

UNITED STATES PATENT AND
TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

DATADOME S.A. AND DATADOME
SOLUTIONS, INC.

Petitioner,

v.

ARKOSE LABS HOLDINGS, INC.,

Patent Owner.

Case No. IPR2025-00694
U.S. Patent No. 9,148,427

DECLARATION OF DR. WENKE M. LEE

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I, Wenke M. Lee, hereby declare under penalty of perjury that the following statements are made based on my personal knowledge and are true and correct.

I. SCOPE OF THE ENGAGEMENT

1. I have been retained by Womble Bond Dickinson (US) LLP (“WBD”) on behalf of Arkose Labs Holdings, Inc. (hereinafter “Patent Owner” or “Arkose”), to provide analysis and opinion in connection with the petition for *inter partes* review (“IPR” or “Petition”) filed before the United States Patent and Trademark Office (“PTO”) Patent Trial and Appeal Board (“Board”). I understand that my testimony is being submitted in connection with Patent Owner Arkose’s Preliminary Response to be considered by the Board.

2. I understand that the Petition involves U.S. Patent No. 9,148,427 (“the ’427 Patent”) (Ex. 1001) that is assigned to Arkose. I have been asked to provide my opinions as to the validity of claims 1–20 of the ’427 Patent (collectively, the “disputed claims”) of the ’427 Patent in view of the grounds set forth in the Petition.

3. This Declaration sets forth the opinions that I have formed related to the Challenged Claims of the ’427 Patent based on my personal knowledge, education, research, personal and professional experience, and the information I have reviewed as of the date of this Declaration. In connection with my analysis, I have reviewed each Exhibit filed along with the Petition, including the prior art

publications that form the basis of Petitioner's invalidity challenges, as well as the other exhibits cited in the Petition. I have given the Exhibits different levels of attention based on their roles in the Petition.

4. Patent Owner has hired me at a rate of \$900 per hour for my work in this proceeding, including studying this matter and preparing this declaration. Deposition and trial testimony, if any, are to be paid at a different hourly rate. My compensation is not contingent upon the outcome of this proceeding or the particular testimony or opinions that I express. I have personal knowledge of the facts stated in the declaration, and I am willing to competently testify to them if and when called to do so.

5. I expect to continue my review, evaluation, and analysis of evidence presented for the duration of these proceedings. I expressly reserve the right to amend or supplement this report, as appropriate. In the event that additional relevant information becomes available to me, I also reserve the right to review and consider that information in further developing or refining my opinions.

II. PROFESSIONAL BACKGROUND AND QUALIFICATIONS

6. I have summarized in this section my educational background, career history, and other qualifications relevant to this matter. I have also included a current version of my curriculum vitae, which is attached as Exhibit A.

7. I received my bachelor's degree in computer science from Sun Yat-Sen University in China in 1988. I received my master's degree in computer science from The City College of New York in 1990, and my Ph.D. in Computer Science from Columbia University in New York in 1999.

8. I am now a Regents' Professor and the John P. Imlay Jr. Chair in the School of Cybersecurity and Privacy in the College of Computing at the Georgia Institute of Technology (Georgia Tech). I am knowledgeable and familiar with computer science and cybersecurity and privacy in general, and more specifically, network, hardware and software security, authentication using automated systems (such as CAPTCHA) and biometric data (such as facial recognition), remote network management, network design including high-speed computer memory devices, and VPNs and network intrusion detection including network traffic analysis and malware and botnet detection—this last category being a topic about which I have published multiple related papers stretching back to 1998. For example, I published my paper “Data Mining Approaches for Intrusion Detection” in the 1998 USENIX Security Symposium, a top security conference. It described data analysis and machine learning techniques that I developed to analyze network traffic to identify attack activities, that is, to distinguish attack traffic from normal traffic. This work is the result of several years of coursework and research and development on networking, artificial intelligence, and security. As another example, I completed

my Ph.D. thesis, “A Data Mining Framework for Constructing Features and Models for Intrusion Detection Systems,” in 1999. In addition to data mining and machine learning techniques for analyzing network traffic, it also includes my work, from 1996 to 1999, on using various techniques, including machine learning, to analyze malware behaviors, model human behaviors, and detect impersonation attacks where a user account is compromised to perform tasks that are normally performed by that user.

