
30 receiver from the selected, heavily loaded primary station transmitter may be transferred) (step 660). In the preferred embodiment, the primary station transmitter having the smallest transmit loading factor is selected. Other
information may also be pertinent to the selection of a
35 candidate primary station transmitter; for example, historical

information, such as error rate and noise levels, may indicate that additional secondary station receivers should not be transferred to the candidate primary station transmitter, or an excessively high error rate may result. In step 660, if the candidate primary station transmitter would, with the proposed transfer (i.e., with the additional impact of the selected secondary station receiver), have a new transmit loading factor which is still less than (or equal to) the mean transmit loading factor, then the selected secondary station receiver may be transferred to this candidate primary station transmitter, step 665. Following such a transfer in step 665, the process may be repeated, returning to step 615, to continue to balance the downstream channel loading across all the transmitters of the primary stations. In step 660, however, if the candidate primary station transmitter would, with the proposed transfer (i.e., with the additional impact of the selected secondary station receiver), have a new transmit loading factor which is greater than the mean transmit loading factor, potentially overloading the candidate primary station transmitter, then the selected secondary station receiver should probably not be transferred to this candidate primary station transmitter. Protocol information and other predictive information may also indicate, in step 660, that a transfer may be ill advised because, while the candidate primary station transmitter may currently (with the additional impact of the selected secondary station receiver) have a transmit loading factor less than the mean, anticipated traffic (based upon protocol information) may indicate that the transmit loading factor soon will be greater than the mean, and the selected secondary station receiver should probably not be transferred. In these cases, when the selected secondary station receiver should probably not be transferred to this candidate primary station transmitter in step 660, the method may proceed to step 645, to select another (second or third) secondary station receiver having the next highest impact level for evaluation

for possible transfer. Alternatively, if the primary station transmitter having the smallest transmit loading factor was not already selected in step 655 and evaluated in step 660, then the method may select another (second) candidate primary station transmitter for evaluation for possible transfer of the selected secondary station receiver, returning to step 655. As may be apparent from the above discussion, as this portion of the spectrum management process continues to iterate, receivers of secondary stations will be transferred from heavily loaded primary station transmitters to less loaded primary station transmitters, resulting in transmit loading factors moving toward the mean and load balancing across downstream channels.

FIG. 10 is a flow chart illustrating upstream congestion management for active secondary devices 110 of the communication system 100 in accordance with the present invention. While related to upstream channel allocation and loading illustrated in FIGs. 4, 6 and 8, upstream congestion management concerns additional factors and additional circumstances which affect system performance. While the upstream channel allocation portion of the spectrum management methodology of FIGs. 6 and 8 focused upon a receive (upstream) loading factor, formed by parameters such as the cycle time to reach all active secondary devices in a polling protocol, the upstream congestion management portion of the spectrum management methodology concerns a broader and more inclusive congestion parameter. In the preferred embodiment, the congestion parameter for upstream congestion management is an access latency factor, while in other embodiments, the congestion parameter may include, for example, factors or measurements of data throughput, the number of data collisions, or the various receive loading factors such as cycle time and packet and bit rates. In addition to the access latency experienced by polled secondary stations, referred to more specifically as cycle time, the

access latency factor as a congestion parameter includes delays which may be experienced by any and all secondary stations, including those which may be initiating communication with the system utilizing a contention access protocol or hybrid contention/polling protocol. For example, congestion may occur when many secondary stations are transmitting upstream, creating collisions of messages to which the primary station should respond. If an excessive number of such collisions have occurred, any given secondary station may be unable to gain access to the communication system 100 within a reasonable or acceptable period of time, resulting in excessive or unacceptable access latency.

Referring to FIG. 10, beginning with start step 700, a congestion parameter (preferably an access latency factor) is determined for each primary station receiver 135_n, step 705, until congestion parameters have been determined for all receivers 135 of the primary station 101, step 710. Next, in step 715, if none of the plurality of congestion parameters obtained in steps 705 and 710 are greater than a predetermined threshold or an adaptive threshold, indicating that all primary station receivers have acceptable congestion parameters and are not experiencing upstream congestion, then no further adjustments need to be made with regard to the upstream congestion management of secondary stations, and this iteration of the upstream congestion management portion of the spectrum management method may terminate, return step 765. In step 715, however, if any of the plurality of congestion parameters obtained in steps 705 and 710 are greater than a predetermined threshold or an adaptive threshold, indicating that one or more primary station receivers have unacceptable congestion parameters (such as access latency factors) and are experiencing congestion, then a primary station receiver (of the plurality of primary station receivers 135) is selected which has the highest congestion parameter, and impact levels of all its corresponding

secondary station transmitters are determined, step 720. As in the upstream load balancing portion of the spectrum management method illustrated in FIG. 8, secondary station transmitters will then be transferred from congested primary station receivers to more lightly loaded, non-congested primary station receivers, depending upon various conditions. For example, only secondary station transmitters which would have an impact if transferred, namely, decreasing the congestion parameter for the given primary station receiver, will be transferred, provided that the transfer does not result in creating congestion for yet another primary station receiver. Moreover, to avoid excessive service disruptions, excessive transfers of secondary device transmitters should also be avoided. As a consequence, referring to FIG. 10, in step 720, for the primary station receiver having the highest congestion parameter, the impact level of a transfer, for each corresponding transmitter (of the secondary stations), is determined. Next, in step 725, the secondary station transmitter having the highest impact level, if transferred, is selected. In step 730, another (or second) receiver of a primary station, which has a congestion parameter less than the predetermined (or adaptive) threshold, is selected as a candidate to which the selected secondary station transmitter may be transferred. In the preferred embodiment, the second primary station receiver having the lowest congestion parameter (i.e., having the least congestion) is selected. As discussed above, to avoid transferring the same secondary station transmitter an excessive number of times, with concomitant potential service disruption, in step 735, if the historical information for the selected secondary station transmitter is greater than a predetermined or adaptive threshold, e.g., the selected secondary station transmitter has already been transferred recently, then another (second) secondary station transmitter having the next highest impact level is selected, step 740. The second secondary station

transmitter having the next highest impact level is also evaluated for possible transfer, returning to step 735. If in step 735 the historical information for the selected secondary station transmitter is not greater than the predetermined or adaptive threshold, e.g., the selected secondary station transmitter has not been transferred recently, then the selected secondary station transmitter is evaluated to determine whether protocol information indicates that a transfer of the selected secondary station transmitter would be allowable, step 745, as discussed above for step 550. If such protocol information indicates that a transfer of the selected transmitter of the secondary station would be inadvisable in step 745, another secondary station transmitter (having the next highest impact level if transferred) is selected, returning to step 740.

Continuing to refer to FIG. 10, if the protocol information indicates that a transfer of the selected secondary station transmitter would be allowable in step 745, then potential congestion of the second primary station receiver is evaluated in step 750. If, in step 750, the transfer of the selected secondary station transmitter to the second primary station receiver would cause the second primary station receiver to become congested and potentially overloaded (having an congestion parameter greater than the predetermined (or adaptive) threshold), then another secondary station transmitter is selected for possible transfer, returning to step 740. Alternatively, if the primary station receiver selected in step 730 was not the primary station receiver having the lowest congestion parameter, then yet another (third) receiver of the primary station, having an congestion parameter less than the threshold, may be selected, returning to step 730. In step 750, if the candidate primary station receiver would, with the proposed transfer (i.e., with the additional impact of the selected secondary station transmitter), have a new congestion parameter which is still less than (or equal to) the

predetermined (or adaptive) threshold, then the selected secondary station transmitter may be transferred to this candidate primary station receiver, step 755. Next, in step 760, the first primary station receiver (previously having the highest congestion parameter), is evaluated to determine whether its current congestion parameter has been reduced below a second predetermined (or adaptive) threshold. In the preferred embodiment, this second threshold is a hysteresis level, namely, is less than the first threshold (of step 715), such that the first primary station receiver does not immediately become congested again. If the congestion parameter of this (first) primary station receiver has at least been reduced to the hysteresis (or second) threshold, in step 760, then no further congestion reduction is needed for this (first) primary station receiver, and this iteration of the congestion management portion of the spectrum management method may terminate, return step 765. If the congestion parameter of this (first) primary station receiver has not been reduced to the hysteresis (or second) threshold, in step 760, then the process will be repeated, returning to step 720, provided that the number of secondary station transmitters moved from the upstream channel of this primary station receiver is not excessive (with corresponding service disruptions), step 770. If the number of secondary station transmitters moved from the upstream channel of this primary station receiver is below a predetermined (or adaptive) threshold in step 770, then the process will be repeated (returning to step 720). If the number of secondary station transmitters moved from the upstream channel of this primary station receiver is greater than the predetermined (or adaptive) threshold in step 770, indicating that enough secondary station transmitters have been transferred during this iteration (and additional transfers may tend to cause service disruptions), then this iteration of the congestion management portion of the spectrum management method may

terminate, return step 765. The congestion management process may also be repeated for additional primary station receivers which may be congested, returning to step 705. As may be apparent from the above discussion, as this portion of the spectrum management process continues to iterate, transmitters of secondary stations will be transferred from heavily loaded, congested primary station receivers to less loaded primary station receivers, resulting in improved congestion parameters, less overall communication system congestion, and improved upstream transmission performance.

FIG. 11 is a flow chart illustrating downstream congestion management for active secondary devices 110 of the communication system 100 in accordance with the present invention. While related to downstream channel allocation and loading illustrated in FIGs. 5, 7 and 9, downstream congestion management concerns additional factors and additional circumstances which may affect system performance. While the downstream channel allocation portion of the spectrum management methodology of FIGs. 8 and 10 focused upon a transmit (downstream) loading factor, formed by parameters such as the queue depth, the downstream congestion management portion of the spectrum management methodology concerns a broader congestion parameter, both for the particular downstream channel and for each secondary station connected to the primary station. In the preferred embodiment, this congestion parameter, for downstream congestion management, is a throughput factor. In other embodiments, the congestion parameter may also include the various transmit loading factors such as queue depth and packet and bit rates. For a downstream channel, a very high congestion parameter such as throughput tends to indicate high levels of activity by secondary station receivers, which may be better serviced through utilization of other downstream channels (and corresponding primary station transmitters) for those very active secondary stations. However, in the

preferred embodiment, transfer of a secondary station receiver to another downstream channel may have greater disruption to a secondary station, such as delay, compared to transfer of a secondary station transmitter to another upstream channel (and corresponding primary station receiver). As a consequence, in the preferred embodiment, the smallest set of secondary station receivers needed to relieve downstream channel congestion (of primary station transmitters) is transferred to another downstream channel (and correspondingly to other primary station transmitters).

Referring to FIG. 11, beginning with start step 800, a congestion parameter is determined for each primary station transmitter 136_n, step 805, until congestion parameters have been determined for all transmitters 136 of the primary station 101, step 810. Next, in step 815, if none of the plurality of congestion parameters obtained in steps 805 and 810 are greater than a predetermined threshold or an adaptive threshold, indicating that all primary station transmitters have acceptable congestion parameters and are not experiencing congestion, then no further adjustments need to be made with regard to the downstream congestion management of secondary devices, and this iteration of the downstream congestion management portion of the spectrum management method may terminate, return step 865. In step 815, however, if any of the plurality of congestion parameters obtained in steps 805 and 810 are greater than a predetermined threshold or an adaptive threshold, indicating that one or more primary station transmitters have unacceptable congestion parameters and are experiencing congestion, then a primary station transmitter (of the plurality of primary station transmitters 136) is selected which has the highest congestion parameter, and impact levels of all its corresponding secondary station receivers are determined, step 820. As in the downstream load balancing portion of the spectrum management method illustrated in FIG.

9, secondary station receivers will then be transferred from congested primary station transmitters to more lightly loaded, non-congested primary station transmitters, depending upon various conditions. For example, only secondary station receivers which would have an impact if transferred, namely, decreasing the congestion parameter for the given primary station transmitter, will be transferred, provided that the transfer does not result in creating congestion for yet another primary station transmitter. Moreover, as indicated above, to avoid excessive service disruptions, excessive transfers of secondary device receivers (and transmitters) should also be avoided. As a consequence, referring to FIG. 11, in step 820, for the primary station transmitter having the highest congestion parameter, the impact level of a transfer, for each corresponding receiver (of the secondary stations), is determined. Next, in step 825, the secondary station receiver having the highest impact level, if transferred, is selected. In step 830, another (or second) transmitter of a primary station, which has a congestion parameter less than the predetermined (or adaptive) threshold, is selected as a candidate to which the selected secondary station receiver may be transferred. In the preferred embodiment, the second primary station transmitter having the lowest congestion parameter (i.e., is the least congested) is selected. As discussed above, to avoid transferring the same secondary station receiver an excessive number of times, with concomitant potential service disruption, in step 835, if the historical information for the selected secondary station receiver is greater than a predetermined or adaptive threshold, e.g., the selected secondary station receiver has already been transferred recently, then another (second) secondary station receiver having the next highest impact level is selected, step 840. The second secondary station receiver having the next highest impact level is also evaluated for possible transfer, returning to step 835. If in step 835 the historical information for the

selected secondary station receiver is not greater than the predetermined or adaptive threshold, e.g., the selected secondary station receiver has not been transferred recently, then the selected secondary station receiver is evaluated to
5 determine whether protocol information indicates that a transfer of the selected secondary station receiver would be allowable, step 845, as discussed above for step 650. If such protocol information indicates that a transfer of the selected receiver of the secondary station would be inadvisable in step
10 845, another secondary station receiver (having the next highest impact level if transferred) is selected, returning to step 840.

If the protocol information indicates that a transfer of the selected secondary station receiver would be allowable in
15 step 845, then potential congestion of the second, candidate transmitter (of the primary station) is evaluated in step 850. If, in step 850, the transfer of the selected secondary station receiver to the second primary station transmitter would cause the second primary station transmitter to become
20 congested and potentially overloaded (having a congestion parameter greater than the predetermined (or adaptive) threshold), then another secondary station receiver is selected for possible transfer, returning to step 840. Alternatively, if the primary station transmitter selected in step 830 was not
25 the transmitter having the lowest congestion parameter, then yet another (third) primary station transmitter of the primary station, having a congestion parameter less than the threshold, may be selected, returning to step 830. In step 850, if the candidate primary station transmitter would, with the
30 proposed transfer (i.e., with the additional impact of the selected secondary station receiver), have a new congestion parameter which is still less than (or equal to) the predetermined (or adaptive) threshold, then the selected secondary station receiver may be transferred to this
35 candidate primary station transmitter, step 855. Next, in step

860, the first primary station transmitter (previously having the highest congestion parameter), is evaluated to determine whether its current congestion parameter has been reduced below a second predetermined (or adaptive) threshold. In the preferred embodiment, this second threshold is also a hysteresis level, namely, is less than the first threshold (of step 815), such that the first primary station transmitter does not immediately become congested again. If the congestion parameter of this (first) primary station transmitter has at least been reduced to the hysteresis (or second) threshold, in step 860, then no further congestion reduction is needed for this (first) primary station transmitter, and this iteration of the downstream congestion management portion of the spectrum management method may terminate, return step 865. If the congestion parameter of this (first) primary station transmitter has not been reduced to the hysteresis (or second) threshold, in step 860, then the process will be repeated, returning to step 820, provided that the number of secondary station receivers moved from the downstream channels of this primary station transmitter is not excessive (with corresponding service disruptions), step 870. If the number of secondary station receivers moved from the downstream channels of this primary station transmitter is below a predetermined (or adaptive) threshold in step 870, then the process will be repeated (returning to step 820). If the number of secondary station receivers moved from the downstream channels of this primary station transmitter is greater than the predetermined (or adaptive) threshold in step 870, indicating that enough secondary station receivers have been transferred during this iteration (and additional transfers may tend to cause service disruptions), then this iteration of the downstream congestion management portion of the spectrum management method may terminate, return step 865. The downstream congestion management process may also be repeated for additional transmitters of a primary station

which may be congested, returning to step 805. Also as may be apparent from the above discussion, as this portion of the spectrum management process continues to iterate, receivers of secondary stations will be transferred from heavily loaded, congested primary station transmitters to less loaded primary station transmitters, resulting in improved congestion parameters, less overall communication system congestion, and improved downstream transmission performance.

FIG. 12 is a flow chart illustrating upstream and downstream spectrum management in accordance with the present invention. Beginning with start step 900, upstream and downstream channel loading is allocated for secondary stations which are entering the communication system 100, step 905, as discussed in detail above and as illustrated in FIGs. 6 and 7. Next or concurrently with step 905, upstream and downstream channel loading is allocated for secondary stations which are and have been active in the communication system 100, step 910, also as discussed in detail above and as illustrated in FIGs. 8 and 9. Next, in step 915, upstream and downstream channels are allocated based upon error parameters, as discussed in detail above and as illustrated in FIGs. 4 and 5. Lastly, in step 920, upstream and downstream channels are allocated based upon congestion parameters, as discussed in detail above and as illustrated in FIGs. 10 and 11. Steps 915 and 920 may be concurrent with each other, and may also be concurrent with either or both steps 905 and 910. Following steps 915 and 920, the iteration of the spectrum management process may end, return step 925, or may continue and repeat, as in the preferred embodiment, returning to steps 905 and 910.

In summary, FIG. 2 in light of FIG. 12 illustrates an apparatus 101 for spectrum management in a communication system, with the communication system having a communication medium, with the communication medium having a plurality of downstream communication channels, the

communication medium further having a plurality of upstream communication channels, with the communication system further having a plurality of secondary stations coupleable to the communication medium, and with each secondary station of the plurality of secondary stations having a receiver and a transmitter. The apparatus 101 then comprises: first, a channel interface 125_n coupleable to the communication medium for signal transmission on a downstream communication channel of the plurality of downstream communication channels and for signal reception on an upstream communication channel of the plurality of upstream communication channels; and second, a processor arrangement 120 coupled to the channel interface 125_n, the processor arrangement 120 responsive through a set of program instructions to allocate loading of the plurality of upstream communication channels and of the plurality of downstream communication channels for an entering secondary station of the plurality of secondary stations; to allocate loading of the plurality of upstream communication channels and of the plurality of downstream communication channels for an active secondary station of the plurality of secondary stations; to allocate the plurality of upstream communication channels and the plurality of downstream communication channels based upon an error parameter; and to allocate loading of the plurality of upstream communication channels and of the plurality of downstream communication channels based upon a congestion parameter.

In summary, FIG. 2 in light of FIG. 4 illustrates an apparatus 101 wherein the processor arrangement 120 is further responsive: first, to monitor an error rate for each upstream communication channel of the plurality of upstream communication channels; to determine whether the error rate for each upstream communication channel of the plurality of upstream communication channels exceeds a first threshold to form a set of upstream high error channels; second, to

determine a channel noise parameter for a first upstream high error channel of the set of upstream high error channels; third, when the channel noise parameter of the first upstream high error channel exceeds a second threshold, to transfer a
5 secondary station transmitter from the first upstream high error channel to a first idle upstream communication channel of the plurality of upstream communication channels, the first idle upstream communication channel then having a channel noise parameter lower than the second threshold; and fourth,
10 when the channel noise parameter of the first upstream high error channel is less than the second threshold, to transfer a secondary station transmitter from the first upstream high error channel to a second idle upstream communication channel of the plurality of upstream communication channels, the
15 second idle upstream communication channel having a frequency higher than a frequency of the first upstream high error channel. As discussed above, any of the thresholds of the preferred embodiment, such as the first threshold and the second threshold of FIG. 4, may be either predetermined or
20 adaptive. In the preferred embodiment, the channel noise parameter is the received signal strength measured when a high error channel of the plurality of high error channels is idle.

In summary, FIG. 2 in light of FIG. 5 illustrates an
25 apparatus 101 wherein the processor arrangement is further responsive: first, to monitor a downstream error rate for each secondary station connected to a first downstream communication channel of the plurality of downstream communication channels; and second, when a predetermined
30 number of the plurality of secondary stations have a downstream error rate which exceeds a threshold, to transfer a secondary station receiver from the first downstream communication channel to a second downstream communication channel of the plurality of downstream communication
35 channels.

Also in summary, FIG. 2 in light of FIG. 6 illustrates an apparatus 101 wherein the processor arrangement 120 is further responsive: first, to determine a receive loading factor for each receiver of a plurality of primary station receivers to
5 form a plurality of receive loading factors; second, when the plurality of receive loading factors indicate initialization of the communication system, to sequentially assign a transmitter of each secondary station transmitter of the plurality of secondary stations to each receiver of the
10 plurality of primary station receivers; and third, when the plurality of receive loading factors do not indicate initialization of the communication system, to assign a transmitter of an entering secondary station of the plurality of secondary stations to a receiver of the plurality of primary
15 station receivers then having a lowest receive loading factor.

Also in summary, FIG. 2 in light of FIG. 7 illustrates an apparatus 101 wherein the processor arrangement 120 is further responsive: first, to determine a transmit loading factor for each transmitter of a plurality of primary station
20 transmitters to form a plurality of transmit loading factors; second, when the plurality of transmit loading factors indicate initialization of the communication system, to sequentially assign a receiver of each secondary station of the plurality of secondary stations to each transmitter of the plurality of
25 primary station transmitters; and third, when the plurality of transmit loading factors do not indicate initialization of the communication system, to assign a receiver of an entering secondary station of the plurality of secondary stations to a transmitter of the plurality of primary station transmitters
30 then having a lowest transmit loading factor.

Also in summary, FIG. 2 in light of FIG. 8 illustrates an apparatus 101 wherein the processor arrangement 120 is further responsive: first, to determine a receive loading factor for each receiver of a plurality of primary station
35 receivers to form a plurality of receive loading factors;

second, when a variation of the plurality of receive loading factors exceeds a threshold, to select a first receiver of the plurality of primary station receivers then having a highest receive loading factor; third, for the first receiver, to
5 determine an impact level of a transfer for each corresponding secondary station transmitter of the plurality of secondary stations and selecting a secondary station transmitter of the plurality of secondary stations then having a highest impact level to form a selected transmitter; fourth, to select a second
10 receiver of the plurality of primary station receivers then having a receive loading factor less than a mean receive loading factor and to determine a second receive loading factor for the second receiver in conjunction with the selected transmitter; and fifth, when the second receive loading factor
15 is less than the mean receive loading factor, to transfer the selected transmitter to the second receiver. In the preferred embodiment, the receive loading factor further comprises a weighted combination of a packet rate, a bit rate, and a cycle time.

20 Also in summary, FIG. 2 in light of FIG. 9 illustrates an apparatus 101 wherein the processor arrangement 120 is further responsive: first, to determine a transmit loading factor for each transmitter of a plurality of primary station transmitters to form a plurality of transmit loading factors;
25 second, when a variation of the plurality of transmit loading factors exceeds a threshold, to select a first transmitter of the plurality of primary station transmitters then having a highest transmit loading factor; third, for the first transmitter, to determine an impact level of a transfer for
30 each corresponding secondary station receiver of the plurality of secondary stations and to select the secondary station receiver of the plurality of secondary stations then having a highest impact level to form a selected receiver; fourth, to select a second transmitter of the plurality of primary station
35 transmitters then having a transmit loading factor less than a

mean transmit loading factor and to determine a second transmit loading factor for the selected transmitter in conjunction with the second receiver; and fifth, when the second transmit loading factor is less than the mean transmit loading factor, to transfer the selected receiver to the second transmitter. In the preferred embodiment, the transmit loading factor further comprises a weighted combination of a packet rate, a bit rate, and a queue depth.

Also in summary, FIG. 2 in light of FIG. 10 illustrates an apparatus 101 wherein the processor arrangement 120 is further responsive: first, to determine a congestion parameter for each receiver of a plurality of primary station receivers to form a plurality of congestion parameters; second, when a congestion parameter of the plurality of congestion parameters exceeds a first threshold, to select a first receiver of the plurality of primary station receivers then having a highest congestion parameter; third, for the first receiver, to determine an impact level of a transfer for each corresponding secondary station transmitter of the plurality of secondary stations and to select a secondary station transmitter of the plurality of secondary stations then having a highest impact level to form a selected transmitter; fourth, to select a second receiver of the plurality of primary station receivers then having a congestion parameter less than the first threshold and to determine a second congestion parameter for the second receiver in conjunction with the selected transmitter; and fifth, when the second congestion parameter is less than the first threshold, to transfer the selected transmitter to the second receiver. In the preferred embodiment, the congestion parameter is an access latency factor.

Lastly in summary, FIG. 2 in light of FIG. 11 illustrates an apparatus 101 wherein the processor arrangement 120 is further responsive: first, to determine a congestion parameter for each transmitter of a plurality of primary station transmitters to form a plurality of congestion parameters;

second, when a congestion parameter of the plurality of congestion parameters exceeds a first threshold, to select a first transmitter of the plurality of primary station transmitters then having a highest congestion parameter;

5 third, for the first transmitter, to determine an impact level of a transfer for each corresponding secondary station receiver of the plurality of secondary stations and to select a secondary station receiver of the plurality of secondary stations then having a highest impact level to form a selected receiver;

10 fourth, to select a second transmitter of the plurality of primary station transmitters then having a congestion parameter less than the first threshold and to determine a second congestion parameter for the second transmitter in conjunction with the selected receiver; and fifth, when the

15 second congestion parameter is less than first threshold, to transfer the selected receiver to the second transmitter. In the preferred embodiment, the congestion parameter further comprises a throughput factor.

Numerous advantages of the spectrum management apparatus and method of the present invention may be apparent.

20 First, the spectrum management apparatus and method of the present invention addresses a completely new issue in data communications, namely, concurrent load balancing, congestion management, and channel assignment, in a multipoint

25 communication system. Second, the spectrum management apparatus and method of the present invention provides a unique response to channel noise conditions, utilizing direct feedback from secondary stations, distinguishing impulse from ingress noise, and providing corresponding solutions. Next, the

30 spectrum management apparatus and method of the present invention, uniquely provides for a minimal access latency, which is very significant in such an asymmetric communication system, as upstream access latency may negatively and severely impact downstream data throughput.

35 Yet another advantage of the spectrum management apparatus

and method of the present invention is the independent management of upstream and downstream channels, both for quality and for congestion, rather than the prior art approach of coupled upstream and downstream channel assignment and management. Lastly, the spectrum management apparatus and method of the present invention provides a needed methodology to integrate channel quality management with data traffic management, in one overall system.

From the foregoing, it will be observed that numerous variations and modifications may be effected without departing from the spirit and scope of the novel concept of the invention. It is to be understood that no limitation with respect to the specific methods and apparatus illustrated herein is intended or should be inferred. It is, of course, intended to cover by the appended claims all such modifications as fall within the scope of the claims. The invention is further defined by the following claims.

1. A method for spectrum management in a communication system, the communication system having a communication medium, the communication medium having a plurality of downstream communication channels, the communication medium further having a plurality of upstream communication channels, the communication system further having a plurality of secondary stations coupleable to the communication medium, each secondary station of the plurality of secondary stations having a receiver and a transmitter, the method comprising:

(a) allocating loading of the plurality of upstream communication channels and of the plurality of downstream communication channels for an entering secondary station of the plurality of secondary stations;

(b) allocating loading of the plurality of upstream communication channels and of the plurality of downstream communication channels for an active secondary station of the plurality of secondary stations;

(c) allocating the plurality of upstream communication channels and the plurality of downstream communication channels based upon an error parameter; and

(d) allocating loading of the plurality of upstream communication channels and of the plurality of downstream communication channels based upon a congestion parameter.

2. The method of claim 1 wherein step (c) further comprises:

for upstream communication channels:
monitoring an error rate for each upstream communication channel of the plurality of upstream communication channels;

determining whether the error rate for each upstream communication channel of the plurality of upstream

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communication channels exceeds a first threshold to form a set of upstream high error channels;

determining a channel noise parameter for a first upstream high error channel of the set of upstream high error channels;

when the channel noise parameter of the first upstream high error channel exceeds a second threshold, transferring a secondary station transmitter from the first upstream high error channel to a first idle upstream communication channel of the plurality of upstream communication channels, the first idle upstream communication channel then having a channel noise parameter lower than the second threshold; and

when the channel noise parameter of the first upstream high error channel is less than the second threshold, transferring a secondary station transmitter from the first upstream high error channel to a second idle upstream communication channel of the plurality of upstream communication channels, the second idle upstream communication channel having a frequency higher than a frequency of the first upstream high error channel; and

for downstream communication channels:

monitoring a downstream error rate for each secondary station of the plurality of secondary stations which is connected to a first downstream communication channel of the plurality of downstream communication channels; and

when a predetermined number of the plurality of secondary stations have a downstream error rate which exceeds a threshold, transferring a secondary station receiver from the first downstream communication channel to a second downstream communication channel of the plurality of downstream communication channels.

3. The method of claim 1 wherein step (a) further comprises:

for upstream communication channels:

determining a receive loading factor for each receiver of a plurality of primary station receivers to form a plurality of receive loading factors;

5 when the plurality of receive loading factors indicate initialization of the communication system, sequentially assigning a transmitter of each secondary station of the plurality of secondary stations to each receiver of the plurality of primary station receivers; and

10 when the plurality of receive loading factors do not indicate initialization of the communication system, assigning a transmitter of an entering secondary station of the plurality of secondary stations to a receiver of the plurality of primary station receivers then having a lowest receive loading factor;

15 and

for downstream communication channels:

determining a transmit loading factor for each transmitter of a plurality of primary station transmitters to form a plurality of transmit loading factors;

20 when the plurality of transmit loading factors indicate initialization of the communication system, sequentially assigning a receiver of each secondary station of the plurality of secondary stations to each transmitter of the plurality of primary station transmitters; and

25 when the plurality of transmit loading factors do not indicate initialization of the communication system, assigning a receiver of an entering secondary station of the plurality of secondary stations to a transmitter of the plurality of primary station transmitters then having a lowest

30 transmit loading factor.

4. The method of claim 1 wherein step (b) further comprises:

for upstream communication channels:

determining a receive loading factor for each receiver of a plurality of primary station receivers to form a plurality of receive loading factors;

5 when a variation of the plurality of receive loading factors exceeds a threshold, selecting a first receiver of the plurality of primary station receivers then having a highest receive loading factor;

10 for the first receiver, determining an impact level of a transfer for each corresponding secondary station transmitter of the plurality of secondary stations and selecting a secondary station transmitter of the plurality of secondary stations then having a highest impact level to form a selected transmitter;

15 selecting a second receiver of the plurality of primary station receivers then having a receive loading factor less than a mean receive loading factor and determining a second receive loading factor for the selected receiver in conjunction with the selected transmitter; and

20 when the second receive loading factor is less than the mean receive loading factor, transferring the selected transmitter to the second receiver; and

for downstream communication channels:

25 determining a transmit loading factor for each transmitter of a plurality of primary station transmitters to form a plurality of transmit loading factors;

when a variation of the plurality of transmit loading factors exceeds a threshold, selecting a first transmitter of the plurality of primary station transmitters then having a highest transmit loading factor;

30 for the first transmitter, determining an impact level of a transfer for each corresponding secondary station receiver of the plurality of secondary stations and selecting a secondary station receiver of the plurality of secondary stations then having a highest impact level to form a selected receiver;

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- selecting a second transmitter of the plurality of primary station transmitters then having a transmit loading factor less than a mean transmit loading factor and determining a second transmit loading factor for the second transmitter in conjunction with the selected receiver; and
- 5 when the second transmit loading factor is less than the mean transmit loading factor, transferring the selected receiver to the second transmitter.
- 10 5. The method of claim 1 wherein step (d) further comprises:
- for upstream communication channels:
- determining a congestion parameter for each receiver of a plurality of primary station receivers to form a
- 15 plurality of congestion parameters;
- when a congestion parameter of the plurality of congestion parameters exceeds a first threshold, selecting a first receiver of the plurality of primary station receivers then having a highest congestion parameter;
- 20 for the first receiver, determining an impact level of a transfer for each corresponding secondary station transmitter of the plurality of secondary stations and selecting a secondary station transmitter of the plurality of secondary stations then having a highest impact level to form
- 25 a selected transmitter;
- selecting a second receiver of the plurality of primary station receivers then having a congestion parameter less than the first threshold and determining a second congestion parameter for the second receiver in conjunction
- 30 with the selected transmitter; and
- when the second congestion parameter is less than the first threshold, transferring the selected transmitter to the second receiver; and
- for downstream communication channels:

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determining a congestion parameter for each transmitter of a plurality of primary station transmitters to form a plurality of congestion parameters;

5 when a congestion parameter of the plurality of congestion parameters exceeds a first threshold, selecting a first transmitter of the plurality of primary station transmitters then having a highest congestion parameter;

for the first transmitter, determining an impact level of a transfer for each corresponding secondary station receiver of the plurality of secondary stations and selecting a
10 secondary station receiver of the plurality of secondary stations then having a highest impact level to form a selected receiver;

selecting a second transmitter of the plurality of
15 primary station transmitters then having a congestion parameter less than the first threshold and determining a second congestion parameter for the second transmitter in conjunction with the selected receiver; and

when the second congestion parameter is less than
20 first threshold, transferring the selected receiver to the second transmitter.

6. An apparatus for spectrum management in a communication system, the communication system having a
25 communication medium, the communication medium having a plurality of downstream communication channels, the communication medium further having a plurality of upstream communication channels, the communication system further having a plurality of secondary stations coupleable to the
30 communication medium, each secondary station of the plurality of secondary stations having a receiver and a transmitter, the apparatus comprising:

a channel interface coupleable to the communication medium for signal transmission on a downstream
35 communication channel of the plurality of downstream

55

communication channels and for signal reception on an upstream communication channel of the plurality of upstream communication channels; and

a processor arrangement coupled to the channel interface, the processor arrangement responsive through a set of program instructions to allocate loading of the plurality of upstream communication channels and of the plurality of downstream communication channels for an entering secondary station of the plurality of secondary stations; to allocate loading of the plurality of upstream communication channels and of the plurality of downstream communication channels for an active secondary station of the plurality of secondary stations; to allocate the plurality of upstream communication channels and the plurality of downstream communication channels based upon an error parameter; and to allocate loading of the plurality of upstream communication channels and of the plurality of downstream communication channels based upon a congestion parameter.

7. The apparatus of claim 6 wherein the processor arrangement is further responsive:

for upstream communication channels:

to monitor an error rate for each upstream communication channel of the plurality of upstream communication channels;

to determine whether the error rate for each upstream communication channel of the plurality of upstream communication channels exceeds a first threshold to form a set of upstream high error channels;

to determine a channel noise parameter for a first upstream high error channel of the set of upstream high error channels;

when the channel noise parameter of the first upstream high error channel exceeds a second threshold, to transfer a secondary station transmitter from the first

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upstream high error channel to a first idle upstream communication channel of the plurality of upstream communication channels, the first idle upstream communication channel then having a channel noise parameter
5 lower than the second threshold; and

when the channel noise parameter of the first upstream high error channel is less than the second threshold, to transfer a secondary station transmitter from the first upstream high error channel to a second idle upstream
10 communication channel of the plurality of upstream communication channels, the second idle upstream communication channel having a frequency higher than a frequency of the first upstream high error channel; and

for downstream communication channels:
15 to monitor a downstream error rate for each secondary station connected to a first downstream communication channel of the plurality of downstream communication channels; and

when a predetermined number of the plurality of
20 secondary stations have a downstream error rate which exceeds a threshold, to transfer a secondary station receiver from the first downstream communication channel to a second downstream communication channel of the plurality of downstream communication channels.

25

8. The apparatus of claim 6 wherein the processor arrangement is further responsive:

for upstream communication channels:
to determine a receive loading factor for each
30 receiver of a plurality of primary station receivers to form a plurality of receive loading factors;

when the plurality of receive loading factors indicate initialization of the communication system, to sequentially assign a transmitter of each secondary station

transmitter of the plurality of secondary stations to each receiver of the plurality of primary station receivers; and

when the plurality of receive loading factors do not indicate initialization of the communication system, to assign
5 a transmitter of an entering secondary station of the plurality of secondary stations to a receiver of the plurality of primary station receivers then having a lowest receive loading factor; and

for downstream communication channels:

10 to determine a transmit loading factor for each transmitter of a plurality of primary station transmitters to form a plurality of transmit loading factors;

when the plurality of transmit loading factors indicate initialization of the communication system, to
15 sequentially assign a receiver of each secondary station of the plurality of secondary stations to each transmitter of the plurality of primary station transmitters; and

when the plurality of transmit loading factors do not indicate initialization of the communication system, to
20 assign a receiver of an entering secondary station of the plurality of secondary stations to a transmitter of the plurality of primary station transmitters then having a lowest transmit loading factor.

25 9. The apparatus of claim 6 wherein the processor arrangement is further responsive:

for upstream communications channels:

to determine a receive loading factor for each receiver of a plurality of primary station receivers to form a
30 plurality of receive loading factors;

when a variation of the plurality of receive loading factors exceeds a threshold, to select a first receiver of the plurality of primary station receivers then having a highest receive loading factor;

for the first receiver, to determine an impact level of a transfer for each corresponding secondary station transmitter of the plurality of secondary stations and selecting a secondary station transmitter of the plurality of secondary stations then having a highest impact level to form
5 a selected transmitter;

to select a second receiver of the plurality of primary station receivers then having a receive loading factor less than a mean receive loading factor and to determine a
10 second receive loading factor for the second receiver in conjunction with the selected transmitter; and

when the second receive loading factor is less than the mean receive loading factor, to transfer the selected transmitter to the second receiver; and

15 for downstream communication channels:

to determine a transmit loading factor for each transmitter of a plurality of primary station transmitters to form a plurality of transmit loading factors;

when a variation of the plurality of transmit loading factors exceeds a threshold, to select a first
20 transmitter of the plurality of primary station transmitters then having a highest transmit loading factor;

for the first transmitter, to determine an impact level of a transfer for each corresponding secondary station receiver of the plurality of secondary stations and to select
25 the secondary station receiver of the plurality of secondary stations then having a highest impact level to form a selected receiver;

to select a second transmitter of the plurality of primary station transmitters then having a transmit loading factor less than a mean transmit loading factor and to
30 determine a second transmit loading factor for the selected transmitter in conjunction with the second receiver; and

when the second transmit loading factor is less than the mean transmit loading factor, to transfer the selected receiver to the second transmitter.

5 10. The apparatus of claim 6 wherein the processor arrangement is further responsive:

for upstream communication channels:

to determine a congestion parameter for each receiver of a plurality of primary station receivers to form a
10 plurality of congestion parameters;

when a congestion parameter of the plurality of congestion parameters exceeds a first threshold, to select a first receiver of the plurality of primary station receivers then having a highest congestion parameter;

15 for the first receiver, to determine an impact level of a transfer for each corresponding secondary station transmitter of the plurality of secondary stations and to select a secondary station transmitter of the plurality of secondary stations then having a highest impact level to form
20 a selected transmitter;

to select a second receiver of the plurality of primary station receivers then having a congestion parameter less than the first threshold and to determine a second congestion parameter for the second receiver in conjunction
25 with the selected transmitter; and

when the second congestion parameter is less than the first threshold, to transfer the selected transmitter to the second receiver; and

for downstream communication channels:

30 to determine a congestion parameter for each transmitter of a plurality of primary station transmitters to form a plurality of congestion parameters;

when a congestion parameter of the plurality of congestion parameters exceeds a first threshold, to select a

60

first transmitter of the plurality of primary station transmitters then having a highest congestion parameter;

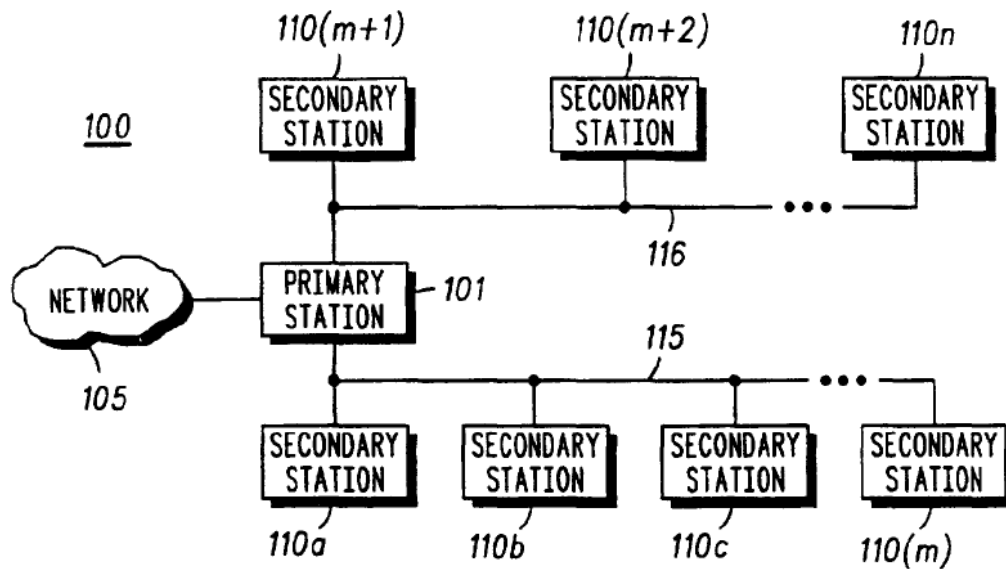
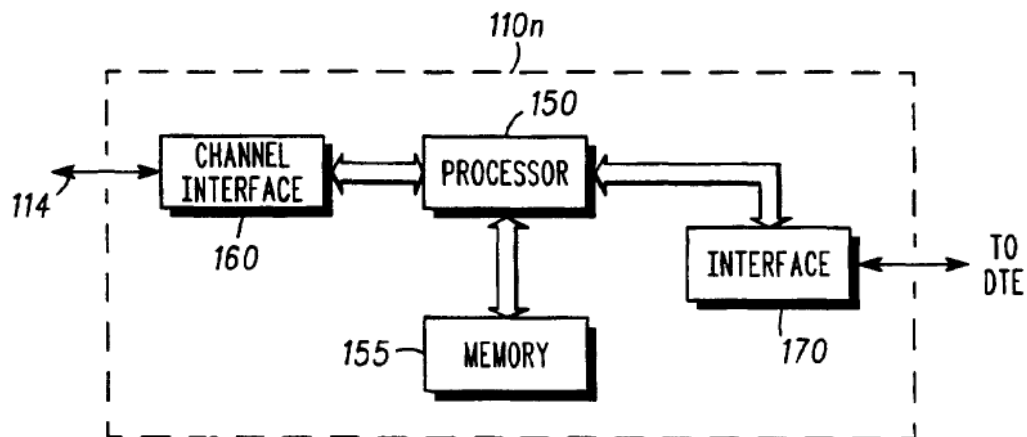
for the first transmitter, to determine an impact level of a transfer for each corresponding secondary station

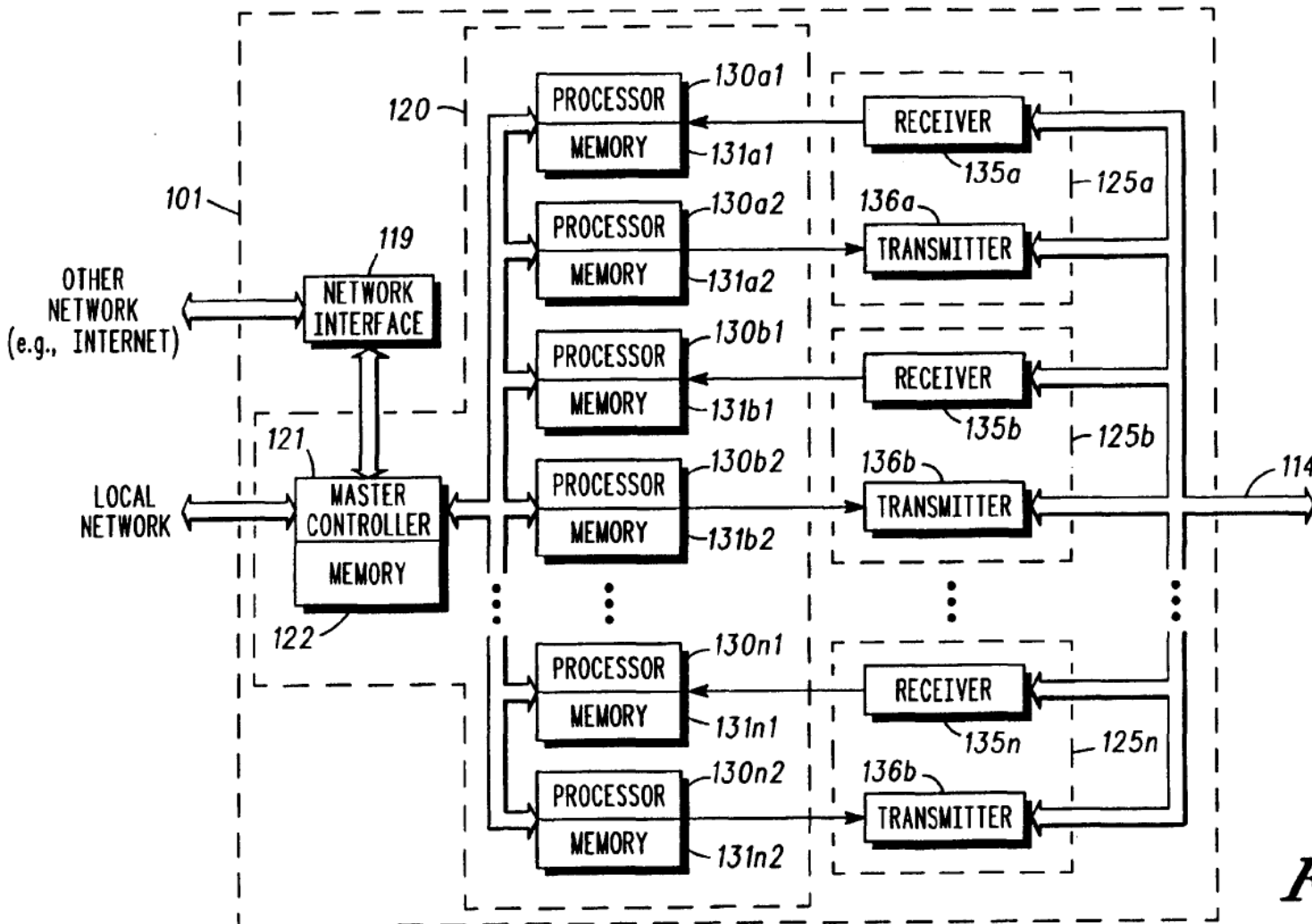
- 5 receiver of the plurality of secondary stations and to select a secondary station receiver of the plurality of secondary stations then having a highest impact level to form a selected receiver;

- 10 to select a second transmitter of the plurality of primary station transmitters then having a congestion parameter less than the first threshold and to determine a second congestion parameter for the second transmitter in conjunction with the selected receiver; and

- 15 when the second congestion parameter is less than first threshold, to transfer the selected receiver to the second transmitter.

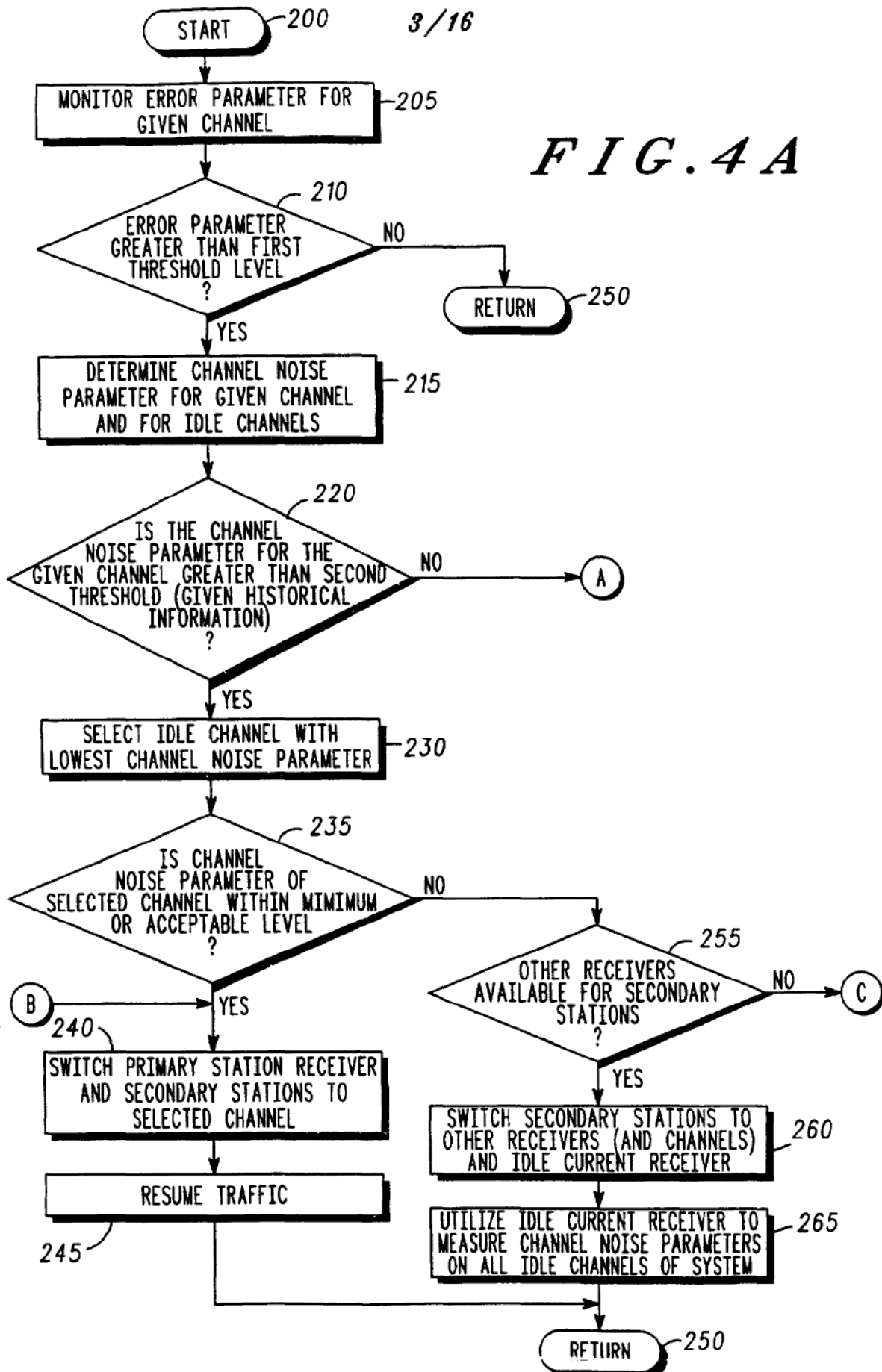
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FIG. 1**FIG. 3**

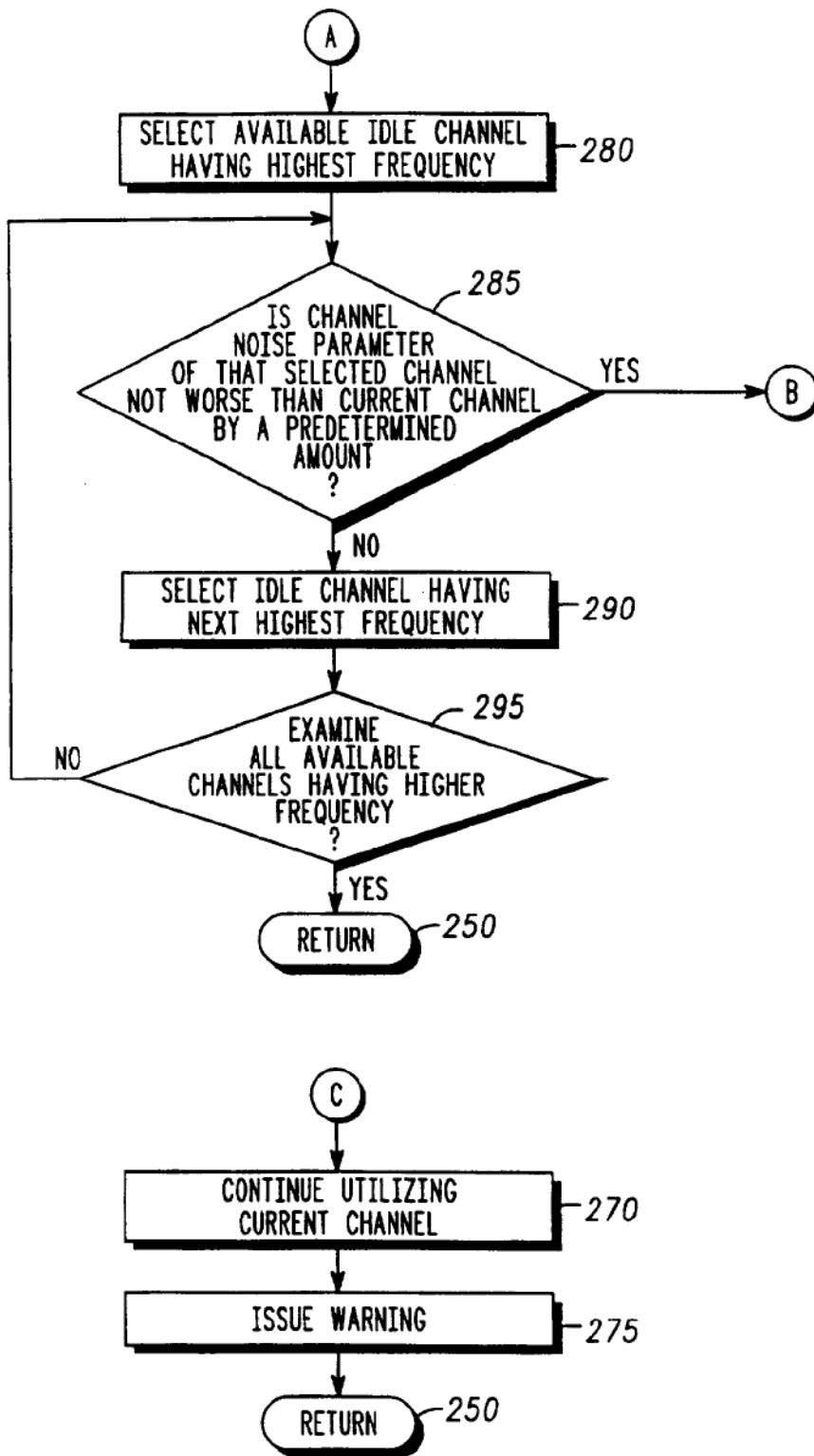


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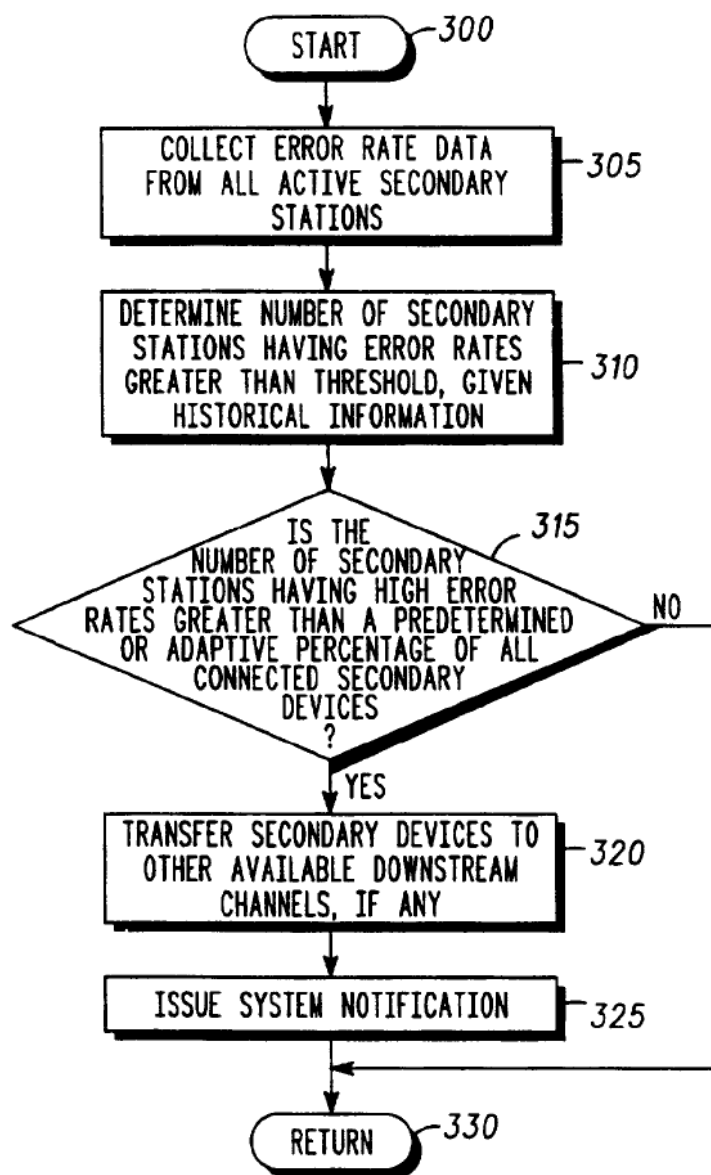
FIG. 2



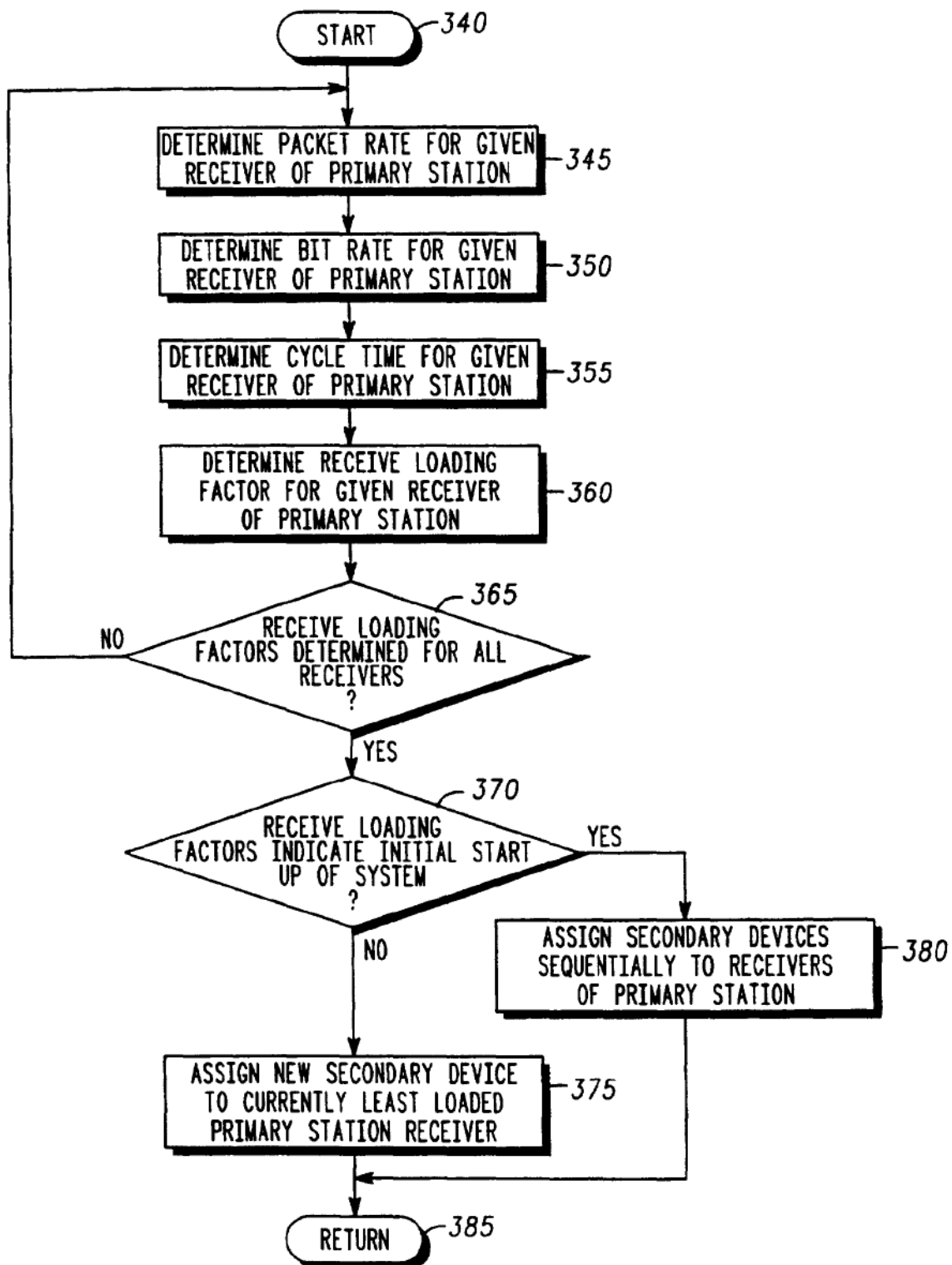
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*FIG. 4B*

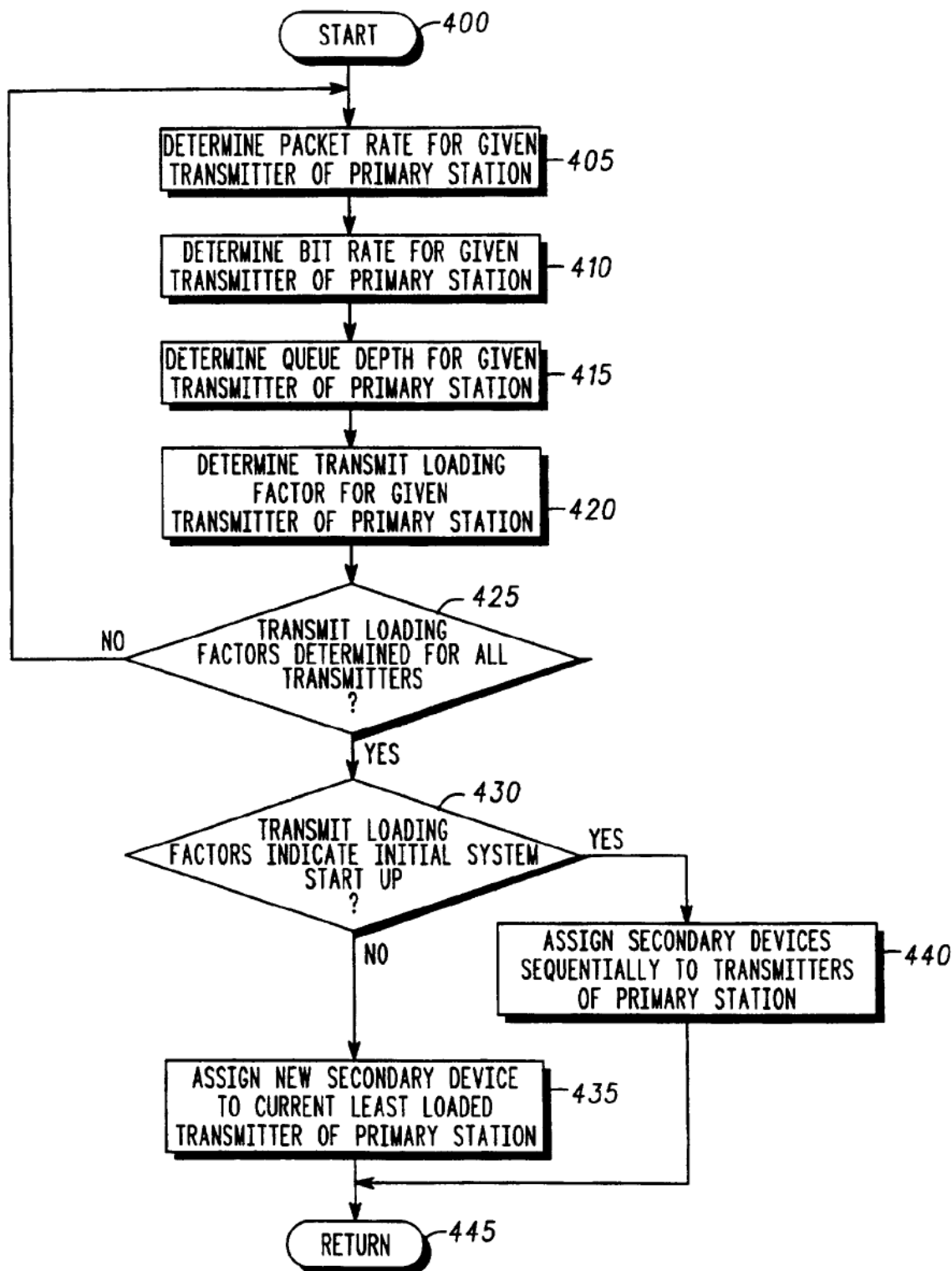
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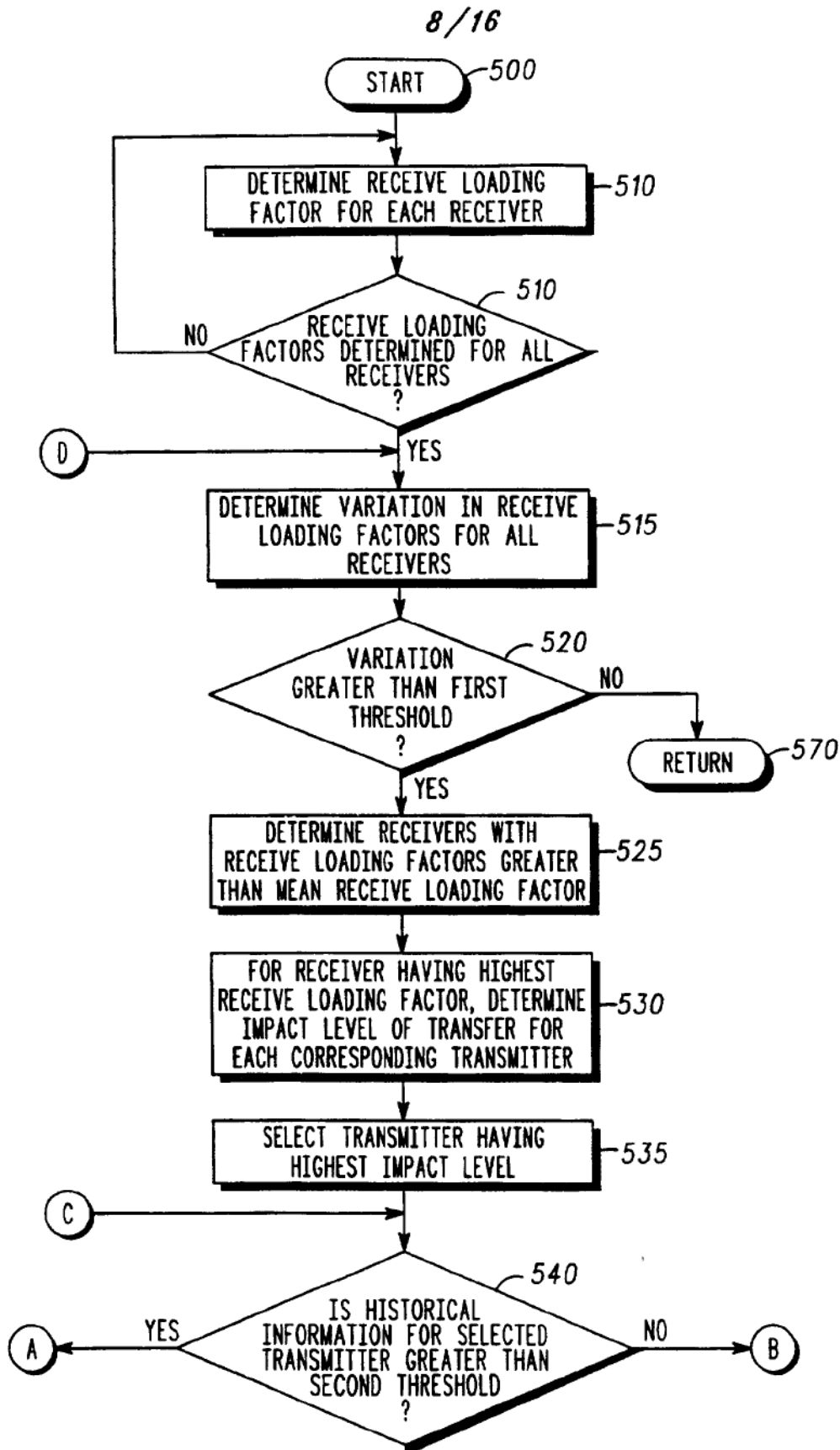
*FIG. 5*

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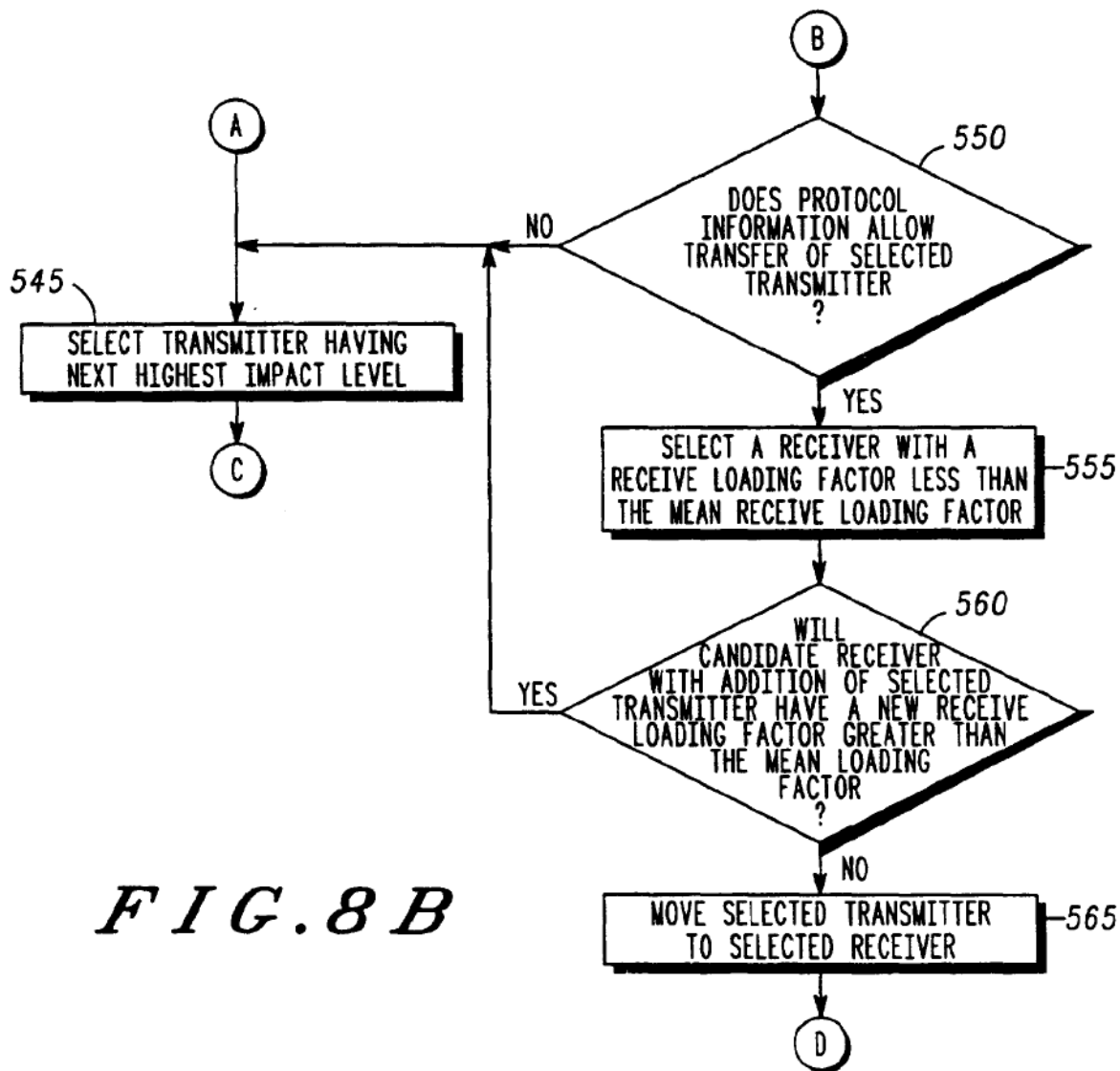
*FIG. 6*

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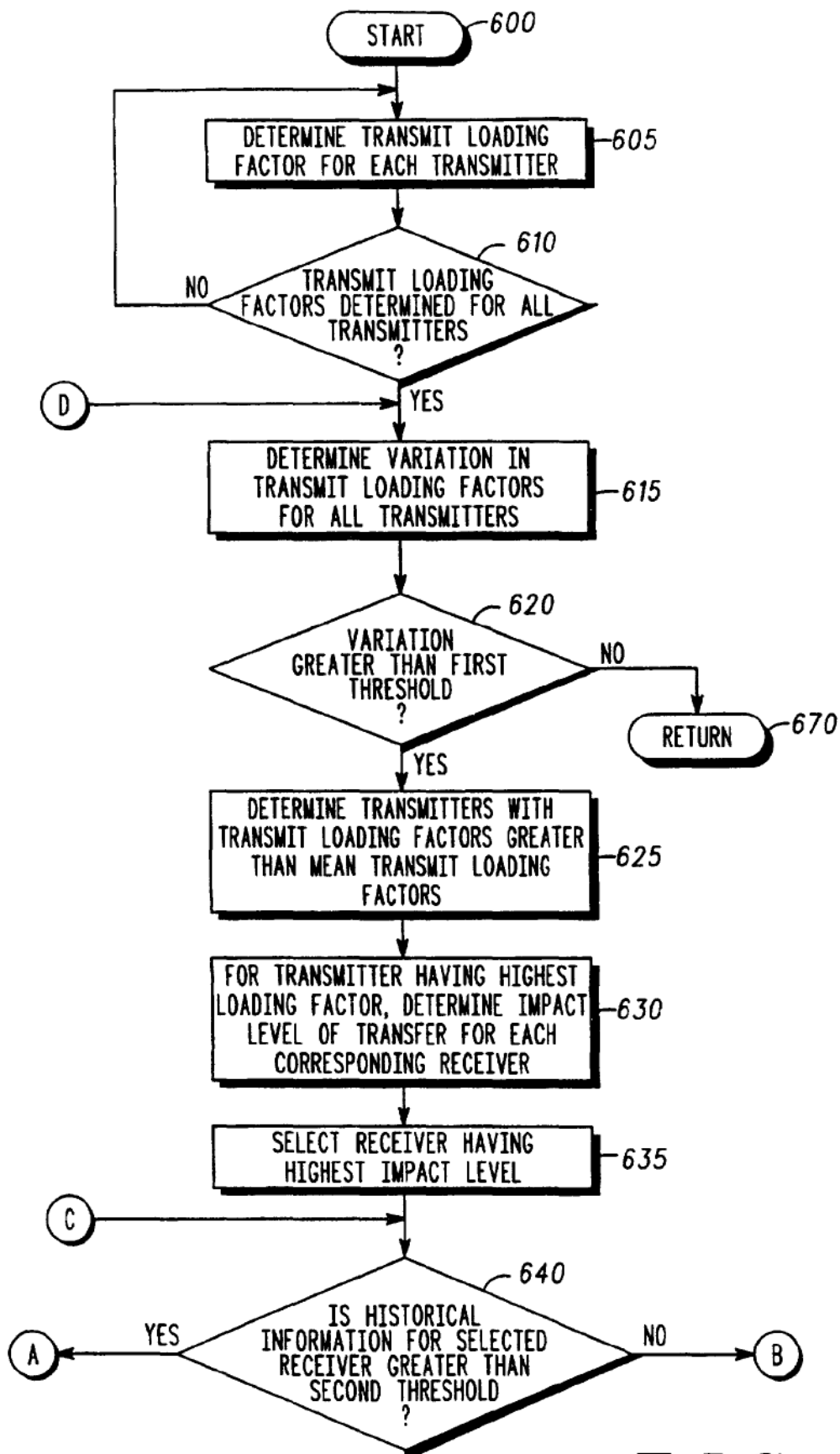
*FIG. 7*