9. Moreover, my research in cybersecurity includes biometric-based user authentication and detection of non-humans attempting to access computer systems or resources. For example, I authored the paper “rtCaptcha: A Real-Time CAPTCHA Based Liveness Detection System” in Proceedings of The 2018 Network and Distributed System Security and Symposium, San Diego, CA, February 2018, which focused on designing a CAPTCHA based remote authentication system that detects a non-human if its response to a CAPTCHA challenge is not accurate or too slow compared with that of human users. The work for this paper involved designing algorithms to generate CAPTCHA challenges that are displays of images and texts, which are easy for human users to understand and respond accurately and quickly, i.e., in real-time, and accurately, but difficult and slow, i.e., not in real-time, for computer programs such as a bot malware or a compromised computer to parse and answer correctly. I authored the paper “Cryptographic Key Derivation from

Biometric Inferences for Remote Authentication” in Proceedings of the 16th ACM ASIA Conference on Computer and Communication Security, 2021, which focused on authenticating a user based on characteristics of the user’s face in a privacy-preserving manner. The main idea is that when a user is enrolled, cryptographic keys are derived from the user’s face data and used to encrypt some random secrets, and only the encrypted secrets are then stored on the authentication server, and a user is authenticated if the keys newly derived from the user’s face (at the moment of authentication) can decrypt correctly the encrypted secrets stored on the server. It achieves both authentication and privacy protection because the server does not store face data.

10. As I explain below, botnet detection involves using knowledge of operating systems, software, networks, as well as machine learning to analyze network traffic and malware behaviors to distinguish botnet activities from human and normal activities. That is, my work in botnet detection is built on my extensive experiences in network intrusion detection, user behavior modeling, malware analysis, and machine learning that started around 1996 and informed further research about botnets that I used as a foundation to publish many papers on botnet detection and takedowns from 2005 to present. A botnet is a network of bots, or compromised computers, and relies on bot malware running on compromised computers that communicate with botnet command-and-control server(s) for

malware updates and instructions to carry out malicious activities. Botnets are the infrastructure for virtually all the cyberattacks and fraudulent activities, such as Denial-of-Service attacks, spam, phishing, and click fraud in online advertisements. My work focuses on distinguishing traffic and online activities driven by the bot malware vs those initiated by human users. For example, as discussed in my paper “Modeling Botnet Propagation Using Time Zones” in Proceedings of the 2006 Network and Distributed System Security Symposium, San Diego, CA, 2006, a website that has many connections from all over the Internet, even though it is not known in the human world (e.g., a web-search of this site yields no/little reference), is likely to be a botnet command-and-control server, which intends to hide from human users and security monitoring. As another example, I authored the paper “Financial Lower Bounds of Online Advertising Abuse – A Four-Year Case Study of the TDSS/TDL4 Botnet” in Proceedings of the 13th Conference on Detection of Intrusion and Malware & Vulnerability Assessments, Sebastian, Spain, July 2016, which focused on tracking and measuring botnet infrastructures, population, and malicious and fraudulent activities, in particular, in online advertising.

11. As shown in my CV, I have authored several books and book chapters on computer science related to computer system monitoring, network security, and network design.

12. I have published extensively with about 200 refereed journal articles, refereed conference proceedings, refereed workshop proceedings, and books. My research has been recognized by many awards for contributions in wired and mobile network security, network and hardware security, network design, and serial and display data communications systems and interfaces. In 2002, I was awarded a National Science Foundation CAREER Award. In 2015, I was awarded the Internet Defense Prize by Facebook and USENIX for work on stopping emerging attack vectors. I have also received several Best Paper Awards and Test-of-Time Awards in the past several years. For example, in 2017, my paper “Cloak and Dagger: From Two Permissions to Complete Control of the UI Feedback Loop” received the Distinguished Practical Paper Award in the 2017 IEEE Symposium on Security and Privacy and it focuses on attacks that exploit display permissions to trick users and take over the control of users’ devices. In 2017, I was elected as a fellow of the Association for Computing Machinery (ACM), in 2019, I received an Outstanding Innovation Award from the ACM for “pioneering contributions to network and systems security”, and in 2021, I was elected as a fellow of the Institute of Electrical and Electronics Engineers (IEEE).