*FIG. 8A*

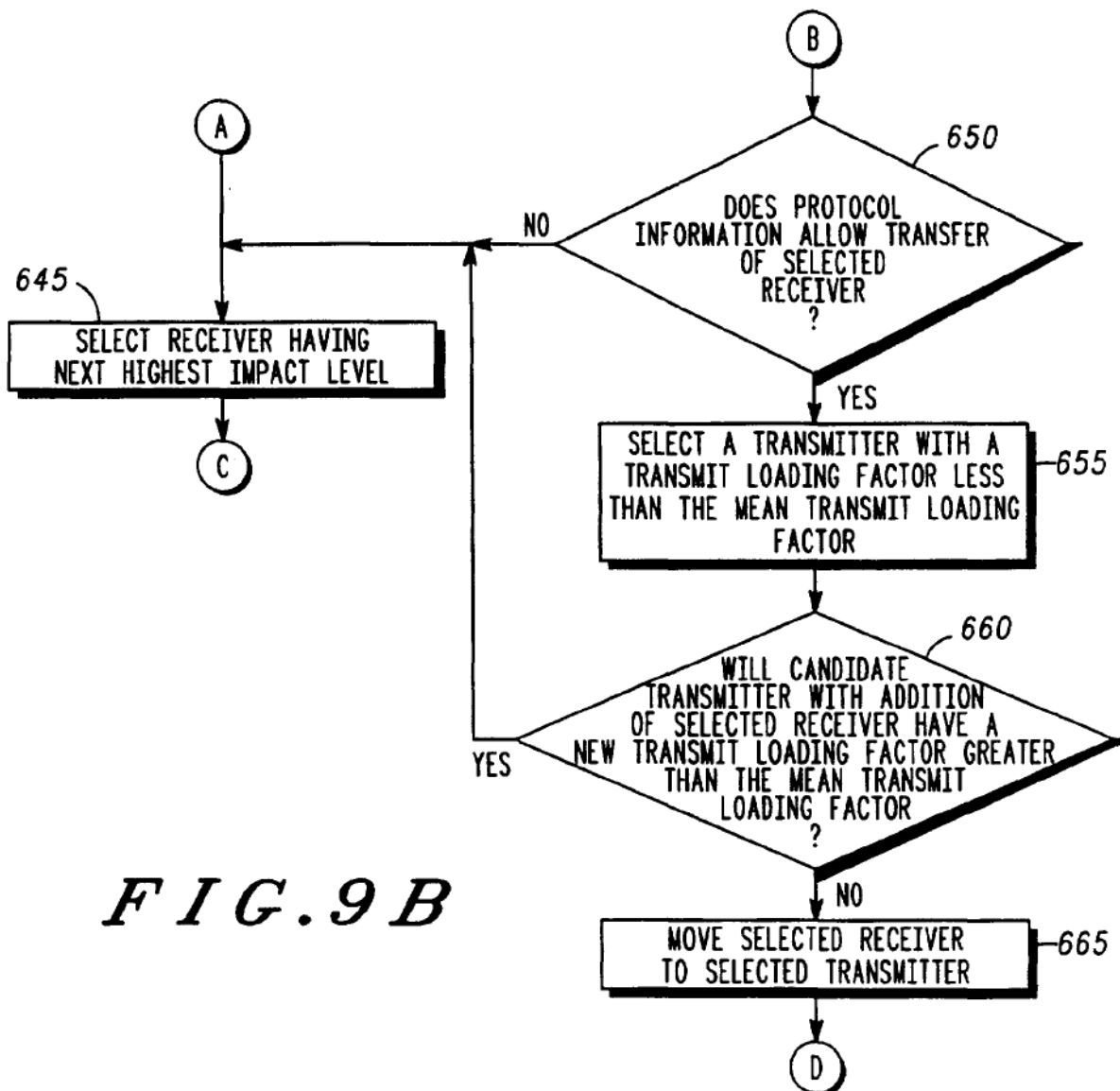
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*FIG. 8B*

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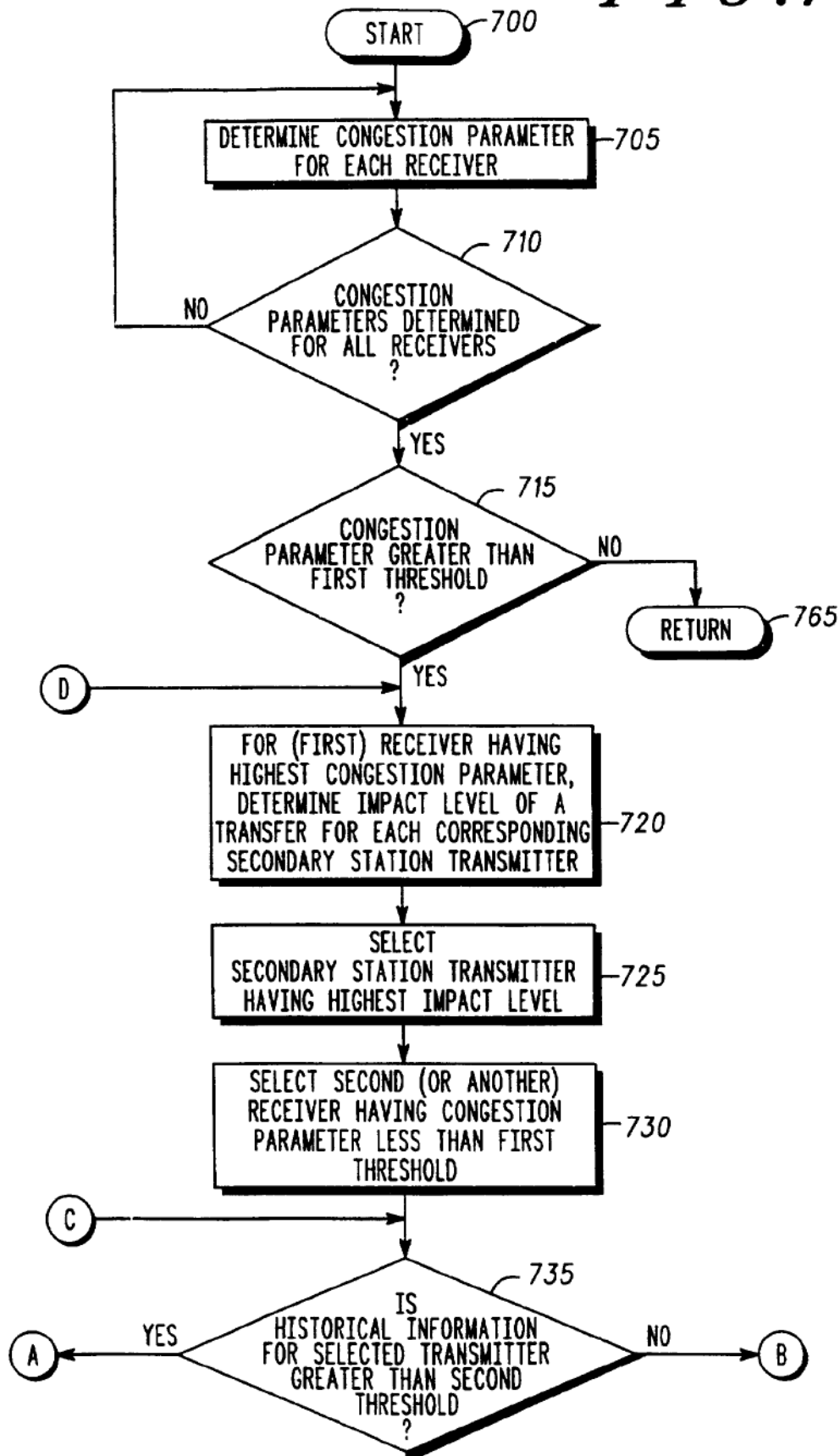
**FIG. 9A**

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*FIG. 9B*

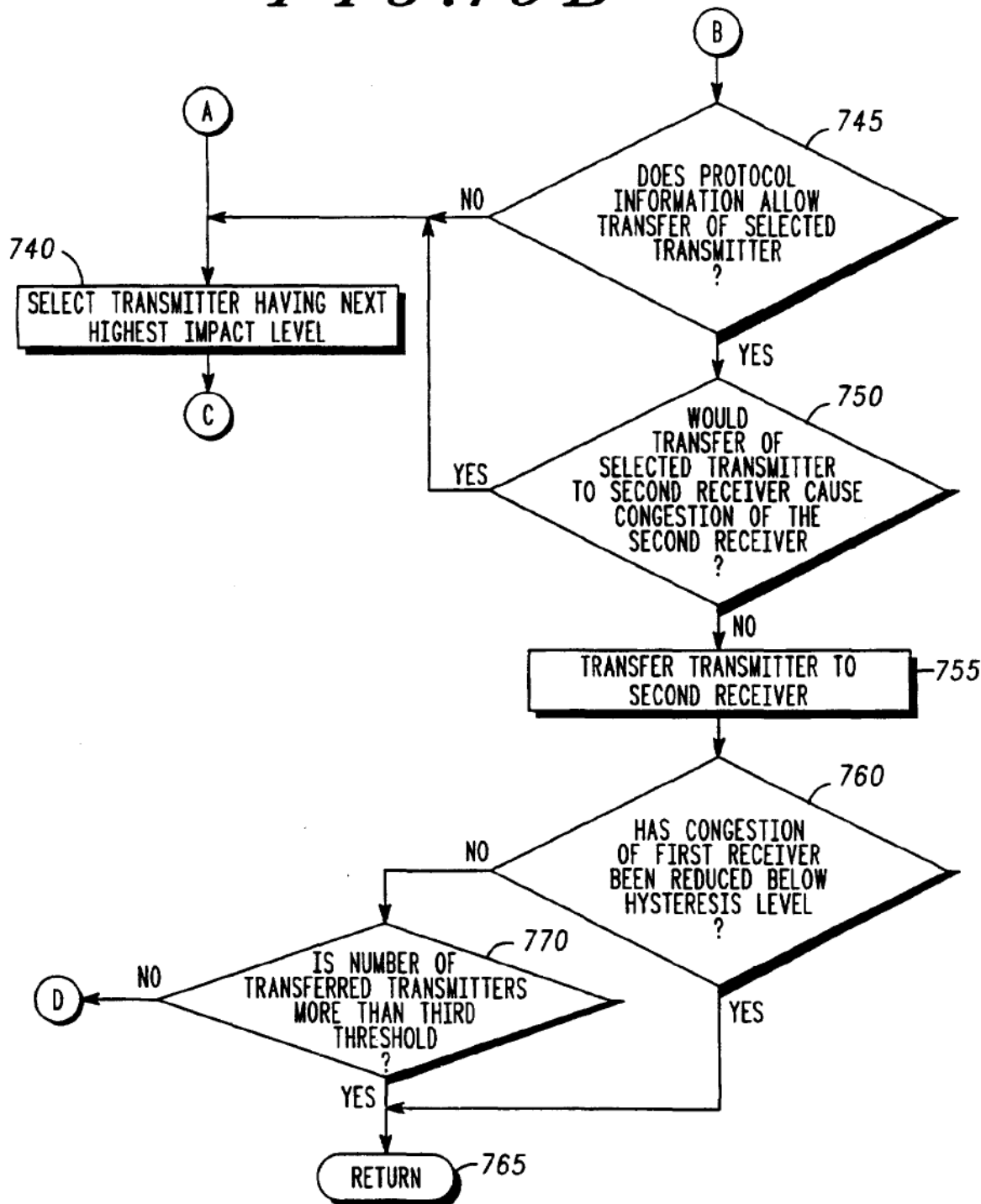
12/16

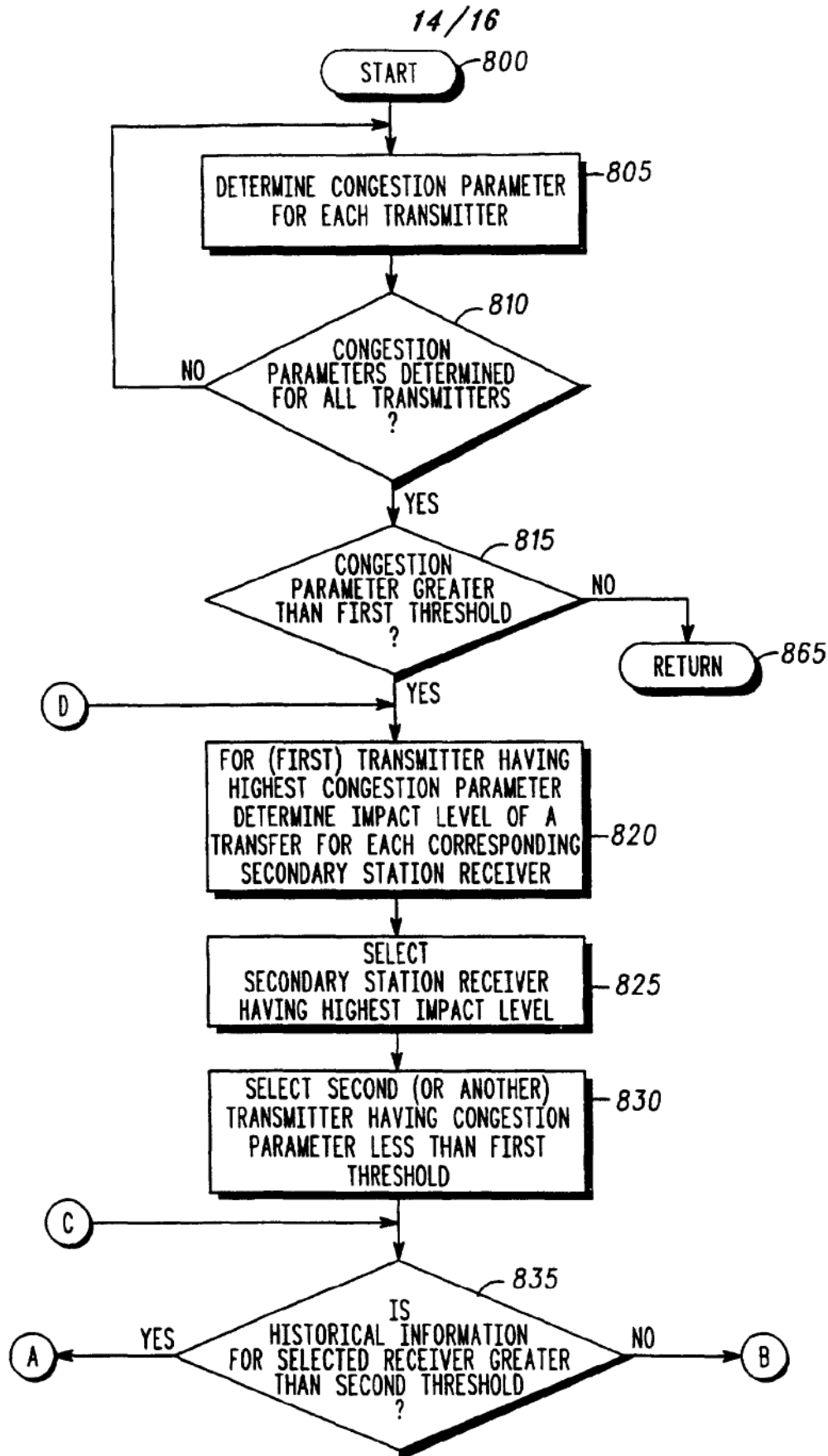
FIG. 10A



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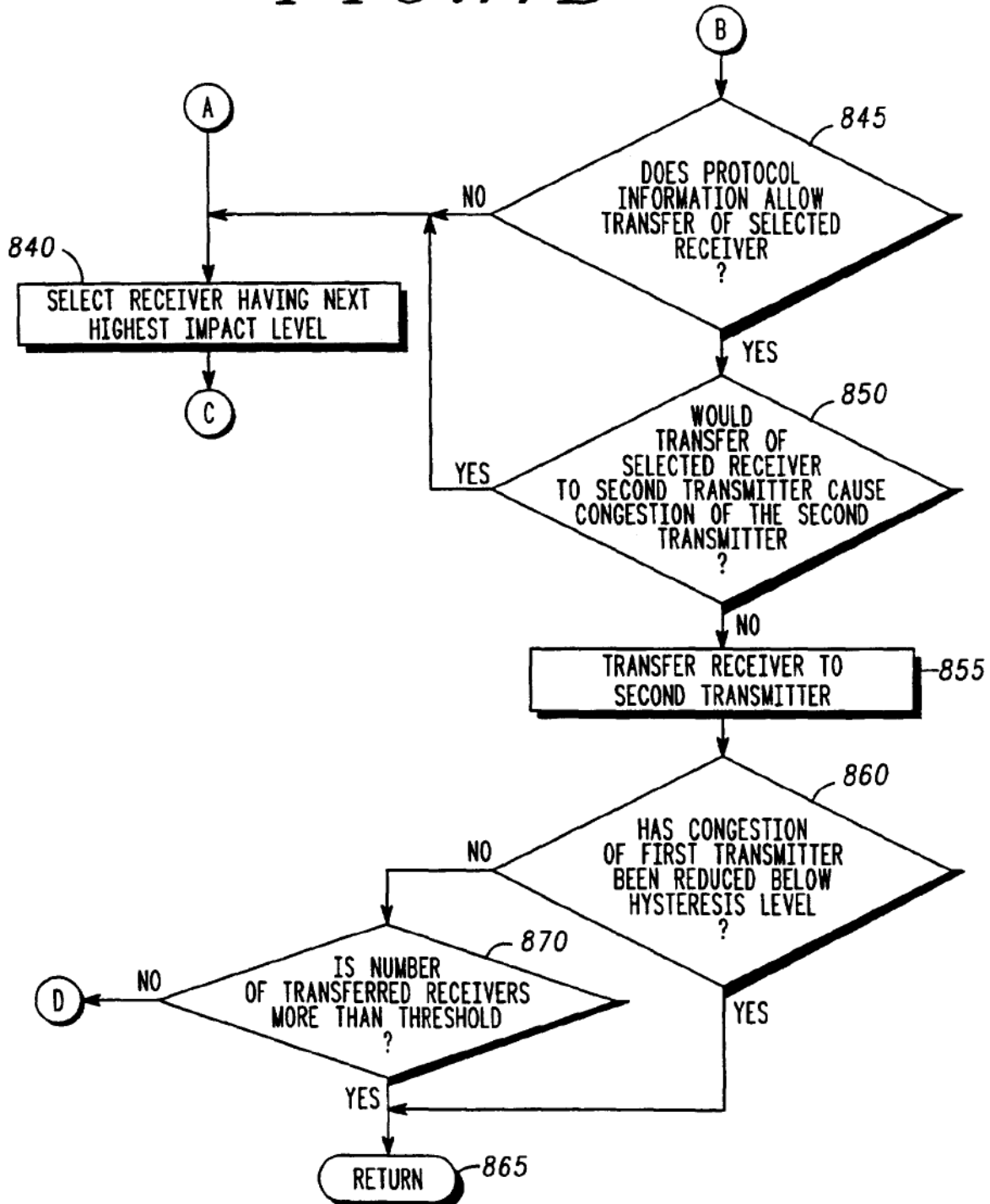
FIG. 10B



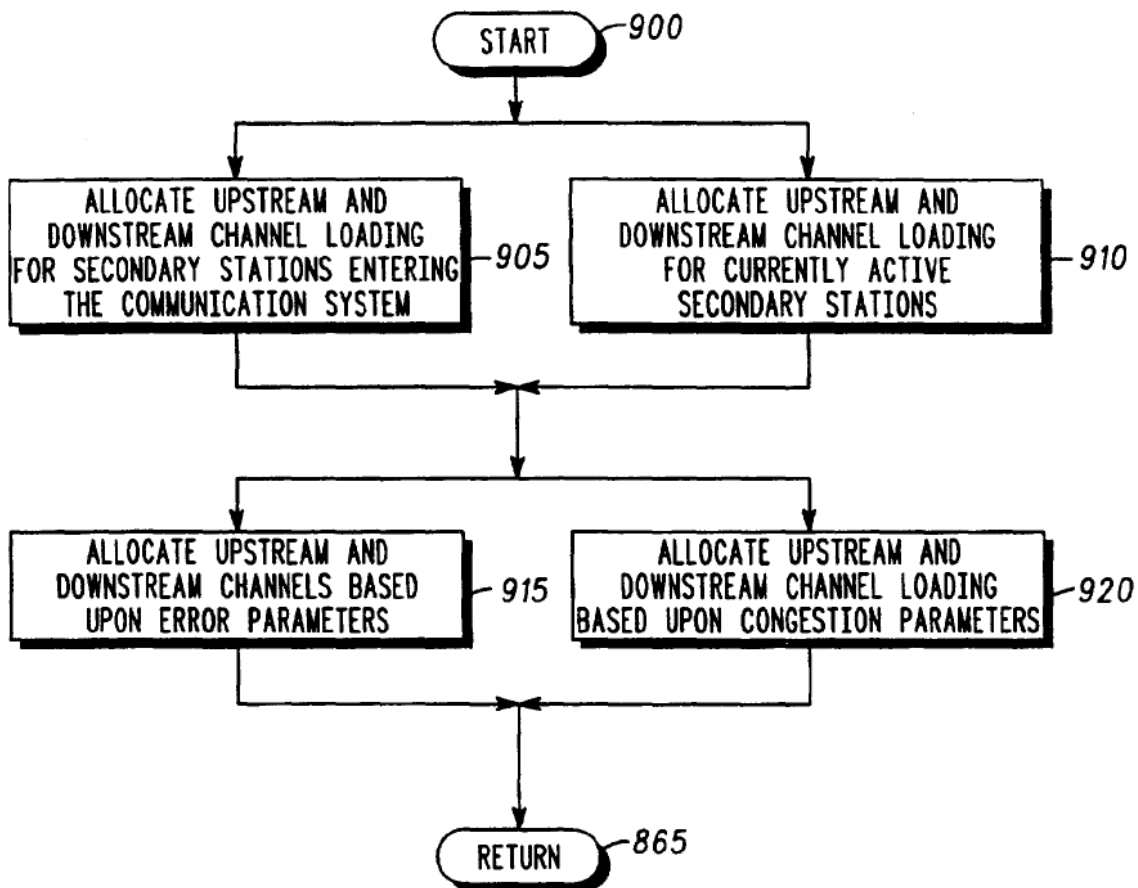
**FIG. 11A**

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FIG. 11B



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*FIG. 12*

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US97/04803

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : H04J 3/16

US CL : 370/232, 458

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 370/229, 230, 231, 232, 235, 237, 458, 468

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,295,140 A (CRISLER ET AL) 15 March 1994, col. 3, line 65 - col. line 40.	1-10
A	US 5,483,533 A (KUBA) 09 January 1996, col. 2 lines 15 - 49.	1-10



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
A document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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O document referring to an oral disclosure, use, exhibition or other means	
P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

01 AUGUST 1997

Date of mailing of the international search report

20 AUG 1997

Name and mailing address of the ISA/US
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Washington, D.C. 20231

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Electronic Acknowledgement Receipt

EFS ID:	22180692
Application Number:	13795283
International Application Number:	
Confirmation Number:	4507
Title of Invention:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
First Named Inventor/Applicant Name:	Shaohong Wei
Customer Number:	21186
Filer:	Eric B. Andersland/Valerie Murphy
Filer Authorized By:	Eric B. Andersland
Attorney Docket Number:	2831.012US4
Receipt Date:	27-APR-2015
Filing Date:	12-MAR-2013
Time Stamp:	17:18:07
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		13795283_UPDATED_4-27-15. pdf	382571 ff99ecc8616ff11d7af6c09b93cede40c5f42f6d	yes	17

	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Miscellaneous Incoming Letter		1	1	
	Transmittal Letter		2	3	
	Information Disclosure Statement (IDS) Form (SB08)		4	17	
Warnings:					
Information:					
2	Foreign Reference	0001_wo0155905a1.pdf	4288782	no	34
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3	Foreign Reference	0002_wo9737454a1.pdf	10870926	no	79
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4	Non Patent Literature	0003_fireeye_022244.pdf	757326	no	6
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12	Non Patent Literature	0011_fireeye_016875.pdf	825710	no	9
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Information:					
13	Non Patent Literature	0012_fireeye_023637.pdf	180813	no	2
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Total Files Size (in bytes):			364169555		
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Shaohong Wei et al.

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Docket No.: 2831.012US4
Filed: March 12, 2013
Examiner: Kevin Harper
Customer No.: 21186

Serial No.: 13/795,283
Due Date: N/A
Group Art Unit: 2462
Confirmation No.: 4507

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

We are transmitting herewith the following attached items (as indicated with an "X"):

X Information Disclosure Statement (2 pgs.), Form 1449 (14 pgs.) Copies of Cited References (246).

If not provided for in a separate paper filed herewith, please consider this a PETITION FOR EXTENSION OF TIME for sufficient number of months to enter these papers and please charge any additional fees or credit overpayment to Deposit Account No. 19-0743. If applicable, any papers or fees supplied herewith are considered to be timely filed pursuant to 37 C.F.R. § 1.7(a), the response period falling on a Federal Holiday, Saturday or Sunday being extended to the next succeeding business day.

SCHWEGMAN LUNDBERG & WOESSNER, P.A.
Customer No.: 21186

By: _____


James D. Hallenbeck
Reg. No. 63,561

S/N 13/795,283

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Shaohong Wei et al.

Examiner: Kevin Harper

Serial No.: 13/795,283

Group Art Unit: 2462

Filed: March 12, 2013

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Customer No.: 21186

Confirmation No.: 4507

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

INFORMATION DISCLOSURE STATEMENT

MS Amendment

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

In compliance with the duty imposed by 37 C.F.R. § 1.56, and in accordance with 37 C.F.R. §§ 1.97 *et. seq.*, the enclosed materials are brought to the attention of the Examiner for consideration in connection with the above-identified patent application. Applicants respectfully request that this Information Disclosure Statement be entered and the documents listed on the attached PTO 1449 Form be considered by the Examiner and made of record. Pursuant to the provisions of MPEP 609, Applicants request that a copy of the PTO 1449 Form, initialed as being considered by the Examiner, be returned to the Applicants with the next official communication.

Pursuant to 37 C.F.R. § 1.97(b), it is believed that no fee or statement is required with the Information Disclosure Statement. However, if an Office Action on the merits has been mailed after filing of the application or after the filing of the most recent RCE, the Commissioner is hereby authorized to charge the required fees to Deposit Account No. 19-0743 in order to have this Information Disclosure Statement considered.

Pursuant to 37 C.F.R. § 1.98(a)(2), copies of cited U.S. Patents and Published Applications, and Non-Published Applications identifiable by USPTO Serial Number, are no longer required to be provided to the Office. Applicants acknowledge the requirement to submit copies of foreign patent documents and non-patent literature in accordance with 37 C.F.R. § 1.98(a)(2).

INFORMATION DISCLOSURE STATEMENT

Serial Number:13/795,283

Filing Date: March 12, 2013

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Page 2

Dkt: 2831.012US4

The Examiner is invited to contact the undersigned at the telephone number indicated if there are any questions regarding this communication.

Respectfully submitted,

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Date 4/27/2015

By



James D. Hallenbeck

Reg. No. 63,561

JDH:vam

Electronic Acknowledgement Receipt

EFS ID:	22181034
Application Number:	13795283
International Application Number:	
Confirmation Number:	4507
Title of Invention:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
First Named Inventor/Applicant Name:	Shaohong Wei
Customer Number:	21186
Filer:	Eric B. Andersland/Valerie Murphy
Filer Authorized By:	Eric B. Andersland
Attorney Docket Number:	2831.012US4
Receipt Date:	27-APR-2015
Filing Date:	12-MAR-2013
Time Stamp:	17:32:37
Application Type:	Utility under 35 USC 111(a)

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Submitted with Payment	no
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<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

Electronic Acknowledgement Receipt

EFS ID:	22181430
Application Number:	13795283
International Application Number:	
Confirmation Number:	4507
Title of Invention:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
First Named Inventor/Applicant Name:	Shaohong Wei
Customer Number:	21186
Filer:	Eric B. Andersland/Valerie Murphy
Filer Authorized By:	Eric B. Andersland
Attorney Docket Number:	2831.012US4
Receipt Date:	27-APR-2015
Filing Date:	12-MAR-2013
Time Stamp:	17:48:29
Application Type:	Utility under 35 USC 111(a)

Payment information:

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<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

Electronic Acknowledgement Receipt

EFS ID:	22181728
Application Number:	13795283
International Application Number:	
Confirmation Number:	4507
Title of Invention:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
First Named Inventor/Applicant Name:	Shaohong Wei
Customer Number:	21186
Filer:	Eric B. Andersland/Valerie Murphy
Filer Authorized By:	Eric B. Andersland
Attorney Docket Number:	2831.012US4
Receipt Date:	27-APR-2015
Filing Date:	12-MAR-2013
Time Stamp:	18:02:35
Application Type:	Utility under 35 USC 111(a)

Payment information:

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45	Non Patent Literature	0221_fireeye_022151.pdf	1658658	no	12
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Information:					
46	Non Patent Literature	0222_fireeye_022335.pdf	1667514	no	15
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Warnings:					
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47	Non Patent Literature	0223_fireeye_016499.pdf	1189520	no	6
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51	Non Patent Literature	0227_fireeye_019222.pdf	2357311	no	15
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53	Non Patent Literature	0229_fireeye_019237.pdf	1631453	no	8
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54	Non Patent Literature	0230_fireeye_016544.pdf	1764986	no	8
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55	Non Patent Literature	0231_fireeye_019704.pdf	1368661	no	8
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56	Non Patent Literature	0232_fireeye_016849.pdf	1226147	no	4
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59	Non Patent Literature	0235_fireeye_021798.pdf	2892581	no	14
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Total Files Size (in bytes):			158052923		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

Electronic Acknowledgement Receipt

EFS ID:	22181826
Application Number:	13795283
International Application Number:	
Confirmation Number:	4507
Title of Invention:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
First Named Inventor/Applicant Name:	Shaohong Wei
Customer Number:	21186
Filer:	Eric B. Andersland/Valerie Murphy
Filer Authorized By:	Eric B. Andersland
Attorney Docket Number:	2831.012US4
Receipt Date:	27-APR-2015
Filing Date:	12-MAR-2013
Time Stamp:	18:08:04
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Non Patent Literature	0237_fireeye_019970.pdf	5001044 f9fe80c02c8f212e740dc7d77e29fd7f4e11f06d	no	47

Warnings:

Information:

2	Non Patent Literature	0238_fireeye_019691.pdf	2344967	no	13
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Information:					
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5	Non Patent Literature	0241_fireeye_016540.pdf	1041755	no	4
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Warnings:					
Information:					

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New International Application Filed with the USPTO as a Receiving Office

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**REQUEST
FOR
CONTINUED EXAMINATION (RCE)
TRANSMITTAL**

<i>Application Number</i>	13/795,283
<i>Filing Date</i>	March 12, 2013
<i>First Named Inventor</i>	Shaohong Wei
<i>Confirmation Number</i>	4507
<i>Group Art Unit</i>	2462
<i>Examiner Name</i>	Kevin Harper
<i>Attorney Docket Number</i>	2831.012US4
<i>Customer No.</i>	21186

This is a Request for Continued Examination (RCE) under 37 C.F.R. § 1.114 of the above-identified application entitled

SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

1. Submission required under 37 C.F.R. § 1.114:

- ☒ Amendment and Response Under 37 C.F.R. § 1.116 (7 pages) is enclosed.
- ☒ Request for Consideration under After Final Consideration Pilot Program 2.0 (1 pg)

2. Fees

- ☒ Authorization to charge deposit account 19-0743 in the amount of \$1200.00 to pay the RCE filing fee required under 37 C.F.R. § 1.17(e).

The Commissioner is hereby authorized to charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

SCHWEGMAN LUNDBERG & WOESSNER, P.A.
Customer No.: 21186

/ James D. Hallenbeck /
James D. Hallenbeck
Reg. No. 63,561

Document Description: After Final Consideration Pilot Program Request

Modified PTO/SB/434 (05-13)

CERTIFICATION AND REQUEST FOR CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0		
Practitioner Docket No.: 2831.012US4	Application No.: 13/795,283	Filing Date: March 12, 2013
First Named Inventor: Shaohong Wei et al.	Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION	
<p>APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0 (AFCP 2.0) OF THE ACCOMPANYING RESPONSE UNDER 37 CFR 1.116.</p> <ol style="list-style-type: none"> The above identified application is (i) an original utility, plant, or design nonprovisional application filed under 35 U.S.C. 111(a) [a continuing application (e.g., a continuation or divisional application) is filed under 35 U.S.C. 111(a) and is eligible under (i)], or (ii) an international application that has entered the national stage in compliance with 35 U.S.C. 371(c). The above identified application contains an outstanding final rejection. Submitted herewith is a response under 37 CFR 1.116 to the outstanding final rejection. The response includes an amendment to at least one independent claim, and the amendment does not broaden the scope of the independent claim in any aspect. This certification and request for consideration under AFCP 2.0 is the only AFCP 2.0 certification and request filed in response to the outstanding final rejection. Applicant is willing and available to participate in any interview requested by the examiner concerning the present response. This certification and request is being filed electronically using the Office's electronic filing system (EFSWeb). Any fees that would be necessary consistent with current practice concerning responses after final rejection under 37 CFR 1.116, e.g., extension of time fees, are being concurrently filed herewith. [There is no additional fee required to request consideration under AFCP 2.0.] By filing this certification and request, applicant acknowledges the following: <ul style="list-style-type: none"> Reissue applications and reexamination proceedings are not eligible to participate in AFCP 2.0. The examiner will verify that the AFCP 2.0 submission is compliant, i.e., that the requirements of the program have been met (see items 1 to 7 above). For compliant submissions: <ul style="list-style-type: none"> The examiner will review the response under 37 CFR 1.116 to determine if additional search and/or consideration (i) is necessitated by the amendment and (ii) could be completed within the time allotted under AFCP 2.0. If additional search and/or consideration is required but cannot be completed within the allotted time, the examiner will process the submission consistent with current practice concerning responses after final rejection under 37 CFR 1.116, e.g., by mailing an advisory action. If the examiner determines that the amendment does not necessitate additional search and/or consideration, or if the examiner determines that additional search and/or consideration is required and could be completed within the allotted time, then the examiner will consider whether the amendment places the application in condition for allowance (after completing the additional search and/or consideration, if required). If the examiner determines that the amendment does not place the application in condition for allowance, then the examiner will contact the applicant and request an interview. <ul style="list-style-type: none"> The interview will be conducted by the examiner, and if the examiner does not have negotiation authority, a primary examiner and/or supervisory patent examiner will also participate. If the applicant declines the interview, or if the interview cannot be scheduled within ten (10) calendar days from the date that the examiner first contacts the applicant, then the examiner will proceed consistent with current practice concerning responses after final rejection under 37 CFR 1.116. 		
Signature /  /		Date Apr 23, 2015
Name James D. Hallenbeck		Practitioner Registration No. 63,561
<p>Note: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.</p>		
* Total of <u>1</u> forms are submitted.		

S/N 13/795,283

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Shaohong Wei et al.

Examiner: Kevin Harper

Serial No.: 13/795,283

Group Art Unit: 2462

Filed: March 12, 2013

Docket No.: 2831.012US4

Customer No.: 21186

Confirmation No.: 4507

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

RESPONSE UNDER 37 C.F.R. § 1.116

Mail Stop RCE

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

In response to the Final Office Action dated February 2, 2015, and the Advisory Action of February 24, 2015, following Applicant's response filed on February 12, 2015, please amend the application as follows:

IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A method for determining a type of content, comprising:
receiving a packet associated with a session;
determining whether a content type has been determined ~~for the session or~~ for another packet associated with the session; [[and]]
when the content type of another packet has been determined, classifying the packet to be the content type based at least in part on a result from the act of determining, ~~wherein;~~ and
when the content type of ~~the session or~~ another packet has not been determined but at least one potential classification has been ruled out with regard to ~~the session or~~ another packet associated with the session, ~~the classifying is performed~~ the packet without consideration of the at least one potential classification that has been ruled out.
2. (Currently Amended) The method of claim 1, wherein the content type for ~~the session or~~ the other packet has been determined.
3. (Currently Amended) The method of claim 1, wherein the content type for ~~the session or~~ the other packet has not been determined, and the method further comprises receiving one or more additional packets.
4. (Original) The method of claim 3, wherein the act of classifying the packet comprises analyzing one of the one or more additional packets to determine if the one or more additional packets satisfy a prescribed criteria.
5. (Currently Amended) The method of claim 1, wherein the content type has been determined for ~~the session or~~ for another packet associated with the session to not be at least one ruled out classification.

6. (Currently Amended) The method of claim 1, wherein the content type has been determined for ~~the session or~~ for another packet associated with the session to potentially be of a particular classification.

7. (Currently Amended) A computer product includes a non-transitory computer-readable medium, the non-transitory computer-readable medium having a set of stored instructions, an execution of which causes a process to be performed, the process comprising:

receiving a packet associated with a session;

determining whether a content type has been determined ~~for the session or~~ for another packet associated with the session; [[and]]

when the content type of another packet has been determined, classifying the packet to be the content type based at least in part on a result from the act of determining, ~~wherein;~~ and

when the content type of ~~the session or~~ another packet has not been determined but at least one potential classification has been ruled out with regard to ~~the session or~~ another packet associated with the session, the classifying ~~is performed~~ the packet without consideration of the at least one potential classification that has been ruled out.

8. (Currently Amended) The computer product of claim 7, wherein the content type for ~~the session or~~ the other packet has been determined.

9. (Currently Amended) The computer product of claim 7, wherein the content type for ~~the session or~~ the other packet has not been determined, and the method further comprises receiving one or more additional packets.

10. (Original) The computer product of claim 9, wherein the act of classifying the packet comprises analyzing one of the one or more additional packets to determine if the one or more additional packets satisfy a prescribed criteria.

11. (Currently Amended) The computer product of claim 7, wherein the content type has been determined ~~for the session or~~ for another packet associated with the session to not be at least one ruled out classification.

12. (Currently Amended) The computer product of claim 7, wherein the content type has been determined ~~for the session or~~ for another packet associated with the session to potentially be of a particular classification.

13. (Currently Amended) A method for determining a type of content, comprising:

receiving a first packet from a first port, the first port adapted for receiving at least two types of content; and

determining a content type for the first packet ~~or for a session~~ with which the first packet is associated is not at least one content type, wherein data representative of the determination that the first packet is not at least one content type is stored and utilized in determining a classification for the session with which the first packet is associated when processing a second packet, the processing of the second packet not including consideration of the at least one content type.

14. (Original) The method of claim 13, wherein the content type is determined without using a port number that is associated with the first port.

15. (Original) The method of claim 13, wherein the content type is determined at least in part by analyzing the first packet.

16. (Original) The method of claim 15, wherein the act of analyzing the first packet comprises determining a characteristic associated with the first packet, the characteristic selected from the group consisting of a string pattern, a session classifier, a packet size, and a port number.

17. (Original) The method of claim 13, further comprising receiving a second packet, wherein the content type is determined by using the first and the second packets.

18. (Original) The method of claim 17, wherein the content type is determined by:

determining whether a characteristic of the first packet matches a first criteria; and

determining whether a characteristic of the second packet matches a second criteria.

REMARKS

This communication responds to the Final Office Action dated February 2, 2015, the Advisory Action dated February 24, 2015, following Applicant's response filed on February 12, 2015, and the Advisory Action dated March 26, 2015, following Applicant's response filed on February 26, 2015.

Claims 1-3, 5-9, and 11-13 are amended and no claims are canceled or added. As a result, claims 1-18 remain pending in this application.

Request for Consideration Under 37 C.F.R. 1.116(b) After Final Consideration Pilot 2.0

Applicant respectfully requests consideration under 37 C.F.R. 1.116(b) under the After Final Consideration Pilot 2.0. In the present response, independent claims 13 and 16 have been amended to remove the Section 101 rejections for purposes of appeal. However, Applicant is willing and available to participate in any interview initiated by the examiner concerning the response filed with the AFCP submission to discuss the remaining issues and how the cited art actually teaches away from the present claims. Applicant is submitting a completed form PTO/SB/434.

Double Patenting Rejection

Claims 1-18 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 7,580,974, claims 1-17 of U.S. Patent No. 8,204,933, claims 1-14 of U.S. Patent No. 8,639,752 and claims 1-20 of U.S. Patent No. 8,693,348. Although the claims at issue are not identical, they are not patentably distinct from each other.

Applicant does not admit that claims 1-18 are obvious in view of U.S. Patent No. 7,580,974, 8,204,933, 8,639,752, and 8,693,348

Applicant previously submitted Terminal Disclaimers to render these rejections moot, but they were not entered as the Applicant was not previously identified on the Application Data Sheet in a manner that was recognized. Applicant notes that the Power of Attorney in this matter was also not entered for similar reasons. Substantially parallel with the filing of February 12, 2015, Applicant filed a corrected application data sheet and the Power of Attorney and requested

reconsideration of the Terminal Disclaimers. Thus, in the event the present application is found to be allowable but for the present Double Patenting rejections, Applicant respectfully requests the courtesy of a telephone call to discuss the current status of these filings which may otherwise obviate a need for a further action including only these double patenting rejections. Applicant's representative, James D. Hallenbeck may be reached by telephone at (612) 373-6938.

The Rejection of Claims Under §§ 102 and 103

Claims 1-15 and 17-18 are rejected under pre-AIA 35 U.S.C. § 102(e) as allegedly being anticipated by Brandyburg et al. (US 2007/0011317).

Claims 16 is rejected under pre-AIA 35 U.S.C. § 103(a) as allegedly being unpatentable over Brandyburg in view of Yoakum et al. (US 2014/0198632).

Applicant reiterates the arguments made in response to the Final Office Action as filed on February 12, 2015, but does not repeat them here. The Advisory Actions of February 24, 2015 and March 26, 2015 appeared to indicate that amendments in accord with those presented herein would place the present application in condition for allowance. As such, Applicant respectfully requests entry of the amendments, withdrawal of the 35 U.S.C. §§ 102(e) and 103(a) rejections, and allowance of claims 1-18.

CONCLUSION

Applicant respectfully submits that claims 1-18 remain pending, are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone the undersigned at (612) 373-6938 to facilitate prosecution of this application.

If necessary, please charge any additional fees or deficiencies, or credit any overpayments to Deposit Account No. 19-0743.

Respectfully submitted,

SCHWEGMAN LUNDBERG & WOESSNER, P.A.
P.O. Box 2938
Minneapolis, MN 55402--0938
(612) 373-6938

Date Apr 23, 2015

By / James D. Hallenbeck /

James D. Hallenbeck

Reg. No. 63,561

Electronic Patent Application Fee Transmittal				
Application Number:		13795283		
Filing Date:		12-Mar-2013		
Title of Invention:		SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		
First Named Inventor/Applicant Name:		Shaohong Wei		
Filer:		Gregory M. Stark/John Gustav-Wrathall		
Attorney Docket Number:		2831.012US4		
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Request for Continued Examination	1801	1	1200	1200
Total in USD (\$)				1200

Electronic Acknowledgement Receipt

EFS ID:	22155537
Application Number:	13795283
International Application Number:	
Confirmation Number:	4507
Title of Invention:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
First Named Inventor/Applicant Name:	Shaohong Wei
Customer Number:	21186
Filer:	Gregory M. Stark/John Gustav-Wrathall
Filer Authorized By:	Gregory M. Stark
Attorney Docket Number:	2831.012US4
Receipt Date:	23-APR-2015
Filing Date:	12-MAR-2013
Time Stamp:	20:24:23
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 1200
RAM confirmation Number	19407
Deposit Account	190743
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)					
Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)					
Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)					
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2831012US4_RCE_042315.pdf	2599180 d20592e6fc9a92ded013842155940d501c541bab	yes	9
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Request for Continued Examination (RCE)		1	1	
	After Final Consideration Program Request		2	2	
	Response After Final Action		3	3	
	Claims		4	6	
	Applicant Arguments/Remarks Made in an Amendment		7	9	
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30676 e0482da68d6b1ab8d2ced19340f3c236b9aa246a	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			2629856		

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Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875				Application or Docket Number 13/795,283		Filing Date 03/12/2013		☐ To be Mailed	
ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO									
APPLICATION AS FILED – PART I									
(Column 1)		(Column 2)							
FOR	NUMBER FILED	NUMBER EXTRA			RATE (\$)	FEE (\$)			
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A			N/A				
☐ SEARCH FEE (37 CFR 1.16(k), (j), or (m))	N/A	N/A			N/A				
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A			N/A				
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*			X \$	=			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*			X \$	=			
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).								
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))									
* If the difference in column 1 is less than zero, enter "0" in column 2.					TOTAL				
APPLICATION AS AMENDED – PART II									
(Column 1)		(Column 2)		(Column 3)					
AMENDMENT	04/23/2015	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	* 18	Minus	** 20	= 0	X \$80 =		0	
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X \$420 =		0	
	☐ Application Size Fee (37 CFR 1.16(s))								
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE		0	
(Column 1)		(Column 2)		(Column 3)					
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$		=	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$		=	
	☐ Application Size Fee (37 CFR 1.16(s))								
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE			
<p>* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.</p> <p>** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".</p> <p>*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".</p> <p>The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.</p>									

LIE
/STEFANIE BRYCE/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/795,283	03/12/2013	Shaohong Wei	2831.012US4	4507

21186 7590 03/27/2015
SCHWEGMAN LUNDBERG & WOESSNER, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

EXAMINER

HARPER, KEVIN C

ART UNIT	PAPER NUMBER
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2462

NOTIFICATION DATE	DELIVERY MODE
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03/27/2015

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@slwip.com
SLW@blackhillsip.com

Advisory Action Before the Filing of an Appeal Brief	Application No. 13/795,283	Applicant(s) WEI ET AL.	
	Examiner Kevin C. Harper	Art Unit 2462	AIA (First Inventor to File) Status No

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 26 February 2015 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

NO NOTICE OF APPEAL FILED

1. ☒ The reply was filed after a final rejection. No Notice of Appeal has been filed. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114 if this is a utility or plant application. Note that RCEs are not permitted in design applications. The reply must be filed within one of the following time periods:

a) ☒ The period for reply expires 3 months from the mailing date of the final rejection.

b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action; or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

c) ☐ A prior Advisory Action was mailed more than 3 months after the mailing date of the final rejection in response to a first after-final reply filed within 2 months of the mailing date of the final rejection. The current period for reply expires _____ months from the mailing date of the prior Advisory Action or SIX MONTHS from the mailing date of the final rejection, whichever is earlier.

Examiner Note: If box 1 is checked, check either box (a), (b) or (c). ONLY CHECK BOX (b) WHEN THIS ADVISORY ACTION IS THE FIRST RESPONSE TO APPLICANT'S FIRST AFTER-FINAL REPLY WHICH WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. ONLY CHECK BOX (c) IN THE LIMITED SITUATION SET FORTH UNDER BOX (c). See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) or (c) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☒ The proposed amendments filed after a final rejection, but prior to the date of filing a brief, will not be entered because

a) ☒ They raise new issues that would require further consideration and/or search (see NOTE below);

b) ☐ They raise the issue of new matter (see NOTE below);

c) ☒ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or

d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: _____. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).

5. ☐ Applicant's reply has overcome the following rejection(s): _____.

6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

7. ☒ For purposes of appeal, the proposed amendment(s): (a) ☒ will not be entered, or (b) ☐ will be entered, and an explanation of how the new or amended claims would be rejected is provided below or appended.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

9. ☐ The affidavit or other evidence filed after final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).

10. ☐ The affidavit or other evidence filed after the date of filing the Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).

11. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

12. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because:
See Continuation Sheet.

13. ☐ Note the attached Information *Disclosure Statement(s)*. (PTO/SB/08) Paper No(s). _____

14. ☒ Other: attached PTO-2323.

STATUS OF CLAIMS

15. The status of the claim(s) is (or will be) as follows:

Claim(s) allowed: _____.

Claim(s) objected to: _____.

Claim(s) rejected: 1-18.

Claim(s) withdrawn from consideration: _____.

	/Kevin C. Harper/ Primary Examiner, Art Unit 2462
--	--

Continuation of 12. does NOT place the application in condition for allowance. Applicants' arguments are not considered persuasive because the amendments have not been entered.

Examiner notes an antecedent problem in claim 1. "The classifying..." in line 8 refers to classifying for a known content type (i.e., referring to the previous step of classification "to be the content type" which must be known). However, "The classifying..." in line 8 is based on the content type not being known.

Examiner suggests rewriting claim 1 to better reflect two cases of classification, namely steps 206 and 208 of fig. 2. For example,

"when the content type of another packet has been determined, classifying the packet to be the content type; and

when the content type of another packet has not been determined but at least one potential classification has been ruled out with regard to another packet associated with the session, classifying the packet without consideration of at least one potential classification that has been ruled out".

S/N 13/795,283

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Shaohong Wei et al.

Examiner: Kevin Harper

Serial No.: 13/795,283

Group Art Unit: 2462

Filed: March 12, 2013

Docket No.: 2831.012US4

Customer No.: 21186

Confirmation No.: 4507

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

RESPONSE UNDER 37 C.F.R. § 1.116

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P.O. Box 1450

Alexandria, VA 22313-1450

DO NOT ENTER: /K.H./ (03/22/2015)

In response to the Final Office Action dated February 2, 2015, and the Advisory Action of February 24, 2015, following Applicant's response filed on February 12, 2015, please amend the application as follows:

AFCP 2.0 Decision

Application No.

13/795,283

Applicant(s)

WEI ET AL.

Examiner

Kevin C. Harper

Art Unit

2462

This is in response to the After Final Consideration Pilot request filed 26 February 2015.

1. **Improper Request** – The AFCP 2.0 request is improper for the following reason(s) and the after final amendment submitted with the request will be treated under pre-pilot procedure.

- ☐ An AFCP 2.0 request form PTO/SB/434 (or equivalent document) was not submitted.
- ☐ A non-broadening amendment to at least one independent claim was not submitted.
- ☐ A proper AFCP 2.0 request was submitted in response to the most recent final rejection.
- ☐ Other:

2. Proper Request

- A. After final amendment submitted with the request will not be treated under AFCP 2.0.

The after final amendment cannot be reviewed and a search conducted within the guidelines of the pilot program.

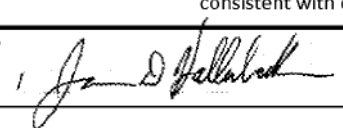
- ☒ The after final amendment will be treated under pre-pilot procedure.

- B. Updated search and/or completed additional consideration.

The examiner performed an updated search and/or completed additional consideration of the after final amendment within the time authorized for the pilot program. The result(s) of the updated search and/or completed additional consideration are:

- ☐ 1. All of the rejections in the most recent final Office action are overcome and a Notice of Allowance is issued herewith.
- ☐ 2. The after final amendment would not overcome all of the rejections in the most recent final Office action. See attached interview summary for further details.
- ☐ 3. The after final amendment was reviewed, and it raises a new issue(s). See attached interview summary for further details.
- ☐ 4. The after final amendment raises new issues, but would overcome all of the rejections in the most recent final Office action. A decision on determining allowability could not be made within the guidelines of the pilot. See attached interview summary for further details, including any newly discovered prior art.
- ☐ 5. Other:

Examiner Note: Please attach an interview summary when necessary as described above.

CERTIFICATION AND REQUEST FOR CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0		
Practitioner Docket No.: 2831.012US4	Application No.: 13/795,283	Filing Date: March 12, 2013
First Named Inventor: Shaohong Wei	Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION	
<p>APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0 (AFCP 2.0) OF THE ACCOMPANYING RESPONSE UNDER 37 CFR 1.116.</p> <ol style="list-style-type: none"> 1. The above-identified application is (i) an original utility, plant, or design nonprovisional application filed under 35 U.S.C. 111(a) [a continuing application (e.g., a continuation or divisional application) is filed under 35 U.S.C. 111(a) and is eligible under (i)], or (ii) an international application that has entered the national stage in compliance with 35 U.S.C. 371(c). 2. The above-identified application contains an outstanding final rejection. 3. Submitted herewith is a response under 37 CFR 1.116 to the outstanding final rejection. The response includes an amendment to at least one independent claim, and the amendment does not broaden the scope of the independent claim in any aspect. 4. This certification and request for consideration under AFCP 2.0 is the only AFCP 2.0 certification and request filed in response to the outstanding final rejection. 5. Applicant is willing and available to participate in any interview requested by the examiner concerning the present response. 6. This certification and request is being filed electronically using the Office's electronic filing system (EFS-Web). 7. Any fees that would be necessary consistent with current practice concerning responses after final rejection under 37 CFR 1.116, e.g., extension of time fees, are being concurrently filed herewith. [There is no additional fee required to request consideration under AFCP 2.0.] 8. By filing this certification and request, applicant acknowledges the following: <ul style="list-style-type: none"> • Reissue applications and reexamination proceedings are not eligible to participate in AFCP 2.0. • The examiner will verify that the AFCP 2.0 submission is compliant, i.e., that the requirements of the program have been met (see items 1 to 7 above). For compliant submissions: <ul style="list-style-type: none"> ○ The examiner will review the response under 37 CFR 1.116 to determine if additional search and/or consideration (i) is necessitated by the amendment and (ii) could be completed within the time allotted under AFCP 2.0. If additional search and/or consideration is required but cannot be completed within the allotted time, the examiner will process the submission consistent with current practice concerning responses after final rejection under 37 CFR 1.116, e.g., by mailing an advisory action. ○ If the examiner determines that the amendment does not necessitate additional search and/or consideration, or if the examiner determines that additional search and/or consideration is required and could be completed within the allotted time, then the examiner will consider whether the amendment places the application in condition for allowance (after completing the additional search and/or consideration, if required). If the examiner determines that the amendment does not place the application in condition for allowance, then the examiner will contact the applicant and request an interview. <ul style="list-style-type: none"> ▪ The interview will be conducted by the examiner, and if the examiner does not have negotiation authority, a primary examiner and/or supervisory patent examiner will also participate. ▪ If the applicant declines the interview, or if the interview cannot be scheduled within ten (10) calendar days from the date that the examiner first contacts the applicant, then the examiner will proceed consistent with current practice concerning responses after final rejection under 37 CFR 1.116. 		
Signature 	Date 2/26/2015	
Name (Print/Typed) James D. Hallenbeck	Practitioner Registration No. 63,561	
<p>Note: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.</p>		
☒ * Total of <u>1</u> forms are submitted.		

S/N 13/795,283

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Shaohong Wei et al.

Examiner: Kevin Harper

Serial No.: 13/795,283

Group Art Unit: 2462

Filed: March 12, 2013

Docket No.: 2831.012US4

Customer No.: 21186

Confirmation No.: 4507

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

RESPONSE UNDER 37 C.F.R. § 1.116

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

In response to the Final Office Action dated February 2, 2015, and the Advisory Action of February 24, 2015, following Applicant's response filed on February 12, 2015, please amend the application as follows:

IN THE CLAIMS

Please amendment the claims as follows:

1. (Currently Amended) A method for determining a type of content, comprising:
 receiving a packet associated with a session;
 determining whether a content type has been determined for ~~the session or~~ for another packet
associated with the session; and
 classifying the packet to be the content type based at least in part on a result from the act of
determining, wherein when the content type of ~~the session or~~ another packet has not been determined
but at least one potential classification has been ruled out with regard to ~~the session or~~ another packet
associated with the session, the classifying is performed without consideration of the at least one
potential classification that has been ruled out.
2. (Currently Amended) The method of claim 1, wherein the content type for ~~the session or~~ the
other packet
has been determined.
3. (Currently Amended) The method of claim 1, wherein the content type for ~~the session or~~ the
other packet has not been determined, and the method further comprises receiving one or more
additional packets.
4. (Original) The method of claim 3, wherein the act of classifying the packet comprises analyzing
one of the one or more additional packets to determine if the one or more additional packets satisfy a
prescribed criteria.
5. (Currently Amended) The method of claim 1, wherein the content type has been determined
for ~~the session or~~ for another packet associated with the session to not be at least one ruled out
classification.

6. (Currently Amended) The method of claim 1, wherein the content type has been determined for ~~the session or~~ for another packet associated with the session to potentially be of a particular classification.

7. (Currently Amended) A computer product includes a non-transitory computer-readable medium, the non-transitory computer-readable medium having a set of stored instructions, an execution of which causes a process to be performed, the process comprising:

receiving a packet associated with a session;

determining whether a content type has been determined for ~~the session or~~ for another packet associated with the session; and

classifying the packet to be the content type based at least in part on a result from the act of determining, wherein when the content type of ~~the session or~~ another packet has not been determined but at least one potential classification has been ruled out with regard to ~~the session or~~ another packet associated with the session, the classifying is performed without consideration of the at least one potential classification that has been ruled out.

8. (Currently Amended) The computer product of claim 7, wherein the content type for ~~the session or~~ the other packet has been determined.

9. (Currently Amended) The computer product of claim 7, wherein the content type for ~~the session or~~ the other packet has not been determined, and the method further comprises receiving one or more additional packets.

10. (Original) The computer product of claim 9, wherein the act of classifying the packet comprises analyzing one of the one or more additional packets to determine if the one or more additional packets satisfy a prescribed criteria.

11. (Currently Amended) The computer product of claim 7, wherein the content type has been determined for ~~the session or~~ for another packet associated with the session to not be at least one ruled out classification.

12. (Currently Amended) The computer product of claim 7, wherein the content type has been determined ~~for the session or~~ for another packet associated with the session to potentially be of a particular classification.

13. (Currently Amended) A method for determining a type of content, comprising:

receiving a first packet from a first port, the first port adapted for receiving at least two types of content; and

determining a content type for the first packet ~~or for a session~~ with which the first packet is associated is not at least one content type, wherein data representative of the determination that the first packet is not at least one content type is stored and utilized in determining a classification for the session with which the first packet is associated when processing a second packet, the processing of the second packet not including consideration of the at least one content type.

14. (Original) The method of claim 13, wherein the content type is determined without using a port number that is associated with the first port.

15. (Original) The method of claim 13, wherein the content type is determined at least in part by analyzing the first packet.

16. (Original) The method of claim 15, wherein the act of analyzing the first packet comprises determining a characteristic associated with the first packet, the characteristic selected from the group consisting of a string pattern, a session classifier, a packet size, and a port number.

17. (Original) The method of claim 13, further comprising receiving a second packet, wherein the content type is determined by using the first and the second packets.

18. (Original) The method of claim 17, wherein the content type is determined by:

determining whether a characteristic of the first packet matches a first criteria; and

determining whether a characteristic of the second packet matches a second criteria.

REMARKS

This communication responds to the Final Office Action dated February 2, 2015, and the Advisory Action dated February 24, 2015, following Applicant's response filed on February 12, 2015.

Claims 1-3, 5-9, and 11-13 are amended and no claims are canceled or added. As a result, claims 1-18 remain pending in this application.

Request for Consideration Under 37 C.F.R. 1.116(b) After Final Consideration Pilot 2.0

Applicant respectfully requests consideration under 37 C.F.R. 1.116(b) under the After Final Consideration Pilot 2.0. In the present response, independent claims 13 and 16 have been amended to remove the Section 101 rejections for purposes of appeal. However, Applicant is willing and available to participate in any interview initiated by the examiner concerning the response filed with the AFCP submission to discuss the remaining issues and how the cited art actually teaches away from the present claims. Applicant is submitting a completed form PTO/SB/434.

Double Patenting Rejection

Claims 1-18 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 7,580,974, claims 1-17 of U.S. Patent No. 8,204,933, claims 1-14 of U.S. Patent No. 8,639,752 and claims 1-20 of U.S. Patent No. 8,693,348. Although the claims at issue are not identical, they are not patentably distinct from each other.

Applicant does not admit that claims 1-18 are obvious in view of U.S. Patent No. 7,580,974, 8,204,933, 8,639,752, and 8,693,348

Applicant previously submitted Terminal Disclaimers to render these rejections moot, but they were not entered as the Applicant was not previously identified on the Application Data Sheet in a manner that was recognized. Applicant notes that the Power of Attorney in this matter was also not entered for similar reasons. Substantially parallel with the filing of February 12, 2015, Applicant filed a corrected application data sheet and the Power of Attorney and requested reconsideration of the Terminal Disclaimers. Thus, in the event the present application is found

to be allowable but for the present Double Patenting rejections, Applicant respectfully requests the courtesy of a telephone call to discuss the current status of these filings which may otherwise obviate a need for a further action including only these double patenting rejections. Applicant's representative, James D. Hallenbeck may be reached by telephone at (612) 373-6938.

The Rejection of Claims Under §§ 102 and 103

Claims 1-15 and 17-18 are rejected under pre-AIA 35 U.S.C. § 102(e) as allegedly being anticipated by Brandyburg et al. (US 2007/0011317).

Claims 16 is rejected under pre-AIA 35 U.S.C. § 103(a) as allegedly being unpatentable over Brandyburg in view of Yoakum et al. (US 2014/0198632).

Applicant reiterates the arguments made in response to the Final Office Action as filed on February 12, 2015, but does not repeat them here. The Advisory Action appeared to indicate that amendments in accord with those presented herein would place the present application in condition for allowance. As such, Applicant respectfully requests entry of the amendments, withdrawal of the 35 U.S.C. §§ 102(e) and 103(a) rejections, and allowance of claims 1-18.

CONCLUSION

Applicant respectfully submits that claims 1-18 remain pending, are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone the undersigned at (612) 373-6938 to facilitate prosecution of this application.

If necessary, please charge any additional fees or deficiencies, or credit any overpayments to Deposit Account No. 19-0743.

Respectfully submitted,

SCHWEGMAN LUNDBERG & WOESSNER, P.A.
P.O. Box 2938
Minneapolis, MN 55402--0938
(612) 373-6938

Date 2/26/2015

By 
James D. Hallenbeck
Reg. No. 63,561

Electronic Acknowledgement Receipt

EFS ID:	21614588
Application Number:	13795283
International Application Number:	
Confirmation Number:	4507
Title of Invention:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
First Named Inventor/Applicant Name:	Shaohong Wei
Customer Number:	21186
Filer:	Gregory M. Stark/John Gustav-Wrathall
Filer Authorized By:	Gregory M. Stark
Attorney Docket Number:	2831.012US4
Receipt Date:	26-FEB-2015
Filing Date:	12-MAR-2013
Time Stamp:	18:03:39
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2831012US4_resp_022614.pdf	182068 c8e2f90982eeb3b53639fd55ec9887c8a9a65965	yes	9

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Miscellaneous Incoming Letter	1	1
	After Final Consideration Program Request	2	2
	Response After Final Action	3	3
	Claims	4	6
	Applicant Arguments/Remarks Made in an Amendment	7	9

Warnings:

Information:

Total Files Size (in bytes):	182068
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Shaohong Wei et al.

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Docket No.: 2831.012US4
Filed: March 12, 2013
Examiner: Kevin Harper
Customer No.: 21186

Serial No.: 13/795,283
Due Date: May 2, 2015
Group Art Unit: 2462
Confirmation No.: 4507

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

We are transmitting herewith the following attached items (as indicated with an "X"):

- ☒ Amendment and Response under 37 C.F.R. § 1.116 (7 pgs.)
- ☒ Certification and Request for Consideration under the After Final Consideration Pilot Program 2.0 (1 pg)

If not provided for in a separate paper filed herewith, please consider this a PETITION FOR EXTENSION OF TIME for sufficient number of months to enter these papers and please charge any additional fees or credit overpayment to Deposit Account No. 19-0743. If applicable, any papers or fees supplied herewith are considered to be timely filed pursuant to 37 C.F.R. § 1.7(a), the response period falling on a Federal Holiday, Saturday or Sunday being extended to the next succeeding business day.

SCHWEGMAN LUNDBERG & WOESSNER, P.A.
Customer No.: 21186

By: _____



James D. Hallenbeck
Reg. No. 63,561

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/795,283	Filing Date 03/12/2013	☐ To be Mailed
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ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

(Column 1)	(Column 2)		RATE (\$)	FEE (\$)
FOR	NUMBER FILED	NUMBER EXTRA		
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (j), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 = *		X \$ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 = *		X \$ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

(Column 1)	(Column 2)	(Column 3)		RATE (\$)	ADDITIONAL FEE (\$)
02/26/2015	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		
Total (37 CFR 1.16(i))	* 18	Minus ** 20	= 0	X \$80 =	0
Independent (37 CFR 1.16(h))	* 3	Minus *** 3	= 0	X \$420 =	0
☐ Application Size Fee (37 CFR 1.16(s))					
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					
				TOTAL ADD'L FEE	0

(Column 1)	(Column 2)	(Column 3)		RATE (\$)	ADDITIONAL FEE (\$)
AMENDMENT	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		
Total (37 CFR 1.16(i))	*	Minus **	=	X \$ =	
Independent (37 CFR 1.16(h))	*	Minus ***	=	X \$ =	
☐ Application Size Fee (37 CFR 1.16(s))					
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					
				TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/PEARLIE A. FENNELL/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/795,283	03/12/2013	Shaohong Wei	2831.012US4	4507
21186 7590 02/24/2015 SCHWEGMAN LUNDBERG & WOESSNER, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402			EXAMINER HARPER, KEVIN C	
			ART UNIT 2462	PAPER NUMBER
			NOTIFICATION DATE 02/24/2015	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@slwip.com
SLW@blackhillsip.com

Advisory Action Before the Filing of an Appeal Brief	Application No. 13/795,283	Applicant(s) WEI ET AL.	
	Examiner Kevin C. Harper	Art Unit 2462	AIA (First Inventor to File) Status No

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 12 February 2015 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

NO NOTICE OF APPEAL FILED

1. ☒ The reply was filed after a final rejection. No Notice of Appeal has been filed. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114 if this is a utility or plant application. Note that RCEs are not permitted in design applications. The reply must be filed within one of the following time periods:

a) ☐ The period for reply expires _____ months from the mailing date of the final rejection.

b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action; or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

c) ☐ A prior Advisory Action was mailed more than 3 months after the mailing date of the final rejection in response to a first after-final reply filed within 2 months of the mailing date of the final rejection. The current period for reply expires _____ months from the mailing date of the prior *Advisory Action* or SIX MONTHS from the mailing date of the final rejection, whichever is earlier.

Examiner Note: If box 1 is checked, check either box (a), (b) or (c). ONLY CHECK BOX (b) WHEN THIS ADVISORY ACTION IS THE FIRST RESPONSE TO APPLICANT'S FIRST AFTER-FINAL REPLY WHICH WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. ONLY CHECK BOX (c) IN THE LIMITED SITUATION SET FORTH UNDER BOX (c). See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) or (c) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☐ The proposed amendments filed after a final rejection, but prior to the date of filing a brief, will not be entered because

a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);

b) ☐ They raise the issue of new matter (see NOTE below);

c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or

d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: _____. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).

5. ☐ Applicant's reply has overcome the following rejection(s): _____.

6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

7. ☐ For purposes of appeal, the proposed amendment(s): (a) ☐ will not be entered, or (b) ☐ will be entered, and an explanation of how the new or amended claims would be rejected is provided below or appended.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

9. ☐ The affidavit or other evidence filed after final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).

10. ☐ The affidavit or other evidence filed after the date of filing the Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).

11. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

12. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because:
See Continuation Sheet.

13. ☐ Note the attached Information *Disclosure Statement(s)*. (PTO/SB/08) Paper No(s). _____

14. ☐ Other: _____.

STATUS OF CLAIMS

15. The status of the claim(s) is (or will be) as follows:

Claim(s) allowed: _____.

Claim(s) objected to: _____.

Claim(s) rejected: 1-18.

Claim(s) withdrawn from consideration: _____.

/Kevin C. Harper/ Primary Examiner, Art Unit 2462
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Continuation of 12. does NOT place the application in condition for allowance because: Applicants' arguments are not considered persuasive.

Applicants argued that Brandyburg does not provide for determining the content type of a session or another packet as claimed. However, Examiner disagrees. The content type of a session is determined in Fig. 5A as claimed and as described in the Final rejection and Response to Arguments. Applicant argued Fig. 5A does not determine a content type of another packet as claimed and Examiner agrees. Once one packet of a session has been classified (fig. 5A, step 460) all subsequent packets of the session (i.e., having the same quadruple) are classified. However, "the content type of another packet" is not claimed definitely due to the use of "or" in the claims. Examiner is addressing the "content type of the session" portions of the claims which in Brandyburg is based on the potential classifications of a currently received packet as claimed.

S/N 13/795,283

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s):	Shaohong Wei et al.	Examiner:	Kevin Harper
Serial No.:	13/795,283	Group Art Unit:	2462
Filed:	March 12, 2013	Docket No.:	2831.012US4
Customer No.:	21186	Confirmation No.:	4507
Title:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		

RESPONSE UNDER 37 C.F.R. § 1.116

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P.O. Box 1450
Alexandria, VA 22313-1450

In response to the Final Office Action dated February 2, 2015, please amend the application as follows:

DO NOT ENTER: /K.H./ (02/13/2015)

Application Number 	Application/Control No. 13/795,283	Applicant(s)/Patent under Reexamination WEI ET AL.	
Document Code - DISQ		Internal Document – DO NOT MAIL	

TERMINAL DISCLAIMER	☒ APPROVED	☐ DISAPPROVED
Date Filed : 2/12/15	This patent is subject to a Terminal Disclaimer	

Approved/Disapproved by:	
Felicia D. Roberts 4 TDs approved with this filing date	

U.S. Patent and Trademark Office

S/N 13/795,283

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s):	Shaohong Wei et al.	Examiner:	Kevin Harper
Serial No.:	13/795,283	Group Art Unit:	2462
Filed:	March 12, 2013	Docket No.:	2831.012US4
Customer No.:	21186	Confirmation No.:	4507
Title:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		

RESPONSE UNDER 37 C.F.R. § 1.116

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

In response to the Final Office Action dated February 2, 2015, please amend the application as follows:

IN THE CLAIMS

The pending claims are as follows:

1. (Previously Presented) A method for determining a type of content, comprising:
 receiving a packet associated with a session;
 determining whether a content type has been determined for the session or for another packet associated with the session; and
 classifying the packet to be the content type based at least in part on a result from the act of determining, wherein when the content type of the session or another packet has not been determined but at least one potential classification has been ruled out with regard to the session or another packet associated with the session, the classifying is performed without consideration of the at least one potential classification that has been ruled out.
2. (Original) The method of claim 1, wherein the content type for the session or the other packet has been determined.
3. (Original) The method of claim 1, wherein the content type for the session or the other packet has not been determined, and the method further comprises receiving one or more additional packets.
4. (Original) The method of claim 3, wherein the act of classifying the packet comprises analyzing one of the one or more additional packets to determine if the one or more additional packets satisfy a prescribed criteria.
5. (Original) The method of claim 1, wherein the content type has been determined for the session or for another packet associated with the session to not be at least one ruled out classification.
6. (Original) The method of claim 1, wherein the content type has been determined for the session or for another packet associated with the session to potentially be of a particular classification.

7. (Previously Presented) A computer product includes a non-transitory computer-readable medium, the non-transitory computer-readable medium having a set of stored instructions, an execution of which causes a process to be performed, the process comprising:

receiving a packet associated with a session;

determining whether a content type has been determined for the session or for another packet associated with the session; and

classifying the packet to be the content type based at least in part on a result from the act of determining, wherein when the content type of the session or another packet has not been determined but at least one potential classification has been ruled out with regard to the session or another packet associated with the session, the classifying is performed without consideration of the at least one potential classification that has been ruled out.

8. (Original) The computer product of claim 7, wherein the content type for the session or the other packet has been determined.

9. (Original) The computer product of claim 7, wherein the content type for the session or the other packet has not been determined, and the method further comprises receiving one or more additional packets.

10. (Original) The computer product of claim 9, wherein the act of classifying the packet comprises analyzing one of the one or more additional packets to determine if the one or more additional packets satisfy a prescribed criteria.

11. (Original) The computer product of claim 7, wherein the content type has been determined for the session or for another packet associated with the session to not be at least one ruled out classification.

12. (Original) The computer product of claim 7, wherein the content type has been determined for the session or for another packet associated with the session to potentially be of a particular classification.

13. (Previously Presented) A method for determining a type of content, comprising:

receiving a first packet from a first port, the first port adapted for receiving at least two types of content; and

determining a content type for the first packet or for a session with which the first packet is associated is not at least one content type, wherein data representative of the determination that the first packet is not at least one content type is stored and utilized in determining a classification for the session with which the first packet is associated when processing a second packet, the processing of the second packet not including consideration of the at least one content type.

14. (Original) The method of claim 13, wherein the content type is determined without using a port number that is associated with the first port.

15. (Original) The method of claim 13, wherein the content type is determined at least in part by analyzing the first packet.

16. (Original) The method of claim 15, wherein the act of analyzing the first packet comprises determining a characteristic associated with the first packet, the characteristic selected from the group consisting of a string pattern, a session classifier, a packet size, and a port number.

17. (Original) The method of claim 13, further comprising receiving a second packet, wherein the content type is determined by using the first and the second packets.

18. (Original) The method of claim 17, wherein the content type is determined by:

determining whether a characteristic of the first packet matches a first criteria; and

determining whether a characteristic of the second packet matches a second criteria.

REMARKS

This communication responds to the Final Office Action dated February 2, 2015.

No claims are amended, canceled, or added. As a result, claims 1-18 remain pending in this application.

Double Patenting Rejection

Claims 1-18 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 7,580,974, claims 1-17 of U.S. Patent No. 8,204,933, claims 1-14 of U.S. Patent No. 8,639,752 and claims 1-20 of U.S. Patent No. 8,693,348. Although the claims at issue are not identical, they are not patentably distinct from each other.

Applicant does not admit that claims 1-18 are obvious in view of U.S. Patent No. 7,580,974, 8,204,933, 8,639,752, and 8,693,348

Applicant previously submitted Terminal Disclaimers to render these rejections moot, but they were not entered as the Applicant was not previously identified on the Application Data Sheet in a manner that was recognized. Applicant notes that the Power of Attorney in this matter was also not entered for similar reasons. Substantially parallel with this filing, Applicant is filing a corrected application data sheet and is refiling the Power of Attorney and requesting reconsideration of the Terminal Disclaimers. Thus, in the event the present application is found to be allowable but for the present Double Patenting rejections, Applicant respectfully requests the courtesy of a telephone call to discuss the current status of these filings which may otherwise obviate a need for a further action including only these double patenting rejections. Applicant's representative, James D. Hallenbeck may be reached by telephone at (612) 373-6938.