13. I have received substantial funding from the US government agencies, industry, and foundations, and as a result, I and my students have developed innovative approaches for system monitoring, hardware and software security,

network security, and mobile network security. In particular, I have won many research grants in the field of program analysis and systems and software security as well as cyber-physical systems security. Based on technologies developed in my research projects, I also co-founded a company, Damballa (2006-2016), that specialized in botnet detection.

14. In sum, I have extensive experience both as a developer and a researcher relating to authentication, system monitoring, hardware and software security, network security, memory for integrated circuit devices, network design, and serial and display communications systems and interfaces.

III. SUMMARY OF OPINIONS

15. My opinions are set forth in detail in this declaration. For convenience, I provide here a summary of key aspects of my opinions. The summary below should not be construed to limit or exclude any more detailed opinions set forth elsewhere in this declaration.

16. In my opinion, claims 1, 5-6, 10-11, 15-16, and 20 are not obvious over Lim alone at least because:

- i. The preambles to claims 1 and 11 are limiting, and Lim does not prevent robots from browsing beyond a welcome page. Instead, Lim's use of quizzes or challenges is primarily to ensure that only humans who are logged-in registered users will receive credits to

their accounts. Lim does not prevent “guests”—whether bot or human—from freely browsing websites;

- ii. Lim does not respond to an “initial request” from an “undefined originator” with a challenge, according to claims 1 and 11;
- iii. Lim does not teach or suggest “the response to the challenge includes an identification of a location of the described one of the plurality of graphical forms,” according to claims 1 and 11; and
- iv. Lim does not teach or suggest “stopping processing of further requests from the undefined originator after the challenge has not been successfully fulfilled,” according to claims 6 and 16.

17. In my opinion, claims 2-4 and 12-14 are not obvious over Lim in combination with Lillibridge at least because:

- i. The preambles to claims 1 and 11 are limiting, and Lim does not prevent robots from browsing beyond a welcome page. Instead, Lim’s use of quizzes or challenges is primarily to ensure that only humans who are logged-in registered users will receive credits to their accounts. Lim does not prevent “guests”—whether bot or human—from freely browsing websites;
- ii. Lim does not respond to an “initial request” from an “undefined originator” with a challenge, according to claims 1 and 11;

- iii. Neither Lim nor Lillibridge teaches or suggests “modifying the challenge in response to a second initial request” according to claims 2-4 and 12-14; and
- iv. A POSITA would not have been motivated to combine Lim with Lillibridge.

18. In my opinion, 7-9 and 17-19 are not obvious over Lim in combination with Guthrie because:

- i. Lim and/or Lim in combination with Guthrie do not disclose the limitations of claims 1 and 11 identified in the preceding paragraphs;
- ii. Lim does not respond to an “initial request” from an “undefined originator” with a challenge, according to claims 1 and 11;
- iii. Lim does not “stop[] processing of any further requests” if a challenge is not fulfilled, according to claims 7-9 and 17-19;
- iv. Neither Lim nor Guthrie discloses “dropping or redirecting a TCP connection” if a challenge is not fulfilled, according to claims 7-9 and 17-19;
- v. Neither Lim nor Guthrie discloses the use of IP address logging, IP address matching, and timers in connection with failed challenges in the manner claimed in claims 7-9 and 17-19; and

- vi. A POSITA would not have been motivated to combine Lim with Guthrie.

IV. MATERIALS CONSIDERED

19. In forming my opinions, I have reviewed the '427 Patent and its prosecution history. I have also reviewed and considered the references cited by the Petitioners, the Petition itself, the accompanying exhibits to the Petition (with a particular focus on the Declaration of Dr. Daniel Lopresti (Ex. 1003) and the cited prior art references (Ex. 1004, Ex. 1008, and Ex. 1009)), all exhibits to Patent Owner's Preliminary Response, and the documents and information as set forth in this declaration. Additionally, I have drawn on my education, experience, and scientific knowledge in forming my opinions.