The Rejection of Claims Under §§ 102 and 103

Claims 1-15 and 17-18 are rejected under pre-AIA 35 U.S.C. § 102(e) as allegedly being anticipated by Brandyburg et al. (US 2007/0011317).

Claims 16 is rejected under pre-AIA 35 U.S.C. § 103(a) as allegedly being unpatentable over Brandyburg in view of Yoakum et al. (US 2014/0198632).

Applicant respectfully traverses the 35 U.S.C. §§ 102(e) and 103(a) rejections as Brandyburg fails to provide a teaching or suggestion for all the claim elements for which it is asserted and Yoakum fails to cure those deficiencies.

For example, each of independent claims 1, 7, and 13 similarly include receiving a packet associated with a session, determining whether a content type has been determined for the session or for another packet associated with the session, and classifying the packet to be the content type based at least in part on the a result from the act of determining. Each of these independent claims further specifies that *when the content type of the session or another packet has not been determined but at least one potential classification has been ruled out with regard to the session or another packet associated with the session, the classifying is performed without consideration of the at least one potential classification that has been ruled out*. This is a classification exercise that does not consider a potential classification of a current packet based on the potential classification being ruled out with regard to previous processing of another packet.

The Office Action on page 5 asserts Brandyburg FIG. 4 with regard to several reference numbers including 425 and similarly in the Response to Arguments section on page 2 of the Office Action as providing such teachings. **(Applicant notes that it appears the intent was to assert FIG. 5A as the 400-series reference numbers noted in the Office Action actually appear in and are described with regard to FIG. 5A, contrary to conventional figure numbering practices. Applicant believes this intent was clear in the Office Action and points this out merely to ensure clarity in the record.)** However, the method illustrated in FIG. 5A is with regard to a received 410 packet that is processed. At 425 a decision is made as to whether an IP address and ports match a custom app. When the answer is yes, application flow data associated with a custom app application flow has been previously affirmatively identified. Similarly, when the answer is no, application flow data associated with custom app application flows have been previously affirmatively identified or the answer could not be no. This is an affirmative classification as yes or no. (Applicant notes that in a case where no data is available to perform the determination of 425, there would be no decision made at 425 and the assertion of 425 would fail to support the present

rejections. As such, no further consideration is given to that possibility herein.) So while when the next IP packet is initially received at 410 is unclassified, previous network flows considered at 425 have been identified to be associated with a particular custom app or a decision of YES or NO could not be made.

This is contrary to the explicit claim language of each of independent claims 1, 7, and 13 which provide that *when the content type of the session or another packet has not been determined*. This expressly provides that no such prior affirmative classification of the session or another packet has been previously made. The decision at 425 of Brandyburg relies on a prior, actual, and affirmative classification that is used to affirmatively determine whether the received next IP packet 410 matches a custom app, yes or no.

Each of these claims then continues to by providing that *at least one potential classification has been ruled out with regard to the session or another packet associated with the session ... without consideration of the at least one potential classification that has been ruled out*. This is not an affirmative classification of the packet or the session as the classification remains unknown, but it is known that the packet and session are not of at least one potential classification. This can be considered a maybe for the potential classifications that have not been ruled out and is somewhere between the yes/no decision at 425 of Brandyburg.

Further, at 425 in Brandyburg, the decision is made only with regard to the received next IP packet in view of custom app classifications without regard to a session of the received packet or with specific regard to another packet. Thus, when a subsequent next IP packet is received 410 in Brandyburg, the same analysis of the packet is performed including the decision at 425. This is also contrary to the explicit language of each of independent claims 1, 7, and 13 which process subsequently received packets *without consideration of the at least one potential classification that has been ruled out*. Brandyburg in failing to provide such a teaching or suggestion of foregoing consideration of ruled out classifications also fails to realize the benefits provided by the claimed embodiments, which as described in paragraph [0047] of the present application include consuming fewer resources in classifying later received packets.

Thus, Applicant respectfully submits that Brandyburg fails to anticipate each of independent claims 1, 7, and 13, as well as claims 2-6, 8-12, 14-15, and 17-18.

Yoakum is asserted for showing the additional elements of claim 16. However, Yoakum fails to cure the deficiencies of Brandyburg. Thus, as claim 16 depends indirectly from patentable independent claim 13, claim 16 is also patentable due at least to this dependence.

Thus, Applicant respectfully submits that independent claims 1, 7, and 13, as well as claims 2-6, 8-12, and 14-18 are patentable over Brandyburg and Yoakum both individually and in combination.

Withdrawal of the 35 U.S.C. §§ 102(e) and 103(a) rejections and allowance of claims 1-18 are respectfully requested.

CONCLUSION

Applicant respectfully submits that claims 1-18 remain pending, are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone the undersigned at (612) 373-6938 to facilitate prosecution of this application.

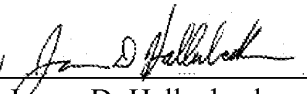
If necessary, please charge any additional fees or deficiencies, or credit any overpayments to Deposit Account No. 19-0743.

Respectfully submitted,

SCHWEGMAN LUNDBERG & WOESSNER, P.A.
P.O. Box 2938
Minneapolis, MN 55402--0938
(612) 373-6938

Date 2/2/2015

By



James D. Hallenbeck
Reg. No. 63,561

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	2831.012US4
		Application Number	Unknown
Title of Invention	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		
<p>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.</p> <p>This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</p>			

☐ **Secrecy Order 37 CFR 5.2**

<p>Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)</p>
--

Inventor Information:

Inventor 1: Shaohong Wei				
Legal Name				
Prefix	Given Name	Middle Name	Family Name	Suffix
	Shaohong		Wei	
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service				
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Address 2				
City	Sunnyvale	State/Province	CA	
Postal Code	94087	Country	United States of America	
Inventor 2: Zhong Qiang Chen				
Legal Name				
Prefix	Given Name	Middle Name	Family Name	Suffix
	Zhong Qiang		Chen	
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service				
City	Sunnyvale	State/Province	CA	Country of United States of America
Mailing Address of Inventor:				
Address 1	1428 Falcon Avenue			
Address 2				
City	Sunnyvale	State/Province	CA	
Postal Code	94087	Country	United States of America	
Inventor 3: Ping Ng				
Legal Name				
Prefix	Given Name	Middle Name	Family Name	Suffix
	Ping		Ng	

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	2831.012US4
		Application Number	Unknown
Title of Invention	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		
<p>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.</p> <p>This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</p>			

Residence Information (Select One)					
☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
City	Milpitas	State/Province	CA	Country of	United States of America
Mailing Address of Inventor:					
Address 1	424 Sandhurst Drive				
Address 2					
City	Milpitas	State/Province	CA		
Postal Code	95035	Country	United States of America		
Inventor 4: Gang Duan					
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Gang		Duan		
Residence Information (Select One)					
☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
City	San Jose	State/Province	CA	Country of	United States of America
Mailing Address of Inventor:					
Address 1	1733 Fumia Dr.				
Address 2					
City	San Jose	State/Province	CA		
Postal Code	95131	Country	United States of America		

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).	
☐ An Address is being provided for the correspondence information of this application.	
Customer Number	21186
Email Address	request@slwip.com

Application Information:

Title of the Invention	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		
Attorney Docket Number	2831.012US4	Small Entity Status Claimed	☐
Application Type	Non-Provisional		
Subject Matter	Utility - CON		

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	2831.012US4
		Application Number	Unknown
Title of Invention	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		
<p>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.</p> <p>This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</p>			

Suggested Class (if any)		Sub Class (if any)	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)	7	Suggested Figure for Publication (if any)	

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)
☐ Request Not to Publish. I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

<p>Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Enter either Customer Number or complete the Representative Name section below. If both sections are completed the Customer Number will be used for the Representative Information during processing.</p>			
Please Select One:	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	21186		

Domestic Benefit/National Stage Information:

<p>This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78(a)(2) or CFR 1.78(a)(4), and need not otherwise be made part of the specification.</p>			
Prior Application Status	Pending		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
This application	continuation	13/409,141	2012-03-01
Prior Application Status	Patented		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
13/409,141	continuation	12/503,100	2009-07-15
Prior Application Status	Patented		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
12/503,100	continuation	11/357,654	2006-02-16

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	2831.012US4
		Application Number	Unknown
Title of Invention	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		
<p>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.</p> <p>This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</p>			

Foreign Priority Information:

<p>This section allows for the applicant to claim benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(a).</p>			
Application Number	Country	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
			☐ Yes ☐ No

Authorization to Permit Access:

☒ Authorization to Permit Access to the Instant Application by the Participating Offices
<p>If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.</p> <p>In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.</p> <p>In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.</p>

Applicant Information:

<p>Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.</p>	
<p>Applicant: <u>Fortinet, Inc.</u></p>	
<p>If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.</p>	
☒ Assignee	☐ Legal Representative under 35 U.S.C. 117

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	2831.012US4
		Application Number	Unknown
Title of Invention	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		
<p>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.</p> <p>This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</p>			

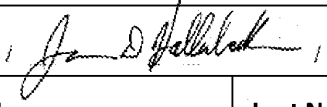
☐ Person to whom the inventor is obligated to assign		☐ Person who shows sufficient proprietary interest	
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:			
☐ Deceased		☐ Legally incapacitated	
Name of the Deceased or Legally Incapacitated Inventor :			
If the Assignee is an Organization check here: ☒			
Organization Name	<u>Fortinet, Inc.</u>		
Applicant Mailing Address Information:			
Address 1	<u>1090 Kifer Road</u>		
Address 2			
City	<u>Sunnyvale</u>	State/Province	<u>CA</u>
Country	<u>United States of America</u>	Postal Code	<u>94086</u>
Phone Number		Fax Number	
Email Address			

Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.				
Assignee: Fortinet, Inc.				
If the Assignee is an Organization check here. ☒				
Prefix	Given Name	Middle Name	Family Name	Suffix
Assignee Mailing Address Information:				
Address 1	1090 Kifer Road			
Address 2				
City	Sunnyvale	State/Province	CA	
Country	United States of America	Postal Code	94086	
Phone Number		Fax Number		
Email Address				

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	2831.012US4
		Application Number	Unknown
Title of Invention	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		
<p>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.</p> <p>This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</p>			

Signature:

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications					
Signature				Date (YYYY-MM-DD)	2/12/2015
First Name	James	Last Name	Hallenbeck	Registration Number	63,561

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-14**

RECORDATION FORM COVER SHEET
PATENTS ONLY

Atty Ref/Docket No.: 2831.012US1

Patent and Trademark Office

To the Director of the U.S. Patent and Trademark Office: Please record the attached original documents or copy thereof.

1. Name of conveying party(ies):

Shaohong Wei, Zhongqiang Chen, Ping Ng and Gang Duan

Additional name(s) of conveying party(ies) attached?

[] Yes [X] No

3. Nature of conveyance:

[X] Assignment

[] Merger

[] Security Agreement [] Change of Name

[] Other

Execution Date: February 18, 2009, February 18, 2009,
February 17, 2009, February 17, 2009

2. Name and address of receiving party(ies):

Name: Fortinet, Inc.

Street Address: 1090 Kifer Road

City: Sunnyvale State: CA Zip: 94086

Additional name(s) & address(es) attached? [] Yes [X] No

4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution date of the application is:

A. Patent Application No.(s)

B. Patent No.(s)

Serial No. 11/357,654, filed February 16, 2006

Additional numbers attached? [] Yes [X] No

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: James D. Hallenbeck

Address:

Schwegman, Lundberg & Woessner, P.A.
P.O. Box 2938
Minneapolis, MN 55402-0938

6. Total number of applications and patents involved: 1

7. Total fee (37 CFR 3.41): \$ 40.00

[] Enclosed

[X] Authorized to be charged to deposit account
19-0743

8. Please charge any additional fees or credit any over payments to our Deposit Account No.: 19-0743

DO NOT USE THIS SPACE

9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

James D. Hallenbeck/Reg. No. 63,561

Name of Person Signing


Signature

3/16/2009

Date

Total number of pages including cover sheet: 6

Mail documents to be recorded with required cover sheet information to:

Commissioner of Patents and Trademarks
Mail Stop Assignment Recordation Services
P.O. Box 1450
Alexandria, VA 22313-1450

ASSIGNMENT

WHEREAS, We, Shaohong Wei, residing at 1428 Falcon Avenue, Sunnyvale, CA 94087, and Zhongqiang Chen, residing at 1428 Falcon Avenue, Sunnyvale, CA 94087, and Ping Ng, residing at 424 Sandhurst Drive, Milpitas, CA 95035, and Gang Duan, residing at 39493 Gallaudet Drive #247, Fremont, CA 94538, made certain new and useful inventions and improvements for which we filed an application for Letters Patent of the United States on February 16, 2006, which application was assigned U.S. patent application serial number 11/357,654, and is entitled SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION;

AND WHEREAS, Fortinet, Inc., a corporation organized and existing under and by virtue of the laws of the State of Delaware, and having an office and place of business at 1090 Kifer Road, Sunnyvale, CA 94086 (hereinafter "Assignee"), is desirous of acquiring the entire right, priority right, title and interest in and to said inventions, improvements and application and in and to the Letters Patent to be obtained therefor;

NOW, THEREFORE, to all whom it may concern, be it known that for good and valuable consideration, the receipt and sufficiency whereof is hereby acknowledged, we have sold, assigned, and transferred, and by these presents do sell, assign and transfer unto said Assignee, its successors or assigns, the entire right, title and interest for all countries in and to all inventions and improvements disclosed in the aforesaid application, and in and to the said application, all divisions, continuations, continuations-in-part, or renewals thereof, all Letters Patent which may be granted there from, and all reissues or extensions of such patents, and in and to any and all applications which have been or shall be filed in any foreign countries for Letters Patent on the said inventions and improvements, including an assignment of all rights under the provisions of the International Convention, and all Letters Patent of foreign countries which may be granted there from; and we do hereby authorize and request the Commissioner of Patents and Trademarks to issue any and all United States Letters Patent for the aforesaid inventions and improvements to the said Assignee as the assignee of the entire right, title and interest in and to the same, for the use of the said Assignee, its successors and assigns.

AND, for the consideration aforesaid, we do hereby agree that we and our executors and legal representatives will make, execute and deliver any and all other instruments in writing including any and all further application papers, affidavits, assignments and other documents, and will communicate to said Assignee, its successors and representatives all facts known to us relating to said improvements and the history thereof and will testify in all legal proceedings and generally do all things which may be necessary or desirable more effectually to secure to and vest in said Assignee, its successors or assigns the entire right, title and interest in and to the said improvements, inventions, applications, Letters Patent, rights, titles, benefits, privileges and advantages hereby sold, assigned and conveyed, or intended so to be.

AND, furthermore, we covenant and agree with said Assignee, its successors and assigns, that no assignment, grant, mortgage, license or other agreement affecting the rights and property herein conveyed has been made to others by us and that full right to convey the same as herein expressed is possessed by us.

IN TESTIMONY WHEREOF, I have hereunto set my hand this 18th day of February,
2009.

SJ Wei

Shaohong Wei

State of California

County of Santa Clara

On this Feb. 18th, 2009 before me, Jun Min, Notary Public personally
appeared Shaohong Wei

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the
within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized
capacity(ies), and that by his/her/their signature(s) on the instrument the persons(s), or the entity upon behalf of
which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is
true and correct.

WITNESS my hand and official seal.

Signature [Signature] (Seal)



IN TESTIMONY WHEREOF, I have hereunto set my hand this 18th day of February,
2009.

ZQ Chen
Zhongqiang Chen

State of California

County of Santa Clara

On this Feb 18th 2009 before me, Jun Min, Notary Public personally
appeared Zhangqiang Chen

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the
within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized
capacity(ies), and that by his/her/their signature(s) on the instrument the persons(s), or the entity upon behalf of
which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is
true and correct.

WITNESS my hand and official seal.

Signature [Signature] (Seal)



IN TESTIMONY WHEREOF, I have hereunto set my hand this 17th day of Feb
2009.

[Signature]
Ping Ng

State of California

County of Santa Clara

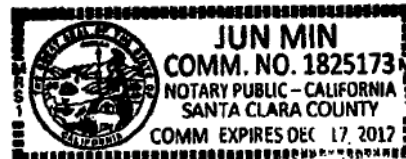
On this Feb 17th, 2009 before me, Jun Min, Notary Public personally
appeared Ping Ng

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the
within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized
capacity(ies), and that by his/her/their signature(s) on the instrument the persons(s), or the entity upon behalf of
which the person(s) acted, executed the instrument.

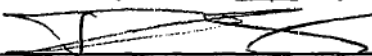
I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is
true and correct.

WITNESS my hand and official seal.

Signature [Signature] (Seal)



IN TESTIMONY WHEREOF, I have hereunto set my hand this 17th day of Feb.
2009.



Gang Duan

State of California

County of Santa Clara

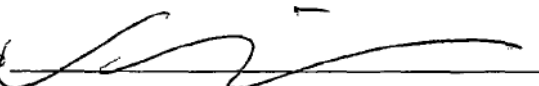
On this Feb. 17th, 2009 before me, Jun Min, Notary Public personally
appeared Gang Duan

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the
within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized
capacity(ies), and that by his/her/their signature(s) on the instrument the persons(s), or the entity upon behalf of
which the person(s) acted, executed the instrument.

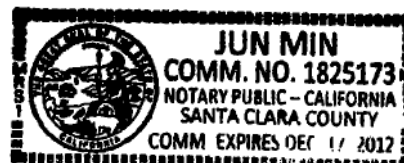
I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is
true and correct.

WITNESS my hand and official seal.

Signature



(Seal)



POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number

Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)



I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above:

21186

OR



I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:



The address associated with the above-mentioned Customer Number

OR



The address associated with Customer Number:

OR

Firm or
Individual Name

Address

City

State

Zip

Country

Telephone

Email

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Fortinet, Inc.



Inventor or Joint Inventor (title not required below)



Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)



Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)



Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature

Date (Optional)

Name

Title

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.



Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Shaohong Wei

Application No./Patent No.: 13/795,283

Filed/Issue Date: March 12, 2013

Titled: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Fortinet, Inc. a Corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☒ The assignee of the entire right, title, and interest.
2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):
 - ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.
 - ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (e.g., bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

- A. ☒ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 022421, Frame 0014, or for which a copy thereof is attached.
- B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
 Reel _____, Frame _____, or for which a copy thereof is attached.

2. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
 Reel _____, Frame _____, or for which a copy thereof is attached.

[Page 1 of 2]

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

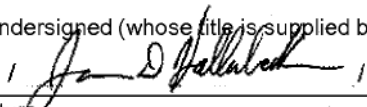
The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.☐ Additional documents in the chain of title are listed on a supplemental sheet(s).☐ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.



Signature7/9/2014

DateJames D. Hallenbeck

Printed or Typed NameUSPTO Reg. No. 63,561

Title or Registration Number

[Page 2 of 2]

S/N 13/795,283

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Shaohong Wei et al.

Examiner: Kevin Harper

Serial No.: 13/795,283

Group Art Unit: 2462

Filed: March 12, 2013

Docket No.: 2831.012US4

Customer No.: 21186

Confirmation No.: 4507

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

TERMINAL DISCLAIMER

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I, James D. Hallenbeck, am an attorney of record for the above-identified patent application as evidenced by the Power of Attorney filed in the present application on January 16, 2015. This Terminal Disclaimer is submitted on behalf of Fortinet, Inc., the assignee of the present invention. As an attorney of record, I am empowered to act on behalf of the assignee and, in accordance with 37 C.F.R. § 1.321(b)(1)(iv), to sign this Terminal Disclaimer.

Certificate Under 37 C.F.R. § 3.73(b)

The assignee, Fortinet, Inc., hereby certifies that it is the owner of the entire right, title and interest in and to both the above-identified application (U.S. Application Serial No. 13/795,283) and to U.S. Patent No. 7,580,974, by virtue of the executed and filed assignment transferring title of both of these applications. The assignment for U.S. Patent No. 7,580,974 was recorded on February 16, 2006 at Reel 017601, Frames 0198-0200. That assignment assigned the application underlying U.S. Patent No. 7,580,974, as well as, *inter alia*, all continuations and divisionals based upon that application. The above-identified application is a continuation of U.S. Patent No. 8,639,752, which is a continuation of U.S. Patent No. 8,204,933, which is a continuation of U.S. Patent No. 7,580,974, and was thus assigned to the assignee by the identified assignment.

The undersigned representative of the assignee has reviewed the evidentiary documents of title and certifies that to the best of assignee's knowledge and belief, title is in the assignee seeking to take the action set forth in this disclaimer.

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TERMINAL DISCLAIMER

Serial Number: 13/795,283

Filing Date: March 12, 2013

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Page 3

Dkt: 2831.012US4

Fee Status

Please charge Deposit Account 19-0743 in the amount of \$160.00 which is required under 37 C.F.R. § 1.20(d) to file a statutory disclaimer. The Commissioner of Patents and Trademarks is hereby authorized to charge any additional fees or deficiencies, or credit any overpayments to Deposit Account No. 19-0743.

Respectfully submitted,

SCHWEGMAN LUNDBERG & WOESSNER, P.A.
P.O. Box 2938
Minneapolis, MN 55402--0938
(612) 373-6938

Dec 22, 2014
Date _____

By /  /
James D. Hallenbeck
Reg. No. 63,561

Electronic Acknowledgement Receipt

EFS ID:	21489575
Application Number:	13795283
International Application Number:	
Confirmation Number:	4507
Title of Invention:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
First Named Inventor/Applicant Name:	Shaohong Wei
Customer Number:	21186
Filer:	Gregory M. Stark/John Gustav-Wrathall
Filer Authorized By:	Gregory M. Stark
Attorney Docket Number:	2831.012US4
Receipt Date:	12-FEB-2015
Filing Date:	12-MAR-2013
Time Stamp:	18:12:06
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2831012US4_resp_021215.pdf	3500875 8f69ea2dea72fbfd531d7a47b10d194a13a634	yes	36

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Miscellaneous Incoming Letter	1	1
	Response After Final Action	2	2
	Claims	3	5
	Applicant Arguments/Remarks Made in an Amendment	6	9
	Application Data Sheet	10	15
	Miscellaneous Incoming Letter	16	21
	Miscellaneous Incoming Letter	22	24
	Terminal Disclaimer Filed	25	27
	Terminal Disclaimer Filed	28	30
	Terminal Disclaimer Filed	31	33
	Terminal Disclaimer Filed	34	36

Warnings:

Information:

Total Files Size (in bytes):	3500875
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Shaohong Wei et al.

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Docket No.: 2831.012US4

Filed: March 12, 2013

Examiner: Kevin Harper

Customer No.: 21186

Serial No.: 13/795,283

Due Date: April 2, 2015

Group Art Unit: 2462

Confirmation No.: 4507

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

We are transmitting herewith the following attached items (as indicated with an "X"):

- ☒ Amendment and Response under 37 C.F.R. § 1.116 (8 pgs.)
- ☒ Updated Application Data Sheet (6 pgs)
- ☒ Copy of Assignment as filed (6 pgs)
- ☒ Copy of Power of Attorney as filed (3 pgs)
- ☒ Terminal Disclaimer over 7,580,974 (3 pgs.)
- ☒ Terminal Disclaimer over 8,204,933 (3 pgs.)
- ☒ Terminal Disclaimer over 8,639,752 (3 pgs.)
- ☒ Terminal Disclaimer over 8,693,348 (3 pgs.)
- ☒ The fees for the Terminal Disclaimers were paid with the Response filed December 22, 2014. If additional fees are needed, authorization is given to charge Deposit Account 19-0743 in any amount necessary

If not provided for in a separate paper filed herewith, please consider this a PETITION FOR EXTENSION OF TIME for sufficient number of months to enter these papers and please charge any additional fees or credit overpayment to Deposit Account No. 19-0743. If applicable, any papers or fees supplied herewith are considered to be timely filed pursuant to 37 C.F.R. § 1.7(a), the response period falling on a Federal Holiday, Saturday or Sunday being extended to the next succeeding business day.

SCHWEGMAN LUNDBERG & WOESSNER, P.A.

Customer No.: 21186

By: _____



James D. Hallenbeck

Reg. No. 63,561

S/N 13/795,283

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Shaohong Wei et al.

Examiner: Kevin Harper

Serial No.: 13/795,283

Group Art Unit: 2462

Filed: March 12, 2013

Docket No.: 2831.012US4

Customer No.: 21186

Confirmation No.: 4507

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TERMINAL DISCLAIMER

MS Amendment

Commissioner for Patents

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The undersigned representative of the assignee has reviewed the evidentiary documents of title and certifies that to the best of assignee's knowledge and belief, title is in the assignee seeking to take the action set forth in this disclaimer.

TERMINAL DISCLAIMER

Serial Number: 13/795,283

Filing Date: March 12, 2013

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Page 2

Dkt: 2831.012US4

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Filing Date: March 12, 2013

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Respectfully submitted,

SCHWEGMAN LUNDBERG & WOESSNER, P.A.

P.O. Box 2938

Minneapolis, MN 55402--0938

(612) 373-6938

Dec 22, 2014
Date _____

By /  /
James D. Hallenbeck
Reg. No. 63,561

S/N 13/795,283

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Shaohong Wei et al.

Examiner: Kevin Harper

Serial No.: 13/795,283

Group Art Unit: 2462

Filed: March 12, 2013

Docket No.: 2831.012US4

Customer No.: 21186

Confirmation No.: 4507

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

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(612) 373-6938

Dec 22, 2014
Date _____

By /  /
James D. Hallenbeck
Reg. No. 63,561

S/N 13/795,283

PATENT

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Inventor(s): Shaohong Wei et al.

Examiner: Kevin Harper

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Dec 22, 2014
Date _____

By /  /
James D. Hallenbeck
Reg. No. 63,561

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875				Application or Docket Number 13/795,283		Filing Date 03/12/2013		☐ To be Mailed	
ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO									
APPLICATION AS FILED – PART I									
(Column 1)		(Column 2)							
FOR		NUMBER FILED		NUMBER EXTRA		RATE (\$)		FEE (\$)	
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))		N/A		N/A		N/A			
☐ SEARCH FEE (37 CFR 1.16(k), (j), or (m))		N/A		N/A		N/A			
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))		N/A		N/A		N/A			
TOTAL CLAIMS (37 CFR 1.16(i))		minus 20 = *				X \$ =			
INDEPENDENT CLAIMS (37 CFR 1.16(h))		minus 3 = *				X \$ =			
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))		If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).							
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))									
* If the difference in column 1 is less than zero, enter "0" in column 2.						TOTAL			
APPLICATION AS AMENDED – PART II									
(Column 1)		(Column 2)		(Column 3)					
AMENDMENT	02/12/2015	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	* 18	Minus	** 20	= 0	X \$80 =		0	
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X \$420 =		0	
	☐ Application Size Fee (37 CFR 1.16(s))								
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE		0	
(Column 1)		(Column 2)		(Column 3)					
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$ =			
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$ =			
	☐ Application Size Fee (37 CFR 1.16(s))								
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE			
<p>* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.</p>									

LIE
/STEFANIE BRYCE/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/795,283	03/12/2013	Shaohong Wei	2831.012US4	4507
21186 7590 02/02/2015 SCHWEGMAN LUNDBERG & WOESSNER, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402			EXAMINER HARPER, KEVIN C	
			ART UNIT 2462	PAPER NUMBER
			NOTIFICATION DATE 02/02/2015	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@slwip.com
SLW@blackhillsip.com

Office Action Summary	Application No. 13/795,283	Applicant(s) WEI ET AL.	
	Examiner Kevin C. Harper	Art Unit 2462	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 22 December 2014.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☒ Claim(s) 1-18 is/are pending in the application.
5a) Of the above claim(s) ____ is/are withdrawn from consideration.

6) ☐ Claim(s) ____ is/are allowed.

7) ☒ Claim(s) 1-18 is/are rejected.

8) ☐ Claim(s) ____ is/are objected to.

9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10) ☐ The specification is objected to by the Examiner.

11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some** c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. ____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
Paper No(s)/Mail Date ____.

3) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.

4) ☐ Other: ____.

The present application is being examined under the pre-AIA first to invent provisions.

Response to Arguments

Applicants' arguments filed 22 December 2014 with respect to the rejection under 35 USC 101 have been fully considered and are persuasive. The rejection has been withdrawn.

Applicants' remaining arguments have been fully considered but they are not persuasive (see also the terminal disclaimer section below).

1. Applicants argued that Brandyburg does not disclose ruling out a potential classification for a session and performing classification without consideration of the ruled out classification. However, Examiner disagrees. Brandyburg discloses that a ruled out classification for a packet/session is not considered further (for example fig. 4, step 425, NO rules out a custom app from consideration where step 435 determines whether the app is from a known ports table or an "other IP" app).

Terminal Disclaimer

1. This application was filed on or after September 16, 2012. The party identified in the terminal disclaimer is not the applicant of record. A request to change the applicant under 37 CFR 1.46(c) must be filed and must include an application data sheet specifying the applicant in the applicant information section and comply with 37 CFR 3.71 and 3.73. To be reconsidered, the terminal disclaimer must be filed with the request under 37 CFR 1.46(c). See the terminal disclaimer disapproval (DISQ 01/12/2015).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the claims at issue are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the reference application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO internet Web site contains terminal disclaimer forms which may be used. Please visit <http://www.uspto.gov/forms/>. The filing date of the application will determine what form should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and

approved immediately upon submission. For more information about eTerminal Disclaimers, refer to <http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp>.

Claims 1-18 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 7,580,974, claims 1-17 of U.S. Patent No. 8,204,933, claims 1-14 of U.S. Patent No. 8,639,752 and claims 1-20 of U.S. Patent No. 8,693,348. Although the claims at issue are not identical, they are not patentably distinct from each other.

1. Regarding claims 1-18, each of the prior patents discloses determining a content type of a session based on a received packet. However, the claims of the prior patents additionally recite limitations such as potential classifications and using two packets to determine classification. In removing the additional limitations, the scope of the claims is merely broadened by eliminating elements and their functions. It has been held that omission of an element and its function is an obvious expedient if the remaining elements perform the same function as before. In re Karlson, 136 USPQ 184 (CCPA). Also note Ex parte Rainu, 168 USPQ 365 (Bd. App. 1969) (omission of a reference element whose function is not needed would be obvious to one skilled in the art). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to not recite the additional limitations.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-15 and 17-18 are rejected under pre-AIA 35 U.S.C. 102(e) as being anticipated by Brandyburg et al. (US 2007/0011317).

2. Regarding claims 1-2, 6-8 and 12-13 and 15, Brandyburg discloses a method for determining a type of content (fig. 4, step 415; para. 45, first sentence). The method comprises receiving a packet associated with a session (step 410; para. 44, last three sentences; note: packet of a flow; fig. 3, item 330), determining whether a content type has been determined for the session (step 420) and classifying the packet/session to be the content type based on the determining (steps 422, 440, 445 or 460; fig. 2; para. 23, second through fourth sentences; para. 23, last fourteen lines; para. 46, lines 7-8). A ruled out classification is not considered further (for example fig. 4, step 425, NO rules out both a custom app from consideration where step 435 determines whether the app is from a known ports table or an "other IP" app). Further regarding claims 6 and 13, the classification is potentially determined (steps 425, 430 and 435) which rules out other classifications (note: a custom app is not an "other IP" app or an app from the well-known ports table). Further regarding claim 7, the method is implemented by a computer product (para. 20, first sentence). Further regarding claim 13, the monitoring device includes a network port (figs. 1 and 2).

3. Regarding claims 3-4, 9-10 and 17-18, the content type has not been determined (step 420, NO) and additional packets are received and analyzed to determine if they satisfy prescribed criteria (loop back to step 410, 415 and 420). The packets are further examined to determine content type of a session (para. 48, first sentence; fig. 5B, all steps; note: port hopping for a flow and determining a child application for a flow based on subsequent packets).

Art Unit: 2462

4. Regarding claims 5 and 11, the content type is not at least one ruled out classification (fig. 4; fig. 5, steps 422, 440, 445 as opposed to step 450; note: for example, when an application is known the “other IP” application type is ruled out).

5. Regarding claim 14, a port number of a port on the monitoring device is not used (fig. 5A, step 415; note: the source and destination ports are used whereas the monitoring device is intermediary within the network; para. 44, lines 9-10; note: a port number need not be used to determine classification).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 16 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Brandyburg in view of Yoakum et al. (US 2014/0198632).

6. Brandyburg does not disclose analyzing a packet based on a characteristic selected from the group consisting of a string pattern, a session classifier, a packet size and a port number. However, Yoakum discloses analyzing a packet base on any packet attributes as desired (para. 24, last sentence). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to analyze a packet based on a specific group of packet characteristics in the invention of Brandyburg in order to classify a packet as desired, as is known in the art (Yoakum, para. 24).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Harper whose telephone number is 571-272-3166. The examiner can normally be reached weekdays from 11:00 AM to 7:00 PM ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yemane Mesfin, can be reached at 571-272-3927. The centralized fax number for the Patent Office is 571-273-8300. For non-official communications, the examiner's personal fax number is 571-273-3166 and the examiner's e-mail address is kevin.harper@uspto.gov.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications associated with a customer number is available through Private PAIR only. For

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more information about the PAIR system, see portal.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin C. Harper/

Primary Examiner, Art Unit 2462

Search Notes 	Application/Control No. 13795283	Applicant(s)/Patent Under Reexamination WEI ET AL.
	Examiner KEVIN C HARPER	Art Unit 2462

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
inventorship search on PALM	9/28/14	kch
EAST - see printout	9/28/14	kch
updated above searches	1/26/15	kch

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

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Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)	<i>Complete if Known</i>	
	Application Number	13/795,283
	Filing Date	March 12, 2013
	First Named Inventor	Shaohong Wei
	Group Art Unit	2462
	Examiner Name	Kevin Harper
Sheet 1 of 1	Attorney Docket No: 2831.012US4	

US PATENT DOCUMENTS			
Examiner Initial *	USP Document Number	Publication Date	Name of Patentee or Applicant of cited Document
	US-20140078907A1	3/20/2014	Wei, Shaohong, et al.
	US-20140079056A1	3/20/2014	Wei, Shaohong, et al.

FOREIGN PATENT DOCUMENTS				
Examiner Initial *	Foreign Document Number	Publication Date	Name of Patentee or Applicant of cited Document	T 1

OTHER DOCUMENTS – NON PATENT LITERATURE DOCUMENTS			
Examiner Initial *	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.		T 1
	"Application Serial No. 14/087,791, Non Final Office Action mailed 10-02-14", 10 pgs		

EXAMINER /Kevin Harper/ (01/26/2015)

DATE CONSIDERED

* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant is to place a check mark here if English language Translation is attached

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /K.H./

Application Number 	Application/Control No. 13/795,283	Applicant(s)/Patent under Reexamination WEI ET AL.	
Document Code - DISQ		Internal Document – DO NOT MAIL	

TERMINAL DISCLAIMER	☐ APPROVED	☒ DISAPPROVED
Date Filed : 12/22/14	This patent is subject to a Terminal Disclaimer	

Approved/Disapproved by:

4 - Tds all disapproved:

Td identifies a party who is not the applicant (for applications filed on/after 9/16/12), see FP 14.26.10.

Below is what needs to be done by Applicant to remedy the defects:

A request under 37 CFR 1.46(c) to change the applicant needs to be filed, which is:

1. A request, signed by a 1.33(b) party,
2. A corrected ADS (37 CFR 1.76(c) that identifies the "NEW" Applicant in the applicant information, and is Underlined since its new, and,
3. A 3.73(c) statement showing chain of title to the New Applicant.
4. We need a POA that gives power to the attorney who is signing the Td's,
5. Along with another copy of the Td's.

NO FEES are required.

Angie Walker

S/N 13/795,283

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s):	Shaohong Wei et al.	Examiner:	Kevin Harper
Serial No.:	13/795,283	Group Art Unit:	2462
Filed:	March 12, 2013	Docket No.:	2831.012US4
Customer No.:	21186	Confirmation No.:	4507
Title:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		

AMENDMENT & RESPONSE UNDER 37 C.F.R. § 1.111

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

In response to the Office Action dated October 7, 2014, please amend the application as follows:

IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A method for determining a type of content, comprising:
 receiving a packet associated with a session;
 determining whether a content type has been determined for the session or for ~~an other~~
another packet associated with the session; and
 classifying the packet to be the content type based at least in part on a result from the act of
determining, wherein when the content type of the session or another packet has not been determined
but at least one potential classification has been ruled out with regard to the session or another packet
associated with the session, the classifying is performed without consideration of the at least one
potential classification that has been ruled out.
2. (Original) The method of claim 1, wherein the content type for the session or the other packet
has been determined.
3. (Original) The method of claim 1, wherein the content type for the session or the other packet
has not been determined, and the method further comprises receiving one or more additional packets.
4. (Original) The method of claim 3, wherein the act of classifying the packet comprises analyzing
one of the one or more additional packets to determine if the one or more additional packets satisfy a
prescribed criteria.
5. (Original) The method of claim 1, wherein the content type has been determined for the session
or for another packet associated with the session to not be at least one ruled out classification.
6. (Original) The method of claim 1, wherein the content type has been determined for the session
or for another packet associated with the session to potentially be of a particular classification.

7. (Currently Amended) A computer product includes a non-transitory computer-readable medium, the non-transitory computer-readable medium having a set of stored instructions, an execution of which causes a process to be performed, the process comprising:

receiving a packet associated with a session;

determining whether a content type has been determined for the session or for ~~an other~~ another packet associated with the session; and

classifying the packet to be the content type based at least in part on a result from the act of determining, wherein when the content type of the session or another packet has not been determined but at least one potential classification has been ruled out with regard to the session or another packet associated with the session, the classifying is performed without consideration of the at least one potential classification that has been ruled out.

8. (Original) The computer product of claim 7, wherein the content type for the session or the other packet has been determined.

9. (Original) The computer product of claim 7, wherein the content type for the session or the other packet has not been determined, and the method further comprises receiving one or more additional packets.

10. (Original) The computer product of claim 9, wherein the act of classifying the packet comprises analyzing one of the one or more additional packets to determine if the one or more additional packets satisfy a prescribed criteria.

11. (Original) The computer product of claim 7, wherein the content type has been determined for the session or for another packet associated with the session to not be at least one ruled out classification.

12. (Original) The computer product of claim 7, wherein the content type has been determined for the session or for another packet associated with the session to potentially be of a particular classification.

13. (Currently Amended) A method for determining a type of content, comprising:
- receiving a first packet from a first port, the first port adapted for receiving at least two types of content; and
 - determining a content type for the first packet or for a session with which the first packet is associated is not at least one content type, wherein data representative of the determination that the first packet is not at least one content type is stored and utilized in determining a classification for the session with which the first packet is associated when processing a second packet, the processing of the second packet not including consideration of the at least one content type.
14. (Original) The method of claim 13, wherein the content type is determined without using a port number that is associated with the first port.
15. (Original) The method of claim 13, wherein the content type is determined at least in part by analyzing the first packet.
16. (Original) The method of claim 15, wherein the act of analyzing the first packet comprises determining a characteristic associated with the first packet, the characteristic selected from the group consisting of a string pattern, a session classifier, a packet size, and a port number.
17. (Original) The method of claim 13, further comprising receiving a second packet, wherein the content type is determined by using the first and the second packets.
18. (Original) The method of claim 17, wherein the content type is determined by:
- determining whether a characteristic of the first packet matches a first criteria; and
 - determining whether a characteristic of the second packet matches a second criteria.

REMARKS

This communication responds to the Office Action dated October 7, 2014.

Claims 1, 7, and 13 are amended and no claims are canceled or added. As a result, claims 1-18 remain pending in this application.

Double Patenting Rejection

Claims 1-18 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 7,580,974, claims 1-17 of U.S. Patent No. 8,204,933, claims 1-14 of U.S. Patent No. 8,639,752 and claims 1-20 of U.S. Patent No. 8,693,348. Although the claims at issue are not identical, they are not patentably distinct from each other.

Applicant does not admit that claims are obvious in view of U.S. Patent No. 7,580,974, 8,204,933, 8,639,752, and 8,693,348. A Terminal Disclaimers in compliance with 37 C.F.R. § 1.321(b) is being submitted to obviate this rejection.

The Rejection of Claims Under § 101

Claims 7-12 are rejected under 35 U.S.C. § 101 because the claims are allegedly directed to non-statutory subject matter. Applicant has amended independent claim 7 to provide that the computer-readable medium is “non-transitory” as suggested in the Office Action. Withdrawal of the 35 U.S.C. § 101 rejection is respectfully requested.

The Rejection of Claims Under §§ 102 and 103

Claims 1-15 and 17-18 are rejected under pre-AIA 35 U.S.C. § 102(e) as allegedly being anticipated by Brandy burg et al. (US 2007/0011317).

Claims 16 is rejected under pre-AIA 35 U.S.C. § 103(a) as allegedly being unpatentable over Brandyburg in view of Yoakum et al. (US 2014/0198632).

Applicant has similarly amended each of independent claims 1, 7, and 13 to clarify the patentable nature of the claims. In particular, Applicant has amended each of independent claims in a similar manner to highlight that when the content type of the session or another packet has not been determined but at least one potential classification has been ruled out with regard to the session or another packet associated with the session, *the classifying is performed without consideration of the at least one potential classification that has been ruled out.*

This amendment clarifies that the classification of a second packet is performed independently of the classification of the first packet, but without consideration of any classifications that were ruled out in determining a classification of the first packet. This is illustrated in the present application in FIG. 4 where a plurality of possible classifications are considered and at least one is ruled out and a subset of those classifications remains possible after determining a potential classification of a session. Only the potential classifications are considered with regard to subsequent packets in the session. For example, if classifications A, B, and C are possible and the processing of the first packet rules out A, in subsequent classification processing of a later received packet, only B and C are considered... A is no longer considered as it has been ruled out. The application as filed supports these amendments and provides greater illustration and description, such as in FIG. 2 and paragraphs [0028] et seq. and FIG. 4 and paragraphs [0041]-[0047].

Applicant respectfully submits that Brandyburg fails to provide such a teaching or suggestion. Instead, while packets of a session may be classified per a previous classification of a session, there is no description or other teaching or suggestion in Brandyburg where a potential classification of one packet that rules out at least one possible classification is taken into account in classifying a subsequently received packet. The decisions that may result in YES and NO at

420, 425, 430, and 435 in FIG. 5A of Brandyburg are only with regard to a single packet and are performed with regard to each packet of an unclassified session regardless of what decisions were made in processing other packets.

Thus, Applicant respectfully submits that amended independent claims 1, 7, and 13 are not anticipated by Brandyburg and are therefore patentable.

Yoakum is asserted for showing the additional elements of claim 16. However, Yoakum fails to cure the deficiencies of Brandyburg. Thus, as claim 16 depends indirectly from patentable independent claim 13, claim 16 is also patentable due at least to this dependence.

Entry of the amendments, withdrawal of the 35 U.S.C. §§ 102(e) and 103(a) rejections, and allowance of claims 1-18 are respectfully requested.

CONCLUSION

Applicant respectfully submits that claims 1-18 remain pending, are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone the undersigned at (612) 373-6938 to facilitate prosecution of this application.

If necessary, please charge any additional fees or deficiencies, or credit any overpayments to Deposit Account No. 19-0743.

Respectfully submitted,

SCHWEGMAN LUNDBERG & WOESSNER, P.A.
P.O. Box 2938
Minneapolis, MN 55402--0938
(612) 373-6938

Date Dec 22, 2014

By / James Hallenbeck /
James D. Hallenbeck
Reg. No. 63,561

Electronic Patent Application Fee Transmittal				
Application Number:		13795283		
Filing Date:		12-Mar-2013		
Title of Invention:		SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		
First Named Inventor/Applicant Name:		Shaohong Wei		
Filer:		Gregory M. Stark/John Gustav-Wrathall		
Attorney Docket Number:		2831.012US4		
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Statutory or Terminal Disclaimer	1814	4	160	640

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
Total in USD (\$)				820

Electronic Acknowledgement Receipt

EFS ID:	21043310
Application Number:	13795283
International Application Number:	
Confirmation Number:	4507
Title of Invention:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
First Named Inventor/Applicant Name:	Shaohong Wei
Customer Number:	21186
Filer:	Gregory M. Stark/John Gustav-Wrathall
Filer Authorized By:	Gregory M. Stark
Attorney Docket Number:	2831.012US4
Receipt Date:	22-DEC-2014
Filing Date:	12-MAR-2013
Time Stamp:	23:14:50
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$820
RAM confirmation Number	8513
Deposit Account	190743
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)					
Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)					
Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)					
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2831012US4_resp_122214.pdf	5492448	yes	23
			31c155a53be0caf47ab2f232e3baaaefecf52bd		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Miscellaneous Incoming Letter		1	1	
	Transmittal Letter		2	3	
	Information Disclosure Statement (IDS) Form (SB08)		4	4	
	Terminal Disclaimer Filed		5	7	
	Terminal Disclaimer Filed		8	10	
	Terminal Disclaimer Filed		11	13	
	Terminal Disclaimer Filed		14	16	
	Amendment/Req. Reconsideration-After Non-Final Reject		17	17	
	Claims		18	20	
	Applicant Arguments/Remarks Made in an Amendment		21	23	
	Warnings:				
Information:					
2	Non Patent Literature	2831012US5_OARN_10-02-14.pdf	387115	no	10
			e87e76f35352773683b99f93ac92cccae6c36816		
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	32539	no	2
			4c73f2093636089da5bba16d0d9165781af354ff1		
Warnings:					

Information:	
Total Files Size (in bytes):	5912102
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>	

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Shaohong Wei et al.

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Docket No.: 2831.012US4

Serial No.: 13/795,283

Filed: March 12, 2013

Due Date: January 7, 2015

Examiner: Kevin Harper

Group Art Unit: 2462

Customer No.: 21186

Confirmation No.: 4507

Mail Stop Amendment

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

We are transmitting herewith the following attached items (as indicated with an "X"):

- ☒ Amendment and Response under 37 C.F.R. § 1.111 (7 pgs.)
- ☒ Supplemental Information Disclosure Statement (2 pgs.), Form 1449 (1 pg.) Copies of Cited References (1).
- ☒ Authorization to charge Deposit Account 19-0743 in the amount of \$180.00 to cover the fee for consideration of Information Disclosure Statement under 37 C.F.R. § 1.97(c).
- ☒ Terminal Disclaimer over 7,580,974 (3 pgs.)
- ☒ Terminal Disclaimer over 8,204,933 (3 pgs.)
- ☒ Terminal Disclaimer over 8,639,752 (3 pgs.)
- ☒ Terminal Disclaimer over 8,693,348 (3 pgs.)
- ☒ Authorization to charge Deposit Account 19-0743 in the amount of \$640.00 to cover the fee for four Terminal Disclaimers

If not provided for in a separate paper filed herewith, please consider this a PETITION FOR EXTENSION OF TIME for sufficient number of months to enter these papers and please charge any additional fees or credit overpayment to Deposit Account No. 19-0743. If applicable, any papers or fees supplied herewith are considered to be timely filed pursuant to 37 C.F.R. § 1.7(a), the response period falling on a Federal Holiday, Saturday or Sunday being extended to the next succeeding business day.

SCHWEGMAN LUNDBERG & WOESSNER, P.A.

Customer No.: 21186

/ James Hallenbeck /
James D. Hallenbeck
Reg. No. 63,561

S/N 13/795,283

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Shaohong Wei et al.

Examiner: Kevin Harper

Serial No.: 13/795,283

Group Art Unit: 2462

Filed: March 12, 2013

Docket: 2831.012US4

Customer No.: 21186

Confirmation No.: 4507

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

MS Amendment

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

In compliance with the duty imposed by 37 C.F.R. § 1.56, and in accordance with 37 C.F.R. §§ 1.97 *et. seq.*, the enclosed materials are brought to the attention of the Examiner for consideration in connection with the above-identified patent application. Applicants respectfully request that this Information Disclosure Statement be entered and the documents listed on the attached PTO 1449 Form be considered by the Examiner and made of record. Pursuant to the provisions of MPEP 609, Applicants request that a copy of the PTO 1449 Form, initialed as being considered by the Examiner, be returned to the Applicants with the next official communication.

Pursuant to 37 C.F.R. § 1.97(c)(2), Applicants hereby authorize the Commissioner to charge the fee of \$180.00 as set forth in 37 C.F.R. § 1.17(p), to Deposit Account No. 19-0743. Please charge any additional fees or deficiencies, or credit any overpayment to Deposit Account No. 19-0743.

Pursuant to 37 C.F.R. § 1.98(a)(2), copies of cited U.S. Patents and Published Applications, and Non-Published Applications identifiable by USPTO Serial Number, are no longer required to be provided to the Office. Applicants acknowledge the requirement to submit copies of foreign patent documents and non-patent literature in accordance with 37 C.F.R. § 1.98(a)(2).

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Serial Number: 13/795,283

Filing Date: March 12, 2013

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Page 2

Dkt: 2831.012US4

The Examiner is invited to contact the undersigned at the telephone number indicated if there are any questions regarding this communication.

Respectfully submitted,

SCHWEGMAN LUNDBERG & WOESSNER, P.A.

P.O. Box 2938

Minneapolis, MN 55402

(612) 373-6938

Date Dec 22, 2014

By / James Hallenbeck /
James D. Hallenbeck
Reg. No. 63,561

S/N 13/795,283

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Shaohong Wei et al.

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TERMINAL DISCLAIMER

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I, James D. Hallenbeck, am an attorney of record for the above-identified patent application as evidenced by the Power of Attorney filed in the present application on January 16, 2015. This Terminal Disclaimer is submitted on behalf of Fortinet, Inc., the assignee of the present invention. As an attorney of record, I am empowered to act on behalf of the assignee and, in accordance with 37 C.F.R. § 1.321(b)(1)(iv), to sign this Terminal Disclaimer.

Certificate Under 37 C.F.R. § 3.73(b)

The assignee, Fortinet, Inc., hereby certifies that it is the owner of the entire right, title and interest in and to both the above-identified application (U.S. Application Serial No. 13/795,283) and to U.S. Patent No. 8,204,933, by virtue of the executed and filed assignment transferring title of both of these applications. The above-identified application is a continuation of U.S. Patent No. 8,639,752, which is a continuation of U.S. Patent No. 8,204,933, which is a continuation of U.S. Patent No. 7,580,974. The assignment for U.S. Patent No. 7,580,974 was recorded on February 16, 2006 at Reel 017601, Frames 0198-0200. That assignment assigned the application underlying U.S. Patent No. 7,580,974, as well as, *inter alia*, all continuations and divisionals based upon that application. The above-identified application and U.S. Patent No. 8,204,933 were thus assigned to the assignee by the identified assignment.

The undersigned representative of the assignee has reviewed the evidentiary documents of title and certifies that to the best of assignee's knowledge and belief, title is in the assignee seeking to take the action set forth in this disclaimer.

TERMINAL DISCLAIMER

Serial Number: 13/795,283

Filing Date: March 12, 2013

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Page 2

Dkt: 2831.012US4

Terminal Disclaimer

The assignee of the above-identified application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the above-identified patent application, which would extend beyond the expiration date of the full statutory term, as presently shortened by any terminal disclaimers, of U.S. Patent No. 8,204,933. The assignee hereby agrees that any patent to be granted on the above-identified application shall be enforceable only for and during such period as such patent is commonly owned with U.S. Patent No. 8,204,933. This agreement shall run with any patent granted on the above-identified application and shall be binding upon the assignee's successors and assigns.

Limitations on the Disclaimer

The assignee does not disclaim any terminal part of any patent granted on the above-identified application prior to the expiration date of the full statutory term as presently shortened by any terminal disclaimer of U.S. Patent No. 8,204,933 in the event that it later expires before such term for failure to pay a maintenance fee, is held unenforceable, is found invalid, is statutorily disclaimed, is the subject of a reexamination certificate cancelling all claims, or is otherwise terminated prior to the expiration date of its statutory term as presently shortened by any terminal disclaimer.

TERMINAL DISCLAIMER

Serial Number: 13/795,283

Filing Date: March 12, 2013

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Page 3

Dkt: 2831.012US4

Fee Status

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Respectfully submitted,

SCHWEGMAN LUNDBERG & WOESSNER, P.A.
P.O. Box 2938
Minneapolis, MN 55402--0938
(612) 373-6938

Dec 22, 2014
Date _____

By /  /
James D. Hallenbeck
Reg. No. 63,561

Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)	<i>Complete if Known</i>	
	Application Number	13/795,283
	Filing Date	March 12, 2013
	First Named Inventor	Shaohong Wei
	Group Art Unit	2462
	Examiner Name	Kevin Harper
Sheet 1 of 1	Attorney Docket No: 2831.012US4	

US PATENT DOCUMENTS			
Examiner Initial *	USP Document Number	Publication Date	Name of Patentee or Applicant of cited Document
	US-20140078907A1	3/20/2014	Wei, Shaohong, et al.
	US-20140079056A1	3/20/2014	Wei, Shaohong, et al.

FOREIGN PATENT DOCUMENTS				
Examiner Initial *	Foreign Document Number	Publication Date	Name of Patentee or Applicant of cited Document	T 1

OTHER DOCUMENTS – NON PATENT LITERATURE DOCUMENTS			
Examiner Initial *	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.		T 1
	"Application Serial No. 14/087,791, Non Final Office Action mailed 10-02-14", 10 pgs		

EXAMINER

DATE CONSIDERED

* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant is to place a check mark here if English language Translation is attached

S/N 13/795,283

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Shaohong Wei et al.

Examiner: Kevin Harper

Serial No.: 13/795,283

Group Art Unit: 2462

Filed: March 12, 2013

Docket No.: 2831.012US4

Customer No.: 21186

Confirmation No.: 4507

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Certificate Under 37 C.F.R. § 3.73(b)

The assignee, Fortinet, Inc., hereby certifies that it is the owner of the entire right, title and interest in and to both the above-identified application (U.S. Application Serial No. 13/795,283) and to U.S. Patent No. 8,639,752, by virtue of the executed and filed assignment transferring title of both of these applications. The above-identified application is a continuation of U.S. Patent No. 8,639,752, which is a continuation of U.S. Patent No. 8,204,933, which is a continuation of U.S. Patent No. 7,580,974. The assignment for U.S. Patent No. 7,580,974 was recorded on February 16, 2006 at Reel 017601, Frames 0198-0200. That assignment assigned the application underlying U.S. Patent No. 7,580,974, as well as, *inter alia*, all continuations and divisionals based upon that application. The above-identified application and U.S. Patent No. 8,639,752 were thus assigned to the assignee by the identified assignment.

The undersigned representative of the assignee has reviewed the evidentiary documents of title and certifies that to the best of assignee's knowledge and belief, title is in the assignee seeking to take the action set forth in this disclaimer.

TERMINAL DISCLAIMER

Serial Number: 13/795,283

Filing Date: March 12, 2013

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Page 2

Dkt: 2831.012US4

Terminal Disclaimer

The assignee of the above-identified application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the above-identified patent application, which would extend beyond the expiration date of the full statutory term, as presently shortened by any terminal disclaimers, of U.S. Patent No. 8,639,752. The assignee hereby agrees that any patent to be granted on the above-identified application shall be enforceable only for and during such period as such patent is commonly owned with U.S. Patent No. 8,639,752. This agreement shall run with any patent granted on the above-identified application and shall be binding upon the assignee's successors and assigns.

Limitations on the Disclaimer

The assignee does not disclaim any terminal part of any patent granted on the above-identified application prior to the expiration date of the full statutory term as presently shortened by any terminal disclaimer of U.S. Patent No. 8,639,752 in the event that it later expires before such term for failure to pay a maintenance fee, is held unenforceable, is found invalid, is statutorily disclaimed, is the subject of a reexamination certificate cancelling all claims, or is otherwise terminated prior to the expiration date of its statutory term as presently shortened by any terminal disclaimer.

TERMINAL DISCLAIMER

Serial Number: 13/795,283

Filing Date: March 12, 2013

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Page 3

Dkt: 2831.012US4

Fee Status

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Respectfully submitted,

SCHWEGMAN LUNDBERG & WOESSNER, P.A.
P.O. Box 2938
Minneapolis, MN 55402--0938
(612) 373-6938

Dec 22, 2014
Date _____

By /  /
James D. Hallenbeck
Reg. No. 63,561

S/N 13/795,283

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Shaohong Wei et al.

Examiner: Kevin Harper

Serial No.: 13/795,283

Group Art Unit: 2462

Filed: March 12, 2013

Docket No.: 2831.012US4

Customer No.: 21186

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The assignee, Fortinet, Inc., hereby certifies that it is the owner of the entire right, title and interest in and to both the above-identified application (U.S. Application Serial No. 13/795,283) and to U.S. Patent No. 8,693,348, by virtue of the executed and filed assignment transferring title of both of these applications. U.S. Patent No. 8,693,348 is a continuation of the above-identified application, which is a continuation of U.S. Patent No. 8,639,752, which is a continuation of U.S. Patent No. 8,204,933, which is a continuation of U.S. Patent No. 7,580,974. The assignment for U.S. Patent No. 7,580,974 was recorded on February 16, 2006 at Reel 017601, Frames 0198-0200. That assignment assigned the application underlying U.S. Patent No. 7,580,974, as well as, *inter alia*, all continuations and divisionals based upon that application. The above-identified application and U.S. Patent No. 8,693,348 were thus assigned to the assignee by the identified assignment.

The undersigned representative of the assignee has reviewed the evidentiary documents of title and certifies that to the best of assignee's knowledge and belief, title is in the assignee seeking to take the action set forth in this disclaimer.

TERMINAL DISCLAIMER

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(612) 373-6938

Dec 22, 2014
Date _____

By /  /
James D. Hallenbeck
Reg. No. 63,561

S/N 13/795,283

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Examiner: Kevin Harper

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P.O. Box 2938
Minneapolis, MN 55402--0938
(612) 373-6938

Dec 22, 2014
Date _____

By /  /
James D. Hallenbeck
Reg. No. 63,561

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875				Application or Docket Number 13/795,283		Filing Date 03/12/2013		☐ To be Mailed			
ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO											
APPLICATION AS FILED – PART I											
(Column 1)		(Column 2)									
FOR	NUMBER FILED	NUMBER EXTRA			RATE (\$)	FEE (\$)					
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A			N/A						
☐ SEARCH FEE (37 CFR 1.16(k), (j), or (m))	N/A	N/A			N/A						
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A			N/A						
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 = *				X \$ =						
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 = *				X \$ =						
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).										
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))											
* If the difference in column 1 is less than zero, enter "0" in column 2.					TOTAL						
APPLICATION AS AMENDED – PART II											
(Column 1)		(Column 2)		(Column 3)							
AMENDMENT	12/22/2014	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)			
	Total (37 CFR 1.16(i))	* 18	Minus	** 20	= 0	X \$80 =		0			
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X \$420 =		0			
	☐ Application Size Fee (37 CFR 1.16(s))										
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))										
						TOTAL ADD'L FEE		0			
(Column 1)		(Column 2)		(Column 3)							
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)			
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$ =					
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$ =					
	☐ Application Size Fee (37 CFR 1.16(s))										
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))										
						TOTAL ADD'L FEE					
<p>* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.</p> <p>** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".</p> <p>*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".</p> <p>The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.</p>											

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/795,283	03/12/2013	Shaohong Wei	2831.012US4	4507
21186 7590 10/07/2014 SCHWEGMAN LUNDBERG & WOESSNER, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402			EXAMINER HARPER, KEVIN C	
			ART UNIT 2462	PAPER NUMBER
			NOTIFICATION DATE 10/07/2014	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@slwip.com
SLW@blackhillsip.com

Office Action Summary	Application No. 13/795,283	Applicant(s) WEI ET AL.	
	Examiner Kevin C. Harper	Art Unit 2462	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 12 March 2013.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☒ Claim(s) 1-18 is/are pending in the application.
5a) Of the above claim(s) ____ is/are withdrawn from consideration.

6) ☐ Claim(s) ____ is/are allowed.

7) ☒ Claim(s) 1-18 is/are rejected.

8) ☐ Claim(s) ____ is/are objected to.

9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10) ☐ The specification is objected to by the Examiner.

11) ☒ The drawing(s) filed on 12 March 2013 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some** c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. ____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
Paper No(s)/Mail Date ____.

3) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.

4) ☐ Other: ____.

The present application is being examined under the pre-AIA first to invent provisions.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the claims at issue are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the reference application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO internet Web site contains terminal disclaimer forms which may be used. Please visit <http://www.uspto.gov/forms/>. The filing date of the application will determine what

form should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to <http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp>.

Claims 1-18 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 7,580,974, claims 1-17 of U.S. Patent No. 8,204,933, claims 1-14 of U.S. Patent No. 8,639,752 and claims 1-20 of U.S. Patent No. 8,693,348. Although the claims at issue are not identical, they are not patentably distinct from each other.

1. Regarding claims 1-18, each of the prior patents discloses determining a content type of a session based on a received packet. However, the claims of the prior patents additionally recite limitations such as potential classifications and using two packets to determine classification. In removing the additional limitations, the scope of the claims is merely broadened by eliminating elements and their functions. It has been held that omission of an element and its function is an obvious expedient if the remaining elements perform the same function as before. In re Karlson, 136 USPQ 184 (CCPA). Also note Ex parte Rainu, 168 USPQ 365 (Bd. App. 1969) (omission of a reference element whose function is not needed would be obvious to one skilled in the art). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to not recite the additional limitations.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Art Unit: 2462

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 7-12 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

2. Regarding claims 7-12, the broadest reasonable interpretation of a claim drawn to a computer readable medium (also called machine readable medium and other such variations) typically covers forms of non-transitory tangible media and transitory propagating signals *per se* in view of the ordinary and customary meaning of computer readable media, particularly when the specification is silent. *See* MPEP 2111.01. When the broadest reasonable interpretation of a claim covers a signal *per se*, the claim must be rejected under 35 U.S.C. § 101 as covering non-statutory subject matter. *See In re Nuijten*, 500 F.3d 1346, 1356-57 (Fed. Cir. 2007) (transitory embodiments are not directed to statutory subject matter) and *Interim Examination Instructions for Evaluating Subject Matter Eligibility Under 35 USC § 101*, Aug. 24, 2009; p. 2. A claim drawn to such a computer readable medium that covers both transitory and non-transitory embodiments may be amended to narrow the claim to cover only statutory embodiments to avoid a rejection under 35 USC § 101 by adding the limitation "non-transitory" to the claim. *Cf Animals - Patentability*, 1077 *Off. Gaz. Pat. Office* 24 (April 21, 1987)(suggesting that applicants add the limitation "non-human" to a claim covering a multicellular organism to avoid a rejection under 35 USC § 101).

Claim Rejections - 35 USC § 102

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the

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statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-15 and 17-18 are rejected under pre-AIA 35 U.S.C. 102(e) as being anticipated by Brandyburg et al. (US 2007/0011317).

3. Regarding claims 1-2, 6-8 and 12-13 and 15, Brandyburg discloses a method for determining a type of content (fig. 4, step 415; para. 45, first sentence). The method comprises receiving a packet associated with a session (step 410; para. 44, last three sentences; note: packet of a flow; fig. 3, item 330), determining whether a content type has been determined for the session (step 420) and classifying the packet to be the content type based on the determining (steps 422, 440, 445 or 460; fig. 2; para. 23, second through fourth sentences; para. 23, last fourteen lines; para. 46, lines 7-8). Further regarding claims 6 and 13, the classification is potentially determined (steps 425, 430 and 435) which rules out other classifications (note: a custom app is not an “other IP” app or an app from the well-known ports table). Further regarding claim 7, the method is implemented by a computer product (para. 20, first sentence). Further regarding claim 13, the monitoring device includes a network port (figs. 1 and 2).

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4. Regarding claims 3-4, 9-10 and 17-18, the content type has not been determined (step 420, NO) and additional packets are received and analyzed to determine if they satisfy prescribed criteria (loop back to step 410, 415 and 420). The packets are further examined to determine content type of a session (para. 48, first sentence; fig. 5B, all steps; note: port hopping for a flow and determining a child application for a flow based on subsequent packets).
5. Regarding claims 5 and 11, the content type is not at least one ruled out classification (fig. 4; fig. 5, steps 422, 440, 445 as opposed to step 450; note: for example, when an application is known the “other IP” application type is ruled out).
6. Regarding claim 14, a port number of a port on the monitoring device is not used (fig. 5A, step 415; note: the source and destination ports are used whereas the monitoring device is intermediary within the network; para. 44, lines 9-10; note: a port number need not be used to determine classification).

Claim Rejections - 35 USC § 103

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under pre-AIA 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to

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point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of pre-AIA 35 U.S.C. 103(c) and potential pre-AIA 35 U.S.C. 102(e), (f) or (g) prior art under pre-AIA 35 U.S.C. 103(a).

Claims 16 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Brandyburg in view of Yoakum et al. (US 2014/0198632).

7. Brandyburg does not disclose analyzing a packet based on a characteristic selected from the group consisting of a string pattern, a session classifier, a packet size and a port number. However, Yoakum discloses analyzing a packet base on any packet attributes as desired (para. 24, last sentence). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to analyze a packet based on a specific group of packet characteristics in the invention of Brandyburg in order to classify a packet as desired, as is known in the art (Yoakum, para. 24).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Riddle et al. (US 2002/0143939) discloses classifying a flow based on packet characteristics (fig. 4; claim 2). Yung et al. (US 7,664,048) discloses determining an application type of a flow based on a packet size (col. 10, lines 53-67).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Harper whose telephone number is 571-272-3166. The examiner can normally be reached weekdays from 11:00 AM to 7:00 PM ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yemane Mesfin, can be reached at 571-272-3927. The centralized fax number for the Patent Office is 571-273-8300. For non-official communications, the examiner's personal fax number is 571-273-3166 and the examiner's e-mail address is kevin.harper@uspto.gov.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications associated with a customer number is available through Private PAIR only. For more information about the PAIR system, see portal.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin C. Harper/

Primary Examiner, Art Unit 2462

Notice of References Cited	Application/Control No. 13/795,283	Applicant(s)/Patent Under Reexamination WEI ET AL.	
	Examiner Kevin C. Harper	Art Unit 2462	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2007/0011317	01-2007	Brandyburg et al.	709/224
*	B	US-2014/0198632	07-2014	Yoakum et al.	370/225
*	C	US-2002/0143939	10-2002	Riddle et al.	709/224
*	D	US-7,664,048	02-2010	Yung et al.	370/253
*	E	US-7,580,974	08-2009	Wei et al.	709/203
*	F	US-8,204,933	06-2012	Wei et al.	709/203
*	G	US-8,639,752	01-2014	Wei et al.	709/203
*	H	US-8,693,348	04-2014	Wei et al.	370/241
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

S/N 13/795,283**PATENT****IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Inventor(s):	Shaohong Wei et al.	Examiner:	Unknown
Serial No.:	13/795,283	Group Art Unit:	2447
Filed:	March 12, 2013	Docket:	2831.012US4
Customer No.:	21186	Confirmation No.:	4507
Title:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		

COMMUNICATION CONCERNING PRIOR OR COPENING APPLICATION(S)

Mail Stop Amendment
 Commissioner for Patents
 P.O. Box 1450
 Alexandria, VA 22313-1450

Pursuant to the guidance of MPEP §§ 2001.06(b) and 2004(9), Applicants would like to bring the following additional application(s) to the Examiner's attention. The identification of these applications is not intended to suggest that the subject matter claimed in any listed application is, or has been, substantially similar to any claim or claims in the present application.

<u>Serial No./ Patent No.</u>	<u>Filing Date</u>	<u>Attorney Docket</u>	<u>Title</u>
11/357,654 7,580,974	February 16, 2006	2831.012US1	Systems and methods for content type classification
12/503,100 8,204,933	July 15, 2009	2831.012US2	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
13/409,141 8,639,752	March 1, 2012	2831.012US3	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
14/087,791	November 22, 2013	2831.012US5	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
14/087,847	November 22, 2013	2831.012US6	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

/Kevin Harper/ (09/28/2014)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /K.H./

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)	<i>Complete if Known</i>	
	Application Number	13/795,283
	Filing Date	March 12, 2013
	First Named Inventor	Shaohong Wei
	Group Art Unit	2447
	Examiner Name	Unknown
Sheet 1 of 2		Attorney Docket No: 2831.012US4

US PATENT DOCUMENTS

Examiner Initial *	USP Document Number	Publication Date	Name of Patentee or Applicant of cited Document
	US-20030012147A1	1/16/2003	Buckman, C. R, et al.
	US-20040002930A1	1/1/2004	Oliver, Nuria M, et al.
	US-20040261016A1	12/23/2004	Glass, J. B, et al.
	US-20050249125A1	11/10/2005	Yoon, Seung Hyun, et al.
	US-20060112043A1	5/25/2006	Oliver, Nuria M, et al.
	US-20060229902A1	10/12/2006	McGovern, Robert J, et al.
	US-20060239273A1	10/26/2006	Buckman, C. R, et al.
	US-20070192481A1	8/16/2007	Wei, Shaohong, et al.
	US-20080052326A1	2/28/2008	Evanchik, S. A
	US-20090268617A1	10/29/2009	Wei, S., et al.
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	US-20120163186A1	6/28/2012	Wei, Shaohong, et al.
	US-5,361,379	11/1/1994	White, Stanley A, et al.
	US-6,157,955	12/5/2000	Narad, C. E, et al.
	US-6,608,816	8/19/2003	Nichols, K. M
	US-6,665,725	12/16/2003	Dietz, R. S, et al.
	US-7,006,502	2/28/2006	Lin, Yeejang James
	US-7,082,102	7/26/2006	Wright, S. A
	US-7,095,715	8/22/2006	Buckman, C. R, et al.
	US-7,242,681	7/10/2007	Van Bokkelen, James B, et al.
	US-7,420,992	9/2/2008	Fang, L., et al.
	US-7,580,974	8/25/2009	Wei, S., et al.
	US-7,945,522	5/17/2011	McGovern, Robert J, et al.
	US-8,204,933	6/19/2012	Wei, Shaohong, et al.
	US-8,639,752	1/28/2014	Wei, Shaohong, et al.

OTHER DOCUMENTS – NON PATENT LITERATURE DOCUMENTS

Examiner Initial *	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T 1
	"Application Serial No. 11/357,654, 312 Amendment filed 06-23-09", 5 pgs	
	"Application Serial No. 11/357,654, Non-Final Office Action mailed 09-18-08", 10 pgs	
	"Application Serial No. 11/357,654, Notice of Allowance mailed 03-23-09", 10 pgs	
	"Application Serial No. 11/357,654, Response filed 12-18-08 to Non-Final Office Action mailed 9-18-08", 8 pgs.	
	"Application Serial No. 11/357,654, Response to Rule 312 Communication mailed 07-23-09", 2 pgs	
	"Application Serial No. 12/503,100, Final Office Action mailed 06-09-11", 12 pgs	

EXAMINER

DATE CONSIDERED

* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant is to place a check mark here if English language Translation is attached

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /K.H./

Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)	<i>Complete if Known</i>	
	Application Number	13/795,283
	Filing Date	March 12, 2013
	First Named Inventor	Shaohong Wei
	Group Art Unit	2447
	Examiner Name	Unknown
Sheet 2 of 2	Attorney Docket No: 2831.012US4	

OTHER DOCUMENTS – NON PATENT LITERATURE DOCUMENTS		
Examiner Initial *	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T 1
	"Application Serial No. 12/503,100, Non-Final Office Action mailed 10-18-10", 12 pgs	
	"Application Serial No. 12/503,100, Notice of Allowance mailed 02-17-12", 13 pgs	
	"Application Serial No. 12/503,100, Response Filed 02-09-12 to Final Office Action 06-09-11", 8 pgs.	
	"Application Serial No. 12/503,100, Response filed 3-18-11 to Non Final Office Action mailed 10-18-10", 10 pgs.	
	"Application Serial No. 12/503,100, Supplemental Notice of Allowability mailed 04-25-12", 9 pgs	
	"Application Serial No. 13/409,141, Non Final Office Action mailed 08-08-13", 6 pgs	
	"Application Serial No. 13/409,141, Notice of Allowance mailed 09-18-13", 9 pgs	
	"Application Serial No. 13/409,141, Response filed 09-03-2013 to Office Action mailed 08-08-2013", 5 pgs	
	"Application Serial No. 13/409,141, Supplemental Notice of Allowability mailed 12-20-13", 5 pgs	
	"Application Serial No. 14/087,847, Notice of Allowance mailed 01-27-14", 8 pgs	

EXAMINER /Kevin Harper/ (09/28/2014)

DATE CONSIDERED

* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant is to place a check mark here if English language Translation is attached

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BIB DATA SHEET

CONFIRMATION NO. 4507

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.		
13/795,283	03/12/2013	370	2462	2831.012US4		
APPLICANTS INVENTORS Shaohong Wei, Sunnyvale, CA; Zhong Qiang Chen, Sunnyvale, CA; Ping Ng, Milpitas, CA; Gang Duan, San Jose, CA;						
** CONTINUING DATA ***** This application is a CON of 13/409,141 03/01/2012 PAT 8639752 which is a CON of 12/503,100 07/15/2009 PAT 8204933 which is a CON of 11/357,654 02/16/2006 PAT 7580974						
** FOREIGN APPLICATIONS *****						
** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 04/15/2013						
Foreign Priority claimed ☐ Yes ☒ No 35 USC 119(a-d) conditions met ☐ Yes ☐ No Verified and /KEVIN C HARPER/ Acknowledged Examiner's Signature		☐ Met after Allowance Initials	STATE OR COUNTRY CA	SHEETS DRAWINGS 7	TOTAL CLAIMS 18	INDEPENDENT CLAIMS 3
ADDRESS SCHWEGMAN LUNDBERG & WOESSNER, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402 UNITED STATES						
TITLE SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION						
FILING FEE RECEIVED 1740	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:			☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit		

Search Notes 	Application/Control No. 13795283	Applicant(s)/Patent Under Reexamination WEI ET AL.
	Examiner KEVIN C HARPER	Art Unit 2462

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
inventorship search on PALM	9/28/14	kch
EAST - see printout	9/28/14	kch

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

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EAST Search History**EAST Search History (Prior Art)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S64	0	(deep adj packet adj inspection) same (potential candidate\$1 possible) near5 type\$1 and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2014/01/13 02:57
S218	7	session\$1 near5 (unknown potential candidate\$1 possible) with (application content) adj2 type\$1 and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2014/09/28 17:56
S217	7	session\$1 near5 (potential candidate\$1 possible) with (application content) adj2 type\$1 and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2014/09/28 17:56
S219	7	packet\$1 near5 (unknown potential candidate\$1 possible) with (application content) adj2 type\$1 and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2014/09/28 17:58
S221	17	packet\$1 near5 (classify\$3 analyz\$3 unknown potential candidate\$1 possible) with determin\$3 near5 (application content) adj2 type\$1 and (@rlad @ad)<"20060216"	US-PGPUB; USPAT	OR	OFF	2014/09/28 17:59
S224	6	S222 and (@rlad @ad)<"20060216" and (determin\$3) near7 (Session\$1 flow\$1 connection\$1) near7 packet\$1 with application\$1	US-PGPUB; USPAT; USOCR	OR	OFF	2014/09/28 18:05
S229	19	("2002/0143939").URPN. and (@rlad @ad)<"20060216"	USPAT	OR	OFF	2014/09/28 18:39
S232	8	("2002/0143939").URPN. and (@rlad @ad)<"20060216" and (determin\$3) near7 (Session\$1 flow\$1 connection\$1 application\$1) near7 packet\$1	USPAT	OR	OFF	2014/09/28 18:40
S231	3	("2002/0143939").URPN. and (@rlad @ad)<"20060216" and (determin\$3) near7 (Session\$1 flow\$1 connection\$1) near7 packet\$1 with application\$1	USPAT	OR	OFF	2014/09/28 18:40
S242	12	fortinet.asn. and content adj type\$1.clm. near5 determin\$4	US-PGPUB; USPAT	OR	OFF	2014/09/28 19:08

EAST Search History (Interference)

<This search history is empty>

9/ 29/ 2014 2:21:30 AM**C:\Users\kharper\Documents\EAST\Workspaces\14087847 packet session analyzer.wsp**



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/795,283	03/12/2013	Shaohong Wei	2831.012US4

21186
SCHWEGMAN, LUNDBERG & WOESSNER, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

CONFIRMATION NO. 4507
IMPROPER CPOA LETTER



Date Mailed: 07/16/2014

NOTICE REGARDING POWER OF ATTORNEY

This is in response to the power of attorney filed 07/11/2014. The power of attorney in this application is not accepted for the reason(s) listed below:

- The power of attorney has not been accepted because the party who is giving power has not been identified. Power of attorney may only be signed by the applicant for patent (37 CFR 1.42) or the patent owner. A party who is not the applicant must become the applicant in accordance with 37 CFR 1.46(c) and appoint any power of attorney in compliance with 37 CFR 3.71 and 3.73. For a reissue application, reexamination proceeding, or supplemental examination proceeding, a patent owner who was not the applicant under 37 CFR 1.46 must appoint any power of attorney in compliance with 37 CFR 3.71 and 3.73. See 37 CFR 1.32(b)(4).