20. Furthermore, my opinions have been informed by my consideration and review of the patents that Petitioner has cited as alleged prior art in its Petition, and Petitioner's arguments for invalidity based on these prior art references:

- U.S. Patent No. 8,527,337 to Lim, et al. ("Lim") (Ex. 1004)
- U.S. Patent No. 6,196,698 to Lillibridge, et al. ("Lillibridge") (Ex. 1008)
- U.S. Patent No. 6,161,185 to Guthrie, et al. ("Guthrie") (Ex. 1009)

V. OVERVIEW OF THE TECHNOLOGY, THE '427 PATENT, AND THE PRIOR ART

21. The application leading to the '427 Patent was filed on May 1, 2008, and claims priority as a continuation of patent application No. 09/901,442, which was filed on July 9, 2001, and became U.S. Patent No. 7,373,510 (“the '510 Patent”). The '510 Patent claims priority from an earlier-filed European application, #00480085.0 2201, which was filed on September 12, 2000. It is my understanding that for the '510 Patent, the earliest possible priority date is September 12, 2000, based on the foreign application priority date, the findings by the Examiner during prosecution of the '427 Patent and position taken by Patent Owner in Patent Owner Arkose’s Preliminary Response, which I agree with. Accordingly, unless stated otherwise, all of the opinions I express in this Declaration have been made from the standpoint of a person of ordinary skill in the art (“POSITA”), as described below, on or around September 12, 2000.

22. The '427 Patent, like the '510 Patent, also pertains to prevention of robots from browsing a website beyond a welcome page. During the early years of CAPTCHA—and before the technology even had a name—the '510 Patent presented a method and computer process designed to prevent harmful bots from entering websites by providing a mechanism to test unwanted “guests” at the door: hard problems for bots to solve, but easy for humans. The '510 Patent disclosed a method and computer process of *differentiating* between a bot and a human, not just

authenticating a user. While passwords and secret handshakes have been around for thousands of years in analog contexts, what truly set the '510 Patent apart was its ability to tell automated threat from a human user at the threshold, and to drop or block the automated threat while letting the human user proceed.

23. The '427 Patent built on the '510 Patent's foundation and teaches a method and computer program for preventing bots from browsing a website beyond a welcome page based on presenting a challenge consisting of a plurality of graphical forms and an accompanying textual expression. An unidentified originator must provide a response that identifies a location of the graphical form described by the expression. The '427 Patent discloses a method and computer program by which an initial request from an undefined originator is received, processed, and responded to with a challenge that prompts the undefined originator to provide a solution based on a written expression accompanying the graphical form. More than requiring just the inputting of a predetermined PIN or password, the '427 takes the '510 Patent's gatekeeping function and teaches an adaptive, graphical challenge function. Like the '510 Patent, if an undefined originator successfully fulfills (i.e., solves) the challenge taught by the '427 Patent, the undefined originator is assumed to be human and can proceed past the welcome page. If the challenge is unsuccessfully fulfilled, the undefined originator is assumed to be a robot, and further access to the website is denied.

A. TECHNICAL BACKGROUND/STATE OF THE ART

24. There have been multiple proposals of technologies that we now refer to collectively as CAPTCHA (“Completely Automated Public Turing test to tell Computers and Humans Apart”) since 1997. While they focus on different technical aspects of CAPTCHA, these methods and systems are all designed to do one thing: prevent bots from pretending to be human users to gain access to the contents of websites and online services. Here, the disclosures in the shared specification for the ’510 Patent and ’427 Patent specifically focus on types of quizzes or challenges that are used for robot detection and on the specific enforcement mechanisms to be employed when a quiz response fails. These quizzes are relatively easy for humans to solve, but hard for bots. In particular, the ’427 Patent further focuses on specific types of quizzes or challenges.

25. In and around 2000, CAPTCHA technology was in its nascent stages. Pioneers in the field, like Luis von Ahn, were still attempting to define the contours of this technology, writing about the nuances of the burgeoning technology and methods of putting it into practice. According to von Ahn, his 2003 paper was the first to formally define and rigorously investigate Automated Turing Tests and their hardness against computer programs. The paper was also the first to propose using AI programs in CAPTCHA. Luis von Ahn, et al., *CAPTCHA: Using Hard AI*

Problems for Security, 2656 Lecture Notes in Computer Science 294, 296 (2003) [https://doi.org/10.1007/3-540-39200-9_18].

26. Based on years of proximity to the art, von Ahn and his colleagues described CAPTCHA as “a cryptographic protocol whose underlying hardness assumption is based on an AI problem.” *Id.* The gist of the paper was this: CAPTCHAs should be hard for bots and computer programs, but quickly