/s/brahim/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number

Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☒ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above:

21186

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☒ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

Firm or
Individual Name

Address

City

State

Zip

Country

Telephone

Email

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Fortinet, Inc.

- ☐ Inventor or Joint Inventor (title not required below)
- ☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)
- ☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)
- ☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature

Date (Optional)

Name

Title

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☒ Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Shaohong Wei

Application No./Patent No.: 13/795,283

Filed/Issue Date: March 12, 2013

Titled: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Fortinet, Inc. a Corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☒ The assignee of the entire right, title, and interest.
2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):
 - ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.
 - ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (e.g., bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

- A. ☒ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 022421, Frame 0014, or for which a copy thereof is attached.
- B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

2. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

[Page 1 of 2]

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

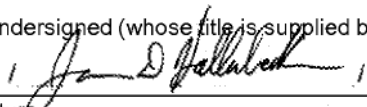
The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.☐ Additional documents in the chain of title are listed on a supplemental sheet(s).☐ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.


Signature _____7/9/2014
Date _____James D. Hallenbeck
Printed or Typed Name _____USPTO Reg. No. 63,561
Title or Registration Number _____

[Page 2 of 2]

Electronic Acknowledgement Receipt

EFS ID:	19551590
Application Number:	13795283
International Application Number:	
Confirmation Number:	4507
Title of Invention:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
First Named Inventor/Applicant Name:	Shaohong Wei
Customer Number:	21186
Filer:	Mark Victor Muller/Diana Johnson
Filer Authorized By:	Mark Victor Muller
Attorney Docket Number:	2831.012US4
Receipt Date:	11-JUL-2014
Filing Date:	12-MAR-2013
Time Stamp:	08:52:05
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2831012US4POAsigned.pdf	270673 b697791c4f18e7bf44cdc4a5a3680f9cd376c0ac	yes	4

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Transmittal Letter	1	1
	Power of Attorney	2	2
	Assignee showing of ownership per 37 CFR 3.73.	3	4
Warnings:			
Information:			
Total Files Size (in bytes):		270673	
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>			

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Shaohong Wei et al.

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Docket No.: 2831.012US4
Filed: March 12, 2013
Examiner: Unknown
Customer No.: 21186

Serial No.: 13/795,283
Due Date: N/A
Group Art Unit: 2447
Confirmation No.: 4507

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

We are transmitting herewith the following attached items (as indicated with an "X"):

- ☒ Power of Attorney (1 pg.)
- ☒ Statement Under 37 C.F.R. 3.73 (c) (2 pgs)

If not provided for in a separate paper filed herewith, please consider this a PETITION FOR EXTENSION OF TIME for sufficient number of months to enter these papers and please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

SCHWEGMAN, LUNDBERG & WOESSNER, P.A.
Customer No.: 21186

By: 
James D. Hallenbeck
Reg. No. 63,561

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)	<i>Complete if Known</i>	
	Application Number	13/795,283
	Filing Date	March 12, 2013
	First Named Inventor	Shaohong Wei
	Group Art Unit	2447
	Examiner Name	Unknown
Sheet 1 of 2		Attorney Docket No: 2831.012US4

US PATENT DOCUMENTS			
Examiner Initial *	USP Document Number	Publication Date	Name of Patentee or Applicant of cited Document
	US-20030012147A1	1/16/2003	Buckman, C. R, et al.
	US-20040002930A1	1/1/2004	Oliver, Nuria M, et al.
	US-20040261016A1	12/23/2004	Glass, J. B, et al.
	US-20050249125A1	11/10/2005	Yoon, Seung Hyun, et al.
	US-20060112043A1	5/25/2006	Oliver, Nuria M, et al.
	US-20060229902A1	10/12/2006	McGovern, Robert J, et al.
	US-20060239273A1	10/26/2006	Buckman, C. R, et al.
	US-20070192481A1	8/16/2007	Wei, Shaohong, et al.
	US-20080052326A1	2/28/2008	Evanchik, S. A
	US-20090268617A1	10/29/2009	Wei, S., et al.
	US-20120023557A1	1/26/2012	Bevan, Stephen J, et al.
	US-20120163186A1	6/28/2012	Wei, Shaohong, et al.
	US-5,361,379	11/1/1994	White, Stanley A, et al.
	US-6,157,955	12/5/2000	Narad, C. E, et al.
	US-6,608,816	8/19/2003	Nichols, K. M
	US-6,665,725	12/16/2003	Dietz, R. S, et al.
	US-7,006,502	2/28/2006	Lin, Yeejang James
	US-7,082,102	7/26/2006	Wright, S. A
	US-7,095,715	8/22/2006	Buckman, C. R, et al.
	US-7,242,681	7/10/2007	Van Bokkelen, James B, et al.
	US-7,420,992	9/2/2008	Fang, L., et al.
	US-7,580,974	8/25/2009	Wei, S., et al.
	US-7,945,522	5/17/2011	McGovern, Robert J, et al.
	US-8,204,933	6/19/2012	Wei, Shaohong, et al.
	US-8,639,752	1/28/2014	Wei, Shaohong, et al.

OTHER DOCUMENTS – NON PATENT LITERATURE DOCUMENTS		
Examiner Initial *	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T 1
	"Application Serial No. 11/357,654, 312 Amendment filed 06-23-09", 5 pgs	
	"Application Serial No. 11/357,654, Non-Final Office Action mailed 09-18-08", 10 pgs	
	"Application Serial No. 11/357,654, Notice of Allowance mailed 03-23-09", 10 pgs	
	"Application Serial No. 11/357,654, Response filed 12-18-08 to Non-Final Office Action mailed 9-18-08", 8 pgs.	
	"Application Serial No. 11/357,654, Response to Rule 312 Communication mailed 07-23-09", 2 pgs	
	"Application Serial No. 12/503,100, Final Office Action mailed 06-09-11", 12 pgs	

EXAMINER

DATE CONSIDERED

* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant is to place a check mark here if English language Translation is attached

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Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)	<i>Complete if Known</i>	
	Application Number	13/795,283
	Filing Date	March 12, 2013
	First Named Inventor	Shaohong Wei
	Group Art Unit	2447
	Examiner Name	Unknown
Sheet 2 of 2	Attorney Docket No: 2831.012US4	

OTHER DOCUMENTS – NON PATENT LITERATURE DOCUMENTS		
Examiner Initial *	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T 1
	"Application Serial No. 12/503,100, Non-Final Office Action mailed 10-18-10", 12 pgs	
	"Application Serial No. 12/503,100, Notice of Allowance mailed 02-17-12", 13 pgs	
	"Application Serial No. 12/503,100, Response Filed 02-09-12 to Final Office Action 06-09-11", 8 pgs.	
	"Application Serial No. 12/503,100, Response filed 3-18-11 to Non Final Office Action mailed 10-18-10", 10 pgs.	
	"Application Serial No. 12/503,100, Supplemental Notice of Allowability mailed 04-25-12", 9 pgs	
	"Application Serial No. 13/409,141, Non Final Office Action mailed 08-08-13", 6 pgs	
	"Application Serial No. 13/409,141, Notice of Allowance mailed 09-18-13", 9 pgs	
	"Application Serial No. 13/409,141, Response filed 09-03-2013 to Office Action mailed 08-08-2013", 5 pgs	
	"Application Serial No. 13/409,141, Supplemental Notice of Allowability mailed 12-20-13", 5 pgs	
	"Application Serial No. 14/087,847, Notice of Allowance mailed 01-27-14", 8 pgs	

EXAMINER

DATE CONSIDERED

* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant is to place a check mark here if English language Translation is attached

Electronic Acknowledgement Receipt

EFS ID:	18072272
Application Number:	13795283
International Application Number:	
Confirmation Number:	4507
Title of Invention:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
First Named Inventor/Applicant Name:	Shaohong Wei
Customer Number:	21186
Filer:	Eric B. Andersland/Valerie Murphy
Filer Authorized By:	Eric B. Andersland
Attorney Docket Number:	2831.012US4
Receipt Date:	30-JAN-2014
Filing Date:	12-MAR-2013
Time Stamp:	16:03:40
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		13795283_IDS_1-30-14.pdf	254414 <small>2059940e47f11d3102dedb3f4e6c6cc030a40834</small>	yes	7

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Miscellaneous Incoming Letter	1	1
	Miscellaneous Incoming Letter	2	3
	Transmittal Letter	4	5
	Information Disclosure Statement (IDS) Form (SB08)	6	7

Warnings:

Information:

2	Non Patent Literature	0001_2831012us1_312amend_62309.pdf	141786	no	5
			2ae1fd8b35b1ca0a6ae567fa27cc1ab69ad0776c		

Warnings:

Information:

3	Non Patent Literature	0002_2831012us1_resprule312_72309.pdf	153674	no	2
			8cb18ffb0e6888dd6caf0a488649eb03aa6657		

Warnings:

Information:

4	Non Patent Literature	0003_noarnotice_of_allowance_received20140127.pdf	1248646	no	8
			6f6300c797041c9be842bff1c0c6ae9960c504bb		

Warnings:

Information:

Total Files Size (in bytes):			1798520
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Shaohong Wei et al.

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Docket No.:	2831.012US4	Serial No.:	13/795,283
Filed:	March 12, 2013	Due Date:	N/A
Examiner:	Unknown	Group Art Unit:	2447
Customer No.:	21186	Confirmation No.:	4507

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

We are transmitting herewith the following attached items (as indicated with an "X"):

- X Communication Concerning Prior and Copending Applications (2 pgs.)
 - X Information Disclosure Statement (2 pgs.), Form 1449 (2 pgs.) Copies of Cited References (3).
- Other Documents NOT enclosed, cited in Parent Application.**

If not provided for in a separate paper filed herewith, please consider this a PETITION FOR EXTENSION OF TIME for sufficient number of months to enter these papers and please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

SCHWEGMAN, LUNDBERG & WOESSNER, P.A.
Customer No.: 21186

/James D. Hallenbeck/
By: _____
James D. Hallenbeck
Reg. No. 63,561

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s):	Shaohong Wei et al.	Examiner:	Unknown
Serial No.:	13/795,283	Group Art Unit:	2447
Filed:	March 12, 2013	Docket:	2831.012US4
Customer No.:	21186	Confirmation No.:	4507
Title:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		

COMMUNICATION CONCERNING PRIOR OR COPENING APPLICATION(S)

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Pursuant to the guidance of MPEP §§ 2001.06(b) and 2004(9), Applicants would like to bring the following additional application(s) to the Examiner's attention. The identification of these applications is not intended to suggest that the subject matter claimed in any listed application is, or has been, substantially similar to any claim or claims in the present application.

<u>Serial No./ Patent No.</u>	<u>Filing Date</u>	<u>Attorney Docket</u>	<u>Title</u>
11/357,654 7,580,974	February 16, 2006	2831.012US1	Systems and methods for content type classification
12/503,100 8,204,933	July 15, 2009	2831.012US2	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
13/409,141 8,639,752	March 1, 2012	2831.012US3	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
14/087,791	November 22, 2013	2831.012US5	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
14/087,847	November 22, 2013	2831.012US6	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Respectfully submitted,

SCHWEGMAN, LUNDBERG & WOESSNER, P.A.

P.O. Box 2938

Minneapolis, MN 55402

(612) 373-6938

Date 1/30/2014 By /James D. Hallenbeck/
James D. Hallenbeck
Reg. No. 63,561

S/N 13/795,283

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Shaohong Wei et al.

Examiner: Unknown

Serial No.: 13/795,283

Group Art Unit: 2447

Filed: March 12, 2013

Docket: 2831.012US4

Customer No.: 21186

Confirmation No.: 4507

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

INFORMATION DISCLOSURE STATEMENT

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

In compliance with the duty imposed by 37 C.F.R. § 1.56, and in accordance with 37 C.F.R. §§ 1.97 *et. seq.*, the enclosed materials are brought to the attention of the Examiner for consideration in connection with the above-identified patent application. Applicants respectfully request that this Information Disclosure Statement be entered and the documents listed on the attached PTO 1449 Form be considered by the Examiner and made of record. Pursuant to the provisions of MPEP 609, Applicants request that a copy of the PTO 1449 Form, initialed as being considered by the Examiner, be returned to the Applicants with the next official communication.

Pursuant to 37 C.F.R. § 1.97(b), it is believed that no fee or statement is required with the Information Disclosure Statement. However, if an Office Action on the merits has been mailed after filing of the application or after the filing of the most recent RCE, the Commissioner is hereby authorized to charge the required fees to Deposit Account No. 19-0743 in order to have this Information Disclosure Statement considered.

Pursuant to 37 C.F.R. § 1.98(d), copies of the listed documents are not provided as these references were previously cited by or submitted to the U.S. Patent Office in connection with Applicants' prior U.S. application, Serial No. 13/409,141, filed on March 1, 2012, which is relied upon for an earlier filing date under 35 U.S.C. § 120.

Copies of three (3) documents, not previously cited in connection with the Applicants' prior U.S. Application, Serial No. 13/409,141, are attached. These documents are highlighted in boldface on the attached Form 1449's.

INFORMATION DISCLOSURE STATEMENT

Serial Number:13/795,283

Filing Date: March 12, 2013

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Page 2

Dkt: 2831.012US4

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The Examiner is invited to contact the undersigned at the telephone number indicated if there are any questions regarding this communication.

Respectfully submitted,

SCHWEGMAN, LUNDBERG & WOESSNER, P.A.
P.O. Box 2938
Minneapolis, MN 55402
(612) 373-6938

1/30/2014

Date _____ By /James D. Hallenbeck/
James D. Hallenbeck
Reg. No. 63,561

JDH:vam



UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/795,283	03/12/2013	Shaohong Wei	2831.012US4

CONFIRMATION NO. 4507

PUBLICATION NOTICE



21186

SCHWEGMAN, LUNDBERG & WOESSNER, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

Title:SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Publication No.US-2013-0258863-A1

Publication Date:10/03/2013

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publicly available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently <http://pair.uspto.gov/>. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

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Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY DOCKET NO	TOT CLAIMS	IND CLAIMS
13/795,283	03/12/2013	2447	1740	2831.012US4	18	3

CONFIRMATION NO. 4507

UPDATED FILING RECEIPT



OC000000062102317

Date Mailed: 06/25/2013

21186
SCHWEGMAN, LUNDBERG & WOESSNER, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Shaohong Wei, Sunnyvale, CA;
Zhong Qiang Chen, Sunnyvale, CA;
Ping Ng, Milpitas, CA;
Gang Duan, San Jose, CA;

Applicant(s)

Shaohong Wei, Sunnyvale, CA;
Zhong Qiang Chen, Sunnyvale, CA;
Ping Ng, Milpitas, CA;
Gang Duan, San Jose, CA;

Assignment For Published Patent Application

Fortinet, Inc., Sunnyvale, CA

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 13/409,141 03/01/2012
which is a CON of 12/503,100 07/15/2009 PAT 8204933
which is a CON of 11/357,654 02/16/2006 PAT 7580974

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

If Required, Foreign Filing License Granted: 04/15/2013

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/795,283**

Projected Publication Date: 10/03/2013

Non-Publication Request: No

Early Publication Request: No
Title

SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Preliminary Class

709

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications:

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

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Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

page 2 of 4

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

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Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 13/795,283				
APPLICATION AS FILED - PART I										
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY				
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)			
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	280			
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	600			
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	720			
TOTAL CLAIMS (37 CFR 1.16(i))	18 minus 20 =	*				x 80 =	0.00			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*				x 420 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00			
			TOTAL			TOTAL	1600			
* If the difference in column 1 is less than zero, enter "0" in column 2.										
APPLICATION AS AMENDED - PART II										
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY		
AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x	=		x	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=		x	=
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))									
						TOTAL ADD'L FEE			TOTAL ADD'L FEE	
AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x	=		x	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=		x	=
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))									
						TOTAL ADD'L FEE			TOTAL ADD'L FEE	
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.										

S/N 13/795,283

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Shaohong Wei et al.	Examiner:	Unknown
Serial No.:	13/795,283	Group Art Unit:	2447
Filed:	March 12, 2013	Docket:	2831.012US4
Customer No.:	21186	Confirmation No.:	4507
Title:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		

COMMUNICATION RE: MISSING PARTS

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

In response to the Notice to File Missing Parts, we submit the Signed Declaration, and authorization to charge Deposit Account 19-0743 in the amount of \$140.00 to cover the Large Entity surcharge, and authorization to charge Deposit Account 19-0743 in the amount of \$1600.00 to cover the Large Entity Basic Filing, Search, and Exam Fees and any Additional Claims Fee.

Applicants assume the application is now in proper order and in condition for examination. Please direct any inquiries to the undersigned at (612) 373-6938. If necessary, please charge any additional fees or credit overpayment to Deposit Account 19-0743.

Respectfully submitted,

SCHWEGMAN, LUNDBERG & WOESSNER, P.A.
P.O. Box 2938
Minneapolis, MN 55402
(612) 373-6938

Date 6/12/2013

By



James D. Hallenbeck
Reg. No. 63,561

JDH:CMG:bmg

**DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN
APPLICATION DATA SHEET (37 CFR 1.76)**

Title of
Invention

SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

As the below named inventor, I hereby declare that:

This declaration
is directed to:

☐ The attached application, or

☒ United States application or PCT international application number 13/795,283,
filed on March 12, 2013.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001
by fine or imprisonment of not more than (5) years, or both.

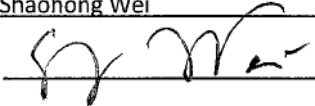
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LEGAL NAME OF INVENTOR

Inventor: Shaohong Wei

Date (Optional): Apr 29, 2013

Signature: 

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form.
Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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2831.012US4

**DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN
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The attached application, or

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United States application or PCT international application number 13/795,283,
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LEGAL NAME OF INVENTOR

Inventor: Zhong Qiang Chen Date (Optional) : _____

Signature: ZQ Chen

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form.
Use an additional PTO/AIA/01 form for each additional inventor.

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LEGAL NAME OF INVENTOR

Inventor: Ping Ng Date (Optional): 04/18/2013

Signature: 

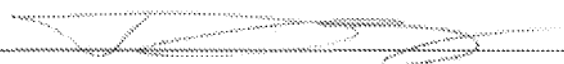
Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form.
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2831 0121154

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
<p>As the below named inventor, I hereby declare that:</p> <p>This declaration is directed to: ☐ The attached application, or</p> <p style="margin-left: 100px;">☒ United States application or PCT international application number <u>13/795,283</u>, filed on <u>March 12, 2013</u>.</p> <p>The above-identified application was made or authorized to be made by me.</p> <p>I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.</p> <p>I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than (5) years, or both.</p> <p style="text-align: center;">WARNING:</p> <p>Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.</p>	
<p>LEGAL NAME OF INVENTOR</p> <p>Inventor: <u>Gang Guan</u> Date (Optional): _____</p> <p>Signature: </p>	
<p>Note: An application data sheet (PTO/SB/1A or equivalent), including naming the entire inventive entity, must accompany this form. Use an additional PTO/AIA/01 form for each additional inventor.</p>	

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2031.012US4

Electronic Patent Application Fee Transmittal				
Application Number:		13795283		
Filing Date:		12-Mar-2013		
Title of Invention:		SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		
First Named Inventor/Applicant Name:		Shaohong Wei		
Filer:		Ann Marie McCrackin/Brandy Getty		
Attorney Docket Number:		2831.012US4		
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility application filing	1011	1	280	280
Utility Search Fee	1111	1	600	600
Utility Examination Fee	1311	1	720	720
Pages:				
Claims:				
Miscellaneous-Filing:				
Late Filing Fee for Oath or Declaration	1051	1	140	140
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1740

Electronic Acknowledgement Receipt

EFS ID:	16019389
Application Number:	13795283
International Application Number:	
Confirmation Number:	4507
Title of Invention:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
First Named Inventor/Applicant Name:	Shaohong Wei
Customer Number:	21186
Filer:	Ann Marie McCrackin/Brandy Getty
Filer Authorized By:	Ann Marie McCrackin
Attorney Docket Number:	2831.012US4
Receipt Date:	12-JUN-2013
Filing Date:	12-MAR-2013
Time Stamp:	15:12:34
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$1740
RAM confirmation Number	1718
Deposit Account	190743
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2831012US4MPResponse.pdf	2589583 272a7fcb177835d64f6f27e3d4fdce5559ee9f1c	yes	6
Multipart Description/PDF files in .zip description					
Document Description		Start		End	
Transmittal Letter		1		1	
Applicant Response to Pre-Exam Formalities Notice		2		2	
Oath or Declaration filed		3		6	

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	36991 ce231a8954215bfe9159755b7a28164f3cdcdff00	no	2
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Warnings:

Information:

Total Files Size (in bytes):			2626574
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Shaohong Wei et al.

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Docket No.: 2831.012US4
Filed: March 12, 2013
Examiner: Unknown
Customer No.: 21186

Serial No.: 13/795,283
Due Date: June 19, 2013
Group Art Unit: 2447
Confirmation No.: 4507

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

We are transmitting herewith the attached:

- ☒ Communication Re: Missing Parts (1 pg.).
- ☒ Signed Declaration (4 pgs.).
- ☒ Authorization to charge Deposit Account 19-0743 in the amount of \$140.00 to cover the Large Entity Surcharge.
- ☒ Authorization to charge Deposit Account 19-0743 in the amount of \$1600.00 to cover the Basic Filing, Search, and Exam Fees and any Additional Claims Fee.

If not provided for in a separate paper filed herewith, please consider this a PETITION FOR EXTENSION OF TIME for sufficient number of months to enter these papers, and please charge any additional required fees or credit overpayment to Deposit Account No. 19-0743.

SCHWEGMAN, LUNDBERG & WOESSNER, P.A.

Customer No.: 21186

JDH:CMG:bmg

By


James D. Hallenbeck
Reg. No. 63,561

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 13/795,283			
APPLICATION AS FILED - PART I									
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY			
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)		
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	280		
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	600		
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	720		
TOTAL CLAIMS (37 CFR 1.16(i))	18 minus 20 =	*				x 80 =	0.00		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*				x 420 =	0.00		
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00		
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00		
			TOTAL			TOTAL	1600		
* If the difference in column 1 is less than zero, enter "0" in column 2.									
APPLICATION AS AMENDED - PART II									
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)	
	Total (37 CFR 1.16(i))	*	Minus **	=	x =		x =		
	Independent (37 CFR 1.16(h))	*	Minus ***	=	x =		x =		
	Application Size Fee (37 CFR 1.16(s))								
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
			TOTAL ADD'L FEE				TOTAL ADD'L FEE		
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)	
	Total (37 CFR 1.16(i))	*	Minus **	=	x =		x =		
	Independent (37 CFR 1.16(h))	*	Minus ***	=	x =		x =		
	Application Size Fee (37 CFR 1.16(s))								
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
			TOTAL ADD'L FEE				TOTAL ADD'L FEE		
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.									



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/795,283	03/12/2013	Shaohong Wei	2831.012US4

CONFIRMATION NO. 4507

21186

SCHWEGMAN, LUNDBERG & WOESSNER, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

FORMALITIES LETTER



Date Mailed: 04/19/2013

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The statutory basic filing fee is missing.

Applicant must submit \$280 to complete the basic filing fee for an undiscounted entity. If appropriate, applicant may make a written assertion of entitlement to small entity status and pay the small entity filing fee (37 CFR 1.27) or make a certification of entitlement to micro entity status and pay the micro entity filing fee (37 CFR 1.29).

The applicant needs to satisfy supplemental fees problems indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- A surcharge (for late submission of the basic filing fee, search fee, examination fee or inventor's oath or declaration) as set forth in 37 CFR 1.16(f) of \$ **140** for an undiscounted entity, must be submitted.

SUMMARY OF FEES DUE:

Total fee(s) required within **TWO MONTHS** from the date of this Notice is \$ **1740** for an undiscounted entity

- \$ **280** Statutory basic filing fee.
- \$ **140** Surcharge.
- The application search fee has not been paid. Applicant must submit \$ **600** to complete the search fee.
- The application examination fee has not been paid. Applicant must submit \$ **720** to complete the examination fee for an undiscounted entity.

Items Required To Avoid Processing Delays:

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute

statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
all
Applicant may submit the inventor's oath or declaration at any time before the Notice of Allowance and Fee(s) Due, PTOL-85, is mailed.

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.

<https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/rmohamed/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY DOCKET NO	TOT CLAIMS	IND CLAIMS
13/795,283	03/12/2013	2447	0.00	2831.012US4	18	3

CONFIRMATION NO. 4507

21186

SCHWEGMAN, LUNDBERG & WOESSNER, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

FILING RECEIPT



OC000000060459688

Date Mailed: 04/19/2013

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Shaohong Wei, Sunnyvale, CA;
Zhong Qiang Chen, Sunnyvale, CA;
Ping Ng, Milpitas, CA;
Gang Duan, San Jose, CA;

Applicant(s)

Shaohong Wei, Sunnyvale, CA;
Zhong Qiang Chen, Sunnyvale, CA;
Ping Ng, Milpitas, CA;
Gang Duan, San Jose, CA;

Assignment For Published Patent Application

Fortinet, Inc., Sunnyvale, CA

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 13/409,141 03/01/2012
which is a CON of 12/503,100 07/15/2009 PAT 8204933
which is a CON of 11/357,654 02/16/2006 PAT 7580974

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

If Required, Foreign Filing License Granted: 04/15/2013

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/795,283**

Projected Publication Date: To Be Determined - pending completion of Missing Parts

Non-Publication Request: No

Early Publication Request: No
Title

SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Preliminary Class

709

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications:

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

page 2 of 4

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop

technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: Shaohong Wei et al.

Title: SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

Attorney Docket No.: 2831.012US4

Customer No.: 21186

PATENT APPLICATION TRANSMITTAL

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

We are transmitting herewith the following attached items and information (as indicated with an "X"):

X CONTINUATION under 37 CFR 1.53(b) of prior Patent Application No. 13/409,141 comprising:

- X** Specification (21 pgs, including claims numbered 1 through 18 and a 1 page Abstract).
 - X** Formal Drawing(s) (7 sheets).
 - X** Application Data Sheet (6 pgs).
- X** Incorporation by Reference herein in its entirety: *The entire disclosure of the prior application is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein in its entirety.*

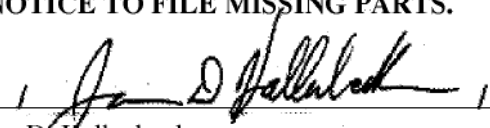
The filing fee (NOT ENCLOSED) will be calculated as follows:

	No. Filed	No. Extra	Rate	Fee
TOTAL CLAIMS	18- 20	0	x \$62.00 =	\$0.00
INDEPENDENT CLAIMS	3 - 3	0	x \$250.00 =	\$0.00
[] MULTIPLE DEPENDENT CLAIMS PRESENTED				\$0.00
BASIC FEE				\$390.00
SEARCH FEE				\$620.00
EXAMINATION FEE				\$250.00
	No. of pages (75% for e-filing)	Extra sets of 50 pages	Rate	
APPLICATION SIZE FEE	(21 - 100) / 50	0	\$320.00	\$0.00
TOTAL				\$1,260.00

THE FILING FEE WILL BE PAID UPON RECEIPT OF THE NOTICE TO FILE MISSING PARTS.

SCHWEGMAN, LUNDBERG & WOESSNER, P.A.

Customer Number: 21186

By: 
James D. Hallenbeck
Reg. No. 63,561

Date of Deposit: March 12, 2013

This paper or fee is being filed on the date indicated above using the USPTO's electronic filing system EFS-Web, and is addressed to The Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	2831.012US4
		Application Number	Unknown
Title of Invention	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		
<p>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.</p> <p>This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</p>			

☐ **Secrecy Order 37 CFR 5.2**

Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1: Shaohong Wei				
Legal Name				
Prefix	Given Name	Middle Name	Family Name	Suffix
	Shaohong		Wei	
Residence Information (Select One)				
☒ US Residency ☐ Non US Residency ☐ Active US Military Service				
City	Sunnyvale	State/Province	CA	Country of United States of America
Mailing Address of Inventor:				
Address 1	1428 Falcon Avenue			
Address 2				
City	Sunnyvale	State/Province	CA	
Postal Code	94087	Country	United States of America	
Inventor 2: Zhong Qiang Chen				
Legal Name				
Prefix	Given Name	Middle Name	Family Name	Suffix
	Zhong Qiang		Chen	
Residence Information (Select One)				
☒ US Residency ☐ Non US Residency ☐ Active US Military Service				
City	Sunnyvale	State/Province	CA	Country of United States of America
Mailing Address of Inventor:				
Address 1	1428 Falcon Avenue			
Address 2				
City	Sunnyvale	State/Province	CA	
Postal Code	94087	Country	United States of America	
Inventor 3: Ping Ng				
Legal Name				
Prefix	Given Name	Middle Name	Family Name	Suffix
	Ping		Ng	

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	2831.012US4
		Application Number	Unknown
Title of Invention	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		
<p>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.</p> <p>This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</p>			

Residence Information (Select One)					
☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
City	Milpitas	State/Province	CA	Country of	United States of America
Mailing Address of Inventor:					
Address 1	424 Sandhurst Drive				
Address 2					
City	Milpitas	State/Province	CA		
Postal Code	95035	Country	United States of America		
Inventor 4: Gang Duan					
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Gang		Duan		
Residence Information (Select One)					
☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
City	San Jose	State/Province	CA	Country of	United States of America
Mailing Address of Inventor:					
Address 1	1733 Fumia Dr.				
Address 2					
City	San Jose	State/Province	CA		
Postal Code	95131	Country	United States of America		

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).	
☐ An Address is being provided for the correspondence information of this application.	
Customer Number	21186
Email Address	request@slwip.com

Application Information:

Title of the Invention	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		
Attorney Docket Number	2831.012US4	Small Entity Status Claimed	☐
Application Type	Non-Provisional		
Subject Matter	Utility - CON		

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	2831.012US4
		Application Number	Unknown
Title of Invention	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		
<p>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.</p> <p>This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</p>			

Suggested Class (if any)		Sub Class (if any)	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)	7	Suggested Figure for Publication (if any)	

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)
☐ Request Not to Publish. I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

<p>Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Enter either Customer Number or complete the Representative Name section below. If both sections are completed the Customer Number will be used for the Representative Information during processing.</p>			
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Prior Application Status	Pending		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
This application	continuation	13/409,141	2012-03-01
Prior Application Status	Patented		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
13/409,141	continuation	12/503,100	2009-07-15
Prior Application Status	Patented		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
12/503,100	continuation	11/357,654	2006-02-16

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	2831.012US4
		Application Number	Unknown
Title of Invention	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		
<p>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.</p> <p>This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</p>			

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Application Number	Country	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
			☐ Yes ☐ No

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☒ Authorization to Permit Access to the Instant Application by the Participating Offices
<p>If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.</p> <p>In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.</p> <p>In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.</p>

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☒ Assignee	☐ Legal Representative under 35 U.S.C. 117

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	2831.012US4
		Application Number	Unknown
Title of Invention	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		
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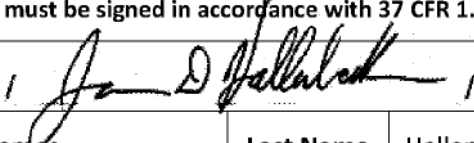
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Phone Number		Fax Number		
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	2831.012US4
		Application Number	Unknown
Title of Invention	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		
<p>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.</p> <p>This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</p>			

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Signature			Date (YYYY-MM-DD)
First Name	James	Last Name	Hallenbeck
			Registration Number
			63,561

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SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION

RELATED APPLICATIONS

[0001] This application is a Continuation of U.S. Application No. 13/409,141, filed March 1, 2012; which was a Continuation of U.S. Application No. 12/503,100, filed July 15, 2009, and issued as U.S. Patent No. 8,204,933 on June 19, 2012; and which was a Continuation of U.S. Application No. 11/357,654, filed February 16, 2006, and issued as U.S. Patent No. 7,580,974 on August 25, 2009, to each of which priority is claimed and each of which are incorporated herein by reference in their entirety.

FIELD

[0002] The field of the invention relates to computer systems and computer networks, and more particularly, to systems and methods for classifying content of computer and network traffic.

BACKGROUND

[0003] Many data processing systems require a content type of data to be determined before the data can be further processed. For example, in malicious content detection systems, such as anti-virus systems and anti-spam systems, a received data generally needs to be classified before it can be scanned for malicious content. Intrusion detection/prevention systems, application-based traffic shaping devices or load balancers, IM proxies, and application accelerators may also require data to be classified. If the data is classified to be a skype data, then a content detection module may apply a set of algorithms to scan the data for malicious content. On the other hand, if the data is classified to be a bittorrent data, then the content detection module may apply a different set of algorithms to scan the data for malicious content. As such, determining content type of data is an important step before the data is scanned.

[0004] Existing systems determine content type by using port number of a port at which data is transmitted. For example, well-known port for HTTP protocol is "80," well-known port for SMTP protocol is "25," and well-known port for POP3 protocol is "110." In such systems, data belonging to a certain type is transmitted to a dedicated port. As such, by determining the port number of the port at which data is transmitted, and knowing the content type that is associated with the port number, a system can determine the content type for the data. However, use of a port to transmit only one type of data is restrictive. Sometimes, it may be desirable to allow a port to transmit more than one type of data. Existing systems do not allow a content type to be determined if data is transmitted through a port that is not data type specific (i.e., port that is allowed to transmit more than one type of data).

[0005] Also, some type of data, such as IM data and P2P data, may not go to any specific port, and can be transmitted through different ports. In such cases, existing systems may not be able to classify IM data and P2P data using port number.

SUMMARY

[0006] In accordance with some embodiments, a method for determining a type of content includes receiving a first packet, determining a state of classification for the first packet or for a session with which the first packet is associated, receiving a second packet, and determining a content type for the second packet based at least in part on the determined state. As used in this specification, the term "first packet" refers to any one of the packets in a session (e.g., it can be the first, second, third, fourth, etc. packet in a session), and does not necessarily mean the very first packet in a session (although it could be used to refer to the very first packet in a session). Similarly, as used in this specification, the term "second packet" refers to any one of the packets in a session (e.g., it can be the first, second, third, fourth, etc. packet in a session) that is different from the first packet.

[0007] In accordance with other embodiments, a computer product includes a computer-readable medium, the computer-readable medium having a set of stored instructions, an execution of which causes a process to be performed, the process

includes receiving a first packet, determining a state of classification for the first packet or for a session with which the first packet is associated, receiving a second packet, and determining a content type for the second packet based at least in part on the determined state.

[0008] In accordance with other embodiments, a system for determining a type of content includes means for receiving a first packet and a second packet, means for determining a state of classification for the first packet or for a session with which the first packet is associated, and means for determining a content type for the second packet based at least in part on the determined state.

[0009] In accordance with other embodiments, a method for determining a type of content includes receiving a packet associated with a session, determining whether a content type has been determined for the session or for an other packet associated with the session, and classifying the packet to be the content type based at least in part on a result from the act of determining.

[0010] In accordance with other embodiments, a computer product includes a computer-readable medium, the computer-readable medium having a set of stored instructions, an execution of which causes a process to be performed, the process includes receiving a packet associated with a session, determining whether a content type has been determined for the session or for an other packet associated with the session, and classifying the packet to be the content type based at least in part on a result from the act of determining.

[0011] In accordance with other embodiments, a system for determining a type of content includes means for receiving a packet associated with a session, means for determining whether a content type has been determined for the session or for an other packet associated with the session, and means for classifying the packet to be the content type based at least in part on a result from the act of determining.

[0012] In accordance with other embodiments, a method for determining a type of content includes receiving a first packet from a first port, the first port adapted for receiving at least two types of content, and determining a content type for the first packet or for a session with which the first packet is associated.

[0013] In accordance with other embodiments, a computer product includes a computer-readable medium, the computer-readable medium having a set of stored instructions, an execution of which causes a process to be performed, the process includes receiving a first packet from a first port, the first port adapted for receiving at least two types of content, and determining a content type for the first packet or for a session with which the first packet is associated.

[0014] In accordance with other embodiments, a system for determining a type of content includes means for receiving a first packet from a first port, the first port adapted for receiving at least two types of content, and means for determining a content type for the first packet or for a session with which the first packet is associated.

[0015] In accordance with other embodiments, a method for determining a type of content includes receiving a packet associated with a session, and determining a state of classification for the packet or the session.

[0016] In accordance with other embodiments, a computer product includes a computer-readable medium, the computer-readable medium having a set of stored instructions, an execution of which causes a process to be performed, the process includes receiving a packet associated with a session, and determining a state of classification for the packet or the session.

[0017] In accordance with other embodiments, a system for determining a type of content includes means for receiving a packet associated with a session, and means for determining a state of classification for the packet or the session.

[0018] Other aspects and features will be evident from reading the following detailed description of the preferred embodiments, which are intended to illustrate, not limit, the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] The drawings illustrate the design and utility of various embodiments, in which similar elements are referred to by common reference numerals. More particular descriptions will be rendered by reference to specific embodiments, which are illustrated in the accompanying drawings. Understanding that these drawings are

not to be considered limiting in scope, the embodiments will be described and explained with additional specificity and detail through the use of the accompanying figures.

[0020] **FIG. 1** illustrates a block diagram representing a system that includes a module for classifying data in accordance with some embodiments;

[0021] **FIG. 2** illustrates a method for classifying data in accordance with some embodiments;

[0022] **FIGS. 3A-3I** illustrate examples of criteria that may be used to determine content type in accordance with some embodiments;

[0023] **FIG. 4** illustrates examples of results obtained using the method of **FIG. 2** in accordance with some embodiments; and

[0024] **FIG. 5** is a diagram of a computer hardware system with which embodiments described herein can be implemented.

DETAILED DESCRIPTION

[0025] Various embodiments are described hereinafter with reference to the figures. It should be noted that the figures are not drawn to scale and that elements of similar structures or functions are represented by like reference numerals throughout the figures. It should also be noted that the figures are only intended to facilitate the description of specific embodiments, and are not intended as an exhaustive description of the invention, or as a limitation on the scope of the invention. In addition, an illustrated embodiment need not have all the aspects or advantages of the invention shown. An aspect or an advantage described in conjunction with a particular embodiment is not necessarily limited to that embodiment and can be practiced in any other embodiments even if not so illustrated.

[0026] **FIG. 1** illustrates a block diagram of a system 100, which includes a data classification module 110 for classifying data into content type in accordance with some embodiments. Sender 102 transmits data associated with network traffic content to module 110. Module 110 receives the transmitted data, determines a type of content to which the network traffic data belongs (i.e., classifies the data), and

causes a result, such as a message, to be sent to a receiver 104. The message sent to receiver 104 notifies the receiver 104 that the received data belongs to a content type. As used in this specification, the term "receiver" should not be limited to a human receiver, and can include a server or other types of devices that can receive information. For example, in some embodiments, the receiver 104 can be a malicious content detection module, such as an anti-virus module, which detects malicious content based on a content type as determined by the module 110. Also, as used in this specification, the term "sender" should not be limited to a human sender, and can include a server or other types of devices that can transmit information.

[0027] In some embodiments, module 110 can be implemented using software. For example, module 110 can be implemented using software that is loaded onto a user's computer, a server, or other types of memory, such as a disk or a CD-ROM. In some cases, module 110 can be implemented as web applications. In alternative embodiments, module 110 can be implemented using hardware. For example, in some embodiments, module 110 includes an application-specific integrated circuit (ASIC), such as a semi-custom ASIC processor or a programmable ASIC processor. ASICs, such as those described in Application-Specific Integrated Circuits by Michael J. S. Smith, Addison-Wesley Pub Co. (1st Edition, June 1997), are well known in the art of circuit design, and therefore will not be described in further detail herein. In other embodiments, module 110 can also be any of a variety of circuits or devices that are capable of performing the functions described herein. For example, in alternative embodiments, module 110 can include a general purpose processor, such as a Pentium processor. In other embodiments, module 110 can be implemented using a combination of software and hardware. In some embodiments, module 110 may be implemented as a firewall, a component of a firewall, or a component that is configured to be coupled to a firewall.

[0028] **FIG. 2** illustrates a method 200 for classifying data in accordance with some embodiments. First, module 110 receives network traffic data in a form of a packet (Step 202). Next, module 110 determines a session S for the received packet (Step 204). A session is an interaction or a series of interactions between two

communication end points. Various techniques may be used to determine a session. For example, module 110 can be configured to determine one or more of a source IP address, a destination IP address, a source port, a destination port, and a protocol, to thereby determine a session S for the received packet. Techniques for determining a session are known in the art, and will not be described in details.

[0029] Next, module 110 determines whether a content type has already been determined for the session S (and therefore, for the packet associated with the session S) (Step 205). In the illustrated embodiments, each session (e.g., session S) being processed by module 110 is automatically assigned an initial state of classification, "unknown" (i.e., the content type is initially determined as "unknown"). In such cases, in step 205, module 110 determines whether a content type other than "unknown" has been determined for session S. If a content type other than "unknown" type has already been determined for the session S, then module 110 classifies the packet to be the same type as that for the classified session S, and the method returns to step 202 to process additional packet, if any (Step 206). In some embodiments, the classifying of the packet (determining the content type for the packet) may be implemented by associating the packet with the classified session S.

[0030] On the other hand, if a content type (other than "unknown" type) has not been previously determined for the session S, module 110 then analyzes the received packet to attempt to determine a content type (Step 207). If a content type (other than "unknown" type) is determined for the received packet, module 110 then classifies the received packet (or its associated session S) as having the determined content type (Step 208). If there is an additional packet, module 110 then receives the additional packet, and repeats the process 200 to process the additional packet.

[0031] Alternatively, if after step 207, the content type remains "unknown" (e.g., because the analysis of the packet provides an inconclusive result), then module 110 receives additional packet that is associated with the same session S, and analyzes the additional packet to attempt to determine a content type for data being transmitted in the session S (repeating Steps 202-207, or Steps 202 and 207), until a content type other than "unknown" is determined for the session S.

[0032] As shown in the above embodiments, module 110 receives packet(s) in step 202, analyzes the packet(s) in step 207, and repeats these two steps until it determines a content type for the session in which the packet(s) is being transmitted. Examples of content type that may be determined by module 110 includes skype, gnutella, kazaa, edonkey, bittorrent, aim, yahoo, msn, icq, qq, http, smtp, pop3, imap, ftp, bo2k, bo, tfn, tfn2k, Idap, radius, ms, rpc, snmp, mssql, mysql, and oracle. Various techniques may be used to analyze received packet(s) to determine a content type for the packet(s) being transmitted in a session. For example, module 110 may be configured to examine one or more characteristics of a packet, such as a packet size, a port number of a port from which the packet is received, whether a proxy is used to transmit the packet, a direction in which the packet travels (e.g., from client to server, or from server to client), a string pattern, order of packets, and/or other protocol characteristics.

[0033] Several examples of techniques for analyzing packets to determine content type will now be discussed. However, it should be understood that module 110 is not limited to using the examples of techniques described herein, and that module 110 can use other algorithms, techniques, and criteria to perform the functions described herein. **FIG. 3A** illustrates an example of criteria that may be used to determine whether data transmitted at a normal port is skype data. As shown in the example, module 110 is configured to examine the first packet that is transmitted from client to server, and determine whether the first packet has a prescribed packet size (in the example, prescribed packet size = 14). If the payload size matches the prescribed packet size, then module 110 determines that the session is a candidate of skype type. However, module 110 still classifies the session as "unknown" because the result is inconclusive. The module 110 then determines the payload size of a second packet from server to client, and determines whether the size satisfies the prescribed criteria (in the example, the prescribed size criteria is 28-36). If there is no match (i.e., the size of the second packet does not match the prescribed size criteria), then module 110 determines that the session is not a skype type, and any further packets received in the same session would not be considered as a skype type. However, if there is a match, the module 110 still determines that

the session is a candidate of skype type, and maintains the state of classification as "unknown." Module 110 next determines the payload size of a third packet from client to server, and determines whether the packet size matches the prescribed size criteria (in the example, the prescribed size criteria = 14). If there is a match, then module 110 determines that data transmitted in the session are skype data.

[0034] **FIG. 3B** illustrates an example of criteria that may be used to determine whether data transmitted at a http port is skype data. **FIG. 3C** illustrates an example of criteria that may be used to determine whether data transmitted at a ssl port is skype data. **FIG. 3D** illustrates an example of criteria that may be used to determine whether UDP traffic data is skype data.

[0035] **FIG. 3E** illustrates an example of criteria that may be used to identify Yahoo! messenger traffic (through normal Yahoo login). In such cases, instead of determining a size of the packet, module 110 is configured to examine the content and string pattern. As shown in the example, two packets are used to determine that the traffic data is Yahoo! messenger traffic. **FIG. 3F** illustrates an example of criteria that may be used to identify Yahoo! messenger traffic (through http proxy). As shown in the example, three packets are used to determine that the traffic data is Yahoo! messenger traffic.

[0036] **FIG. 3G** illustrates an example of criteria that may be used to identify msn messenger. In such cases, module 110 is configured to examine payload size and pattern in the payload. As shown in the example, six packets are used to determine that the traffic data is msn messenger traffic.

[0037] **FIG. 3H** illustrates an example of criteria that may be used to identify bittorrent data. As shown in the example, two packets are used to determine that the traffic data is bittorrent data.

[0038] **FIG. 3I** illustrates an example of criteria that may be used to identify kazaa data. As shown in the example, two packets are used to determine that the traffic data is kazaa traffic.

[0039] As shown in the above example, examining more than one packets within a session is advantageous in that it greatly increases an accuracy, and eliminates false detection.

[0040] It should be noted that module 110 is not limited to using the examples of criteria described previously, and that module 110 can use other criteria for determining content type in other embodiments. In some embodiments, a user interface can be provided that allows an administrator to select criteria or parameters for determining content type. For example, module 110 can allow an administrator to input packet size, port number, prescribed string pattern, classifier, and other parameters that may be used to determine a content type. In some embodiments, the user interface also allows an administrator to create customized criteria to detect certain content type.

[0041] **FIG. 4** illustrates an example of results obtained using the process 200 of **FIG. 2**. After module 110 receives packet P11 (Step 202), module 110 determines that the packet P11 is associated with session S1 (Step 204). Packet P11 is the first packet in session S1, which has not been previously classified. Module 110 processes the packet P11 in an attempt to determine a content type (i.e., in an attempt to classify the session/packet) (Step 207). In the illustrated example, the analysis of packet P11 indicates that the packet P11 could be one of three content types T1, T2, and T3, and therefore, provides a result that is inconclusive. As a result, the content type of the session S1 remains "unknown" (i.e., the state of classification is "unknown" with T1, T2, and T3 being possible candidates).

[0042] Module 110 next receives another packet P12 (Step 202), and determines that the packet P12 is associated with the same session S1 (Step 204). Module 110 determines that the session S1 has not been classified (Step 205), and processes the packet P12 in an attempt to determine a content type (Step 207). In the illustrated example, the analysis of packet P12 indicates that data transmitted in session S1 does not belong to content type T2 (e.g., a packet size of P12 may not match a prescribed criteria for type T2), and is therefore, one of two remaining content types T1 and T3. Because the content type determination is inconclusive, the content type of the session S1 remains "unknown" (i.e., the state of classification is "unknown" with T1 and T3 being possible candidates).

[0043] Module 110 next receives another packet P13 (Step 202), and determines that the packet P13 is associated with the same session S1 (Step 204).

Module 110 determines that the session S1 has not been classified (Step 205), and processes the packet P13 in an attempt to determine a content type (Step 207). In the illustrated example, the analysis of packet P13 indicates that data transmitted in session S1 is content type T3. As a result, module 110 classifies the session S1 (and therefore, its associated data) to be content type T3 (Step 208). In such cases, the state of classification for the session S1 is changed from "unknown" to "classified", with the classified content type being T3.

[0044] Module 110 next receives another packet P14 (Step 202), and determines that the packet P14 is associated with the same session S1 (Step 204). Module 110 determines that the session S1 has already been classified (Step 205), and therefore, classifies the packet P14 to be type T3 (Step 206). As shown in the example, after the session S1 has been classified, all subsequent received packets (e.g., packets P14 and P15) will be classified by module 110 to be type T3, and module 110 needs not analyze these subsequent packets (as in Step 207). In other embodiments, module 110 may be configured to check one or more additional packets after the session has been classified. This has the benefit of adding redundancy to the classification process to thereby prevent false classification.

[0045] In some cases, depending on the criteria used to determine a content type, module 110 may be able to classify a session using one packet. As shown in **FIG. 4**, after module 110 receives packet P21 (Step 202), module 110 determines that the packet P21 is associated with session S2 (Step 204). Because packet P21 is the first packet in session S2, session S2 has not been classified. Module 110 processes the packet P21 in an attempt to determine a content type (i.e., in an attempt to classify the session/packet) (Step 207). In the illustrated example, the analysis of packet P21 indicates that data transmitted in session S2 is content type T2. As a result, module 110 classifies the session S2 (and therefore, its associated data) to be content type T2 (Step 208). In such cases, the state of classification for the session S2 is changed from "unknown" to "classified", with the classified content type being T2.

[0046] Module 110 next receives another packet P22 (Step 202), and determines that the packet P22 is associated with the same session S2 (Step 204).

Module 110 determines that the session S2 has already been classified (Step 205), and therefore, classifies the packet P22 to be type T2 (Step 206). As shown in the example, after the session S2 has been classified, all subsequent received packets (e.g., packets P22 and P23) will be classified by module 110 to be type T2, and module 110 needs not analyze these subsequent packets (as in Step 207). In other embodiments, module 110 may be configured to check one or more additional packets after the session has been classified. This has the benefit of adding redundancy to the classification process to thereby prevent false classification.

[0047] As shown in the above examples, after module 110 determines a content type for a session, any further packet(s) received in the same session will be classified as having the same content type (Step 206). As such, other than determining the session associated with the further packet(s), module 110 does not need to analyze these further packet(s). Such technique is advantageous in that later received packet(s) in the same session can be classified without consuming much resources. Also, as shown in the above examples, if module 110 determines that a session does not belong to a certain content type, then such content type will be eliminated as a potential candidate for the session. Such technique allows module 110 to classify the session more efficiently (because only remaining potential candidates are considered in subsequent processing).

[0048] In any of the embodiments described herein, module 110 may be configured to receive packets associated with more than one sessions (e.g., S1, S2). In such cases, module 110 may include a plurality of processing modules for processing packets that are associated with a same session.

[0049] Also, in some embodiments, module 110 may include a plurality of ports for receiving packets, wherein each port is configured to receive more than one type of data. An advantage of using the content type detection technique described herein is that module 110 can determine a content type by analyzing the packet(s) without using a port number of the port from which the packet(s) is received. This in turn, allows a port of the module 110 to receive more than one type of data. In other embodiments, one or more of the ports in the module 110 may be configured to receive one type of data. In such cases, the port assigned to receive

one type of data can be used to receive data having a type that is relatively more difficult to detect by analyzing the packet. For example, if port R1 in module 110 is assigned to receive data having type T1, and port R2 is configured to receive data having any type, then data received from port R1 is automatically classified as type T1, while data received at port R2 will be processed using the method 200 of **FIG. 2**. In further embodiments, a port of the module 110 may be assigned to receive more than one prescribed type of data. For example, a port R3 of the module 110 may be assigned to receive data having types T2, T4, and T5. In such cases, data received at port R3 will be analyzed by module 110 using the process 200 of **FIG. 2**, with types T2, T4, and T5 being the possible candidates (e.g., other types, T1, T3 are automatically eliminated as possible candidates). Such technique has the benefit of improving the processing time of module 110.

[0050] In other embodiments, in addition to determining a content type for data being transmitted in a session, module 110 can be configured to further process the data based on the determined content type. For example, in some embodiments, module 110 may be configured to do content filtering, anti-virus detection, or other intrusion detection based on the determined content type. Many intrusion detection schemes requires that a content type be determined before applying certain intrusion detection algorithms. For example, if module 110 determines that received data belongs to content type T1, module 110 then applies intrusion detection algorithms A1, A3, and A4 to scan the data. On the other hand, if module 110 determines that received data belongs to content type T2, module 110 then applies intrusion detection algorithms A2, A4, and A6, for example.

[0051] Also, in further embodiments, in addition to determining a content type for data being transmitted in a session, module 110 can be configured to control flow of network traffic content based on the determined content type. For example, module 110 can be configured to block HTTP request, thereby preventing undesirable content, such as a web page containing undesirable content, from being transmitted to receiver 104. In other cases, module 110 may erase network traffic content, or modify network traffic content based on a determined characteristic of the network traffic content, such that only portion(s) of the content is allowed to

pass to receiver 104. In one application, module 110 may be used to identify IM session or P2P session (which in traditional systems, can go to any port). In such cases, module 110 can establish a proxy for the IM session or P2P session, and monitor and/or control content of the session.

[0052] Computer Architecture

[0053] As described previously, module 110 can be implemented using software, hardware, or combination thereof. However, those skilled in the art understand that a computer system may also be used to implement module 110 to perform the functions described herein. **FIG. 5** is a block diagram that illustrates an embodiment of a computer system 500 upon which embodiments of the method 200 may be implemented. Computer system 500 includes a bus 502 or other communication mechanism for communicating information, and a processor 504 coupled with bus 502 for processing information. Computer system 500 also includes a main memory 506, such as a random access memory (RAM) or other dynamic storage device, coupled to bus 502 for storing information and instructions to be executed by processor 504. Main memory 506 also may be used for storing temporary variables or other intermediate information during execution of instructions to be executed by processor 504. Computer system 500 may further include a read only memory (ROM) 508 or other static storage device coupled to bus 502 for storing static information and instructions for processor 504. A data storage device 510, such as a magnetic disk or optical disk, is provided and coupled to bus 502 for storing information and instructions.

[0054] Computer system 500 may be coupled via bus 502 to a display 512, such as a cathode ray tube (CRT), for displaying information to a user (e.g., receiver 104). An input device 514, including alphanumeric and other keys, is coupled to bus 502 for communicating information and command selections to processor 504. Another type of user input device is cursor control 516, such as a mouse, a trackball, or cursor direction keys for communicating direction information and command selections to processor 504 and for controlling cursor movement on display 512. This input device typically has two degrees of freedom in two axes, a first axis (e.g., x) and a second axis (e.g., y), that allows the device to specify positions in a plane.

[0055] Computer system 500 can be used for processing network traffic content. According to some embodiments, such use may be provided by computer system 500 in response to processor 504 executing one or more sequences of one or more instructions contained in the main memory 506. Such instructions may be read into main memory 506 from another computer-readable medium, such as storage device 510. Execution of the sequences of instructions contained in main memory 506 causes processor 504 to perform the process steps described herein. One or more processors in a multi-processing arrangement may also be employed to execute the sequences of instructions contained in main memory 506. In alternative embodiments, hard-wired circuitry may be used in place of or in combination with software instructions to implement embodiments described herein. Thus, embodiments described herein are not limited to any specific combination of hardware circuitry and software.

[0056] The term "computer-readable medium" as used herein refers to any medium that participates in providing instructions to processor 504 for execution. Such a medium may take many forms, including but not limited to, non-volatile media, volatile media, and transmission media. Non-volatile media includes, for example, optical or magnetic disks, such as storage device 510. Volatile media includes dynamic memory, such as main memory 506. Transmission media includes coaxial cables, copper wire and fiber optics, including the wires that comprise bus 502. Transmission media can also take the form of acoustic or light waves, such as those generated during radio wave and infrared data communications.

[0057] Common forms of computer-readable media include, for example, a floppy disk, a flexible disk, hard disk, magnetic tape, or any other magnetic medium, a CD-ROM, any other optical medium, punch cards, paper tape, any other physical medium with patterns of holes, a RAM, a PROM, and EPROM, a FLASH-EPROM, any other memory chip or cartridge, a carrier wave as described hereinafter, or any other medium from which a computer can read.

[0058] Various forms of computer-readable media may be involved in carrying one or more sequences of one or more instructions to processor 504 for execution. For example, the instructions may initially be carried on a magnetic disk

of a remote computer. The remote computer can load the instructions into its dynamic memory and send the instructions over a telephone line using a modem. A modem local to computer system 500 can receive the data on the telephone line and use an infrared transmitter to convert the data to an infrared signal. An infrared detector coupled to bus 502 can receive the data carried in the infrared signal and place the data on bus 502. Bus 502 carries the data to main memory 506, from which processor 504 retrieves and executes the instructions. The instructions received by main memory 506 may optionally be stored on storage device 510 either before or after execution by processor 504.

[0059] Computer system 500 also includes a communication interface 518 coupled to bus 502. Communication interface 518 provides a two-way data communication coupling to a network link 520 that is connected to a local network 522. For example, communication interface 518 may be an integrated services digital network (ISDN) card or a modem to provide a data communication connection to a corresponding type of telephone line. As another example, communication interface 518 may be a local area network (LAN) card to provide a data communication connection to a compatible LAN. Wireless links may also be implemented. In any such implementation, communication interface 518 sends and receives electrical, electromagnetic or optical signals that carry data streams representing various types of information.

[0060] Network link 520 typically provides data communication through one or more networks to other devices. For example, network link 520 may provide a connection through local network 522 to a host computer 524. Network link 520 may also transmits data between an equipment 526 and communication interface 518. The data streams transported over the network link 520 can comprise electrical, electromagnetic or optical signals. The signals through the various networks and the signals on network link 520 and through communication interface 518, which carry data to and from computer system 500, are exemplary forms of carrier waves transporting the information. Computer system 500 can send messages and receive data, including program code, through the network(s), network link 520, and communication interface 518. Although one network link 520 is shown, in

alternative embodiments, communication interface 518 can provide coupling to a plurality of network links, each of which connected to one or more local networks. In some embodiments, computer system 500 may receive data from one network, and transmit the data to another network. Computer system 500 may process and/or modify the data before transmitting it to another network.

[0061] Although particular embodiments have been shown and described, it will be understood that it is not intended to limit the present inventions to the preferred embodiments, and it will be obvious to those skilled in the art that various changes and modifications may be made without departing from the spirit and scope of the present inventions. For example, in other embodiments, one or more functions performed by module 110 may be implemented using one or more processors or one or more software. Also, in alternative embodiments, two or more of the steps of process 200 may be combined. In other embodiments, any of the steps of process 200 may be further broken down into sub-steps. In further embodiments, module 110 needs not perform all of the steps of process 200. The specification and drawings are, accordingly, to be regarded in an illustrative rather than restrictive sense. The present inventions are intended to cover alternatives, modifications, and equivalents, which may be included within the spirit and scope of the present inventions as defined by the claims.

CLAIMS

What is claimed is:

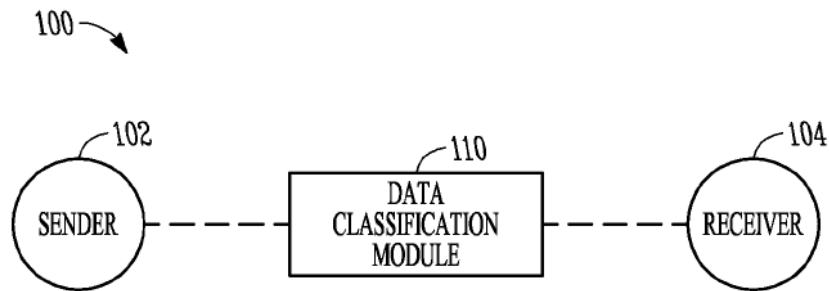
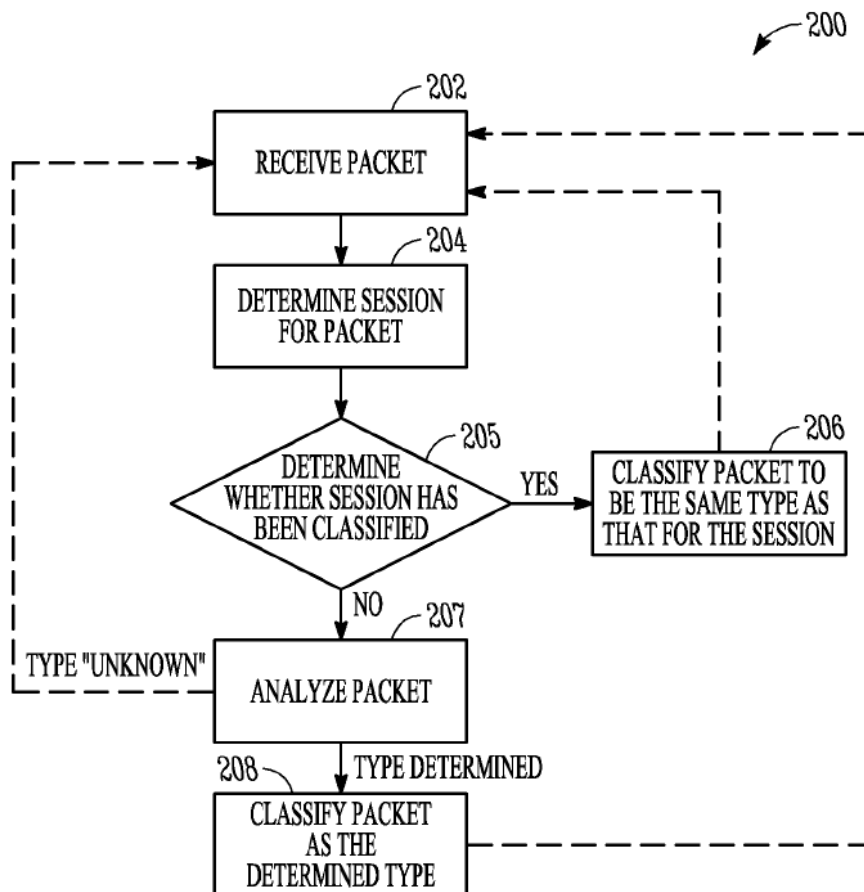
1. A method for determining a type of content, comprising:
receiving a packet associated with a session;
determining whether a content type has been determined for the session or for an other packet associated with the session; and
classifying the packet to be the content type based at least in part on a result from the act of determining.
2. The method of claim 1, wherein the content type for the session or the other packet has been determined.
3. The method of claim 1, wherein the content type for the session or the other packet has not been determined, and the method further comprises receiving one or more additional packets.
4. The method of claim 3, wherein the act of classifying the packet comprises analyzing one of the one or more additional packets to determine if the one or more additional packets satisfy a prescribed criteria.
5. The method of claim 1, wherein the content type has been determined for the session or for another packet associated with the session to not be at least one ruled out classification.
6. The method of claim 1, wherein the content type has been determined for the session or for another packet associated with the session to potentially be of a particular classification.

7. A computer product includes a computer-readable medium, the computer-readable medium having a set of stored instructions, an execution of which causes a process to be performed, the process comprising:
- receiving a packet associated with a session;
 - determining whether a content type has been determined for the session or for another packet associated with the session; and
 - classifying the packet to be the content type based at least in part on a result from the act of determining.
8. The computer product of claim 7, wherein the content type for the session or the other packet has been determined.
9. The computer product of claim 7, wherein the content type for the session or the other packet has not been determined, and the method further comprises receiving one or more additional packets.
10. The computer product of claim 9, wherein the act of classifying the packet comprises analyzing one of the one or more additional packets to determine if the one or more additional packets satisfy a prescribed criteria.
11. The computer product of claim 7, wherein the content type has been determined for the session or for another packet associated with the session to not be at least one ruled out classification.
12. The computer product of claim 7, wherein the content type has been determined for the session or for another packet associated with the session to potentially be of a particular classification.

13. A method for determining a type of content, comprising:
 receiving a first packet from a first port, the first port adapted for receiving at least two types of content; and
 determining a content type for the first packet or for a session with which the first packet is associated is not at least one content type.
14. The method of claim 13, wherein the content type is determined without using a port number that is associated with the first port.
15. The method of claim 13, wherein the content type is determined at least in part by analyzing the first packet.
16. The method of claim 15, wherein the act of analyzing the first packet comprises determining a characteristic associated with the first packet, the characteristic selected from the group consisting of a string pattern, a session classifier, a packet size, and a port number.
17. The method of claim 13, further comprising receiving a second packet, wherein the content type is determined by using the first and the second packets.
18. The method of claim 17, wherein the content type is determined by:
 determining whether a characteristic of the first packet matches a first criteria;
and
 determining whether a characteristic of the second packet matches a second criteria.

ABSTRACT

Various embodiments illustrated and described herein include systems, methods and software for content type classification. Some such embodiments include determining a potential state of classification for packets associated with a session based at least in part on a packet associated with the session that is a packet other than the first packet of the session.

**FIG. 1****FIG. 2**

Example 1: TCP traffic

#	direction	packet_size	port	using proxy	(p,s) matchs skype
1	C --> S	14	!80/!443	no	unknown
2	S --> C	28-36	!80/!443	no	unknown
3	C --> S	14	!80/!443	no	Yes (confirm)

FIG. 3A

Example 2: TCP traffic

#	direction	packet_size	port	using proxy	(p,s) matchs skype
1	C --> S	16	80	no	unknown
2	S --> C	14	80	no	unknown
3	C --> S	28-36	80	no	unknown
4	S --> C	14	80	no	Yes

FIG. 3B

Example 3: TCP traffic

#	direction	packet_size	port	using proxy	pattern	(p,s) matchs skype
1	C --> S	72	443	no	80 46 01 03 01 00 2d	unknown
2	S --> C	93	443	no	16 03 01 00 4a 02	unknown
3	C --> S	14	443	no	N/A	yes (confirm)

FIG. 3C

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Example 4: UDP traffic:

#	direction	packet_size	port	pattern(3rd byte)	(p,s) matchs skype
1	C --> S	18/27	>1024	0x02	unknown
2	S --> C	>10	>1024	0x02/0x07	yes

FIG. 3D

Example 5: normal Yahoo login, through port 80

protocol: TCP; client (C): 192.168.5.186:1734; server (S): 216.155.193.142:80)

#	direction	pattern	classifier(p,s, yahoo)
1	C --> S	[YMSG] + ver_number + pkt_len test	session is Yahoo! candidate However, without server_side packet, the classifier returns "unknown"
2	S --> C	[YMSG] + ver_num	Confirmed. The content type is marked as Yahoo!

FIG. 3E

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Example 6:(fragment packet, through http proxy 192.168.5.158:8007)
 protocol: TCP; client (C): 192.168.5.186:40324; server (S): 192.168.5.158:8007)

#	direction	pattern	classifier(p,s, yahoo)
1	C --> S	POST + YMSG + ver_num + pkt_len test	session is Yahoo! candidate However, without server_side packet, the classifier returns "unknown"
2	S --> C	HTTP/1.0 200 OK	Get proxy server reply. Classifier returns "unknown". Waiting for the next server packet.
3	S --> C	YMSG + ver_num + pkt_len test	Confirmed. The content type is marked as Yahoo!

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FIG. 3F

Example 7:(using sock5 server: 192.168.5.158:1080)
 protocol: TCP; client (C): 192.168.5.186:39594; server (S): 192.168.5.158:1080)

#	direction	pkt_size	pattern	classifier(p,s, msn)
1	C --> S	4	05 02 00 02	session is socks5, classifier return "unknown"
2	S --> C	2	05 00	socks reply, no auth, classifier return "unknown". wait for real data
3	C --> S	>10	05 01 00 03	socks5 connection require, return "unknown", wait for real data
4	S --> C	10	05 00 00 01	socks5 connection success return "unknown", wait for real data.
5	C --> S	>16	msn command	MSN candidate, classifier return "unknown", wait for server reply
6	S --> C	N/A	msn command	session confirmed, session's content type is marked as "MSN"

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FIG. 3G

Example 8: For UDP Tracker protocol 1
 protocol: UDP; client (C): 192.168.5.186:7934; server (S): 218.83.154.39:8080)

#	direction	pattern	classifier(p,s, Bittorrent)
1	P1 --> P2	0x0041727101980L	session is Bittorrent candidate However, without peer packet, the classifier will return "unknown" and wait for the server packet to confirm.
2	P2 --> P1	Test Packet len	If match length requirment.The Classifier will return "YES". The content type will be marked as Bittorrent

FIG. 3H

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Example 9: protocol: UDP; client (C): 192.168.5.186:1837; server (S): 66.75.54.201:1182;
 First Packet (C --> S)

#	direction	pkt_size	pattern	classifier(p,s, KaZaA)
1	P1 --> P2	12	27 00 00 00 + enc_type check + net-workname("KaZaA")	KaZaA candidate, return "unknonw", waiting for peer reply for confirm.
2	P2 --> P1	n/a	28 00 00 00 + enc_type check + network-name ("KaZaA")	Get pong reply from peer session confirmed. return "YES". Session marked as content type KaZaA

note: enc_type coulde be \xa9, \x29,\xbf etc.

FIG. 3I

TIME	SESSION S1	SESSION S1
↓	<div>P11</div> STATE UNKNOWN (T1, T2, T3)	<div>P21</div> STATE CLASSIFIED (T2)
	<div>P12</div> STATE UNKNOWN (T1, T3)	<div>P22</div> STATE CLASSIFIED (T2)
	<div>P13</div> STATE CLASSIFIED (T3)	<div>P23</div> STATE CLASSIFIED (T2)
	<div>P14</div> STATE CLASSIFIED (T3)	
	<div>P15</div> STATE CLASSIFIED (T3)	

FIG. 4

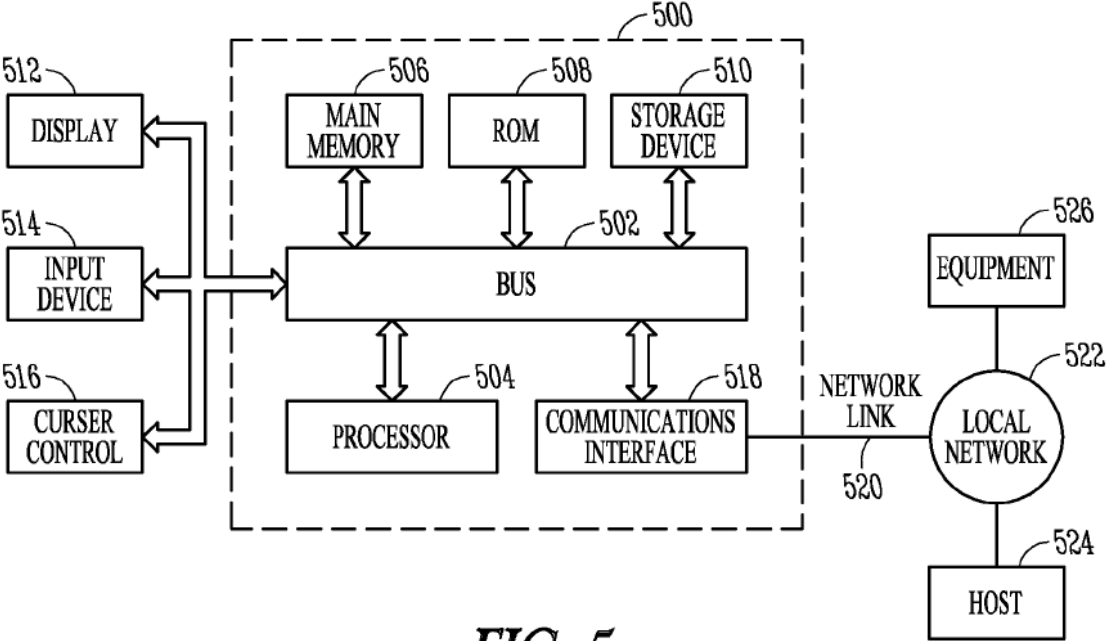


FIG. 5

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION		
First Named Inventor/Applicant Name:		Shaohong Wei		
Filer:		Gregory M. Stark/John Gustav-Wrathall		
Attorney Docket Number:		2831.012US4		
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility application filing	1011	1	390	390
Utility Search Fee	1111	1	620	620
Utility Examination Fee	1311	1	250	250
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1260

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Application Number:	13795283
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Title of Invention:	SYSTEMS AND METHODS FOR CONTENT TYPE CLASSIFICATION
First Named Inventor/Applicant Name:	Shaohong Wei
Customer Number:	21186
Filer:	Gregory M. Stark/John Gustav-Wrathall
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Application Type:	Utility under 35 USC 111(a)

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2831012us4_apln_031213.pdf	1035664 3437ea24b17ac8b4b41621acebc1b3ba24c3911f	yes	35

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Transmittal of New Application	1	1
	Application Data Sheet	2	7
	Specification	8	24
	Claims	25	27
	Abstract	28	28
	Drawings-only black and white line drawings	29	35

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2	Fee Worksheet (SB06)	fee-info.pdf	33397	no	2
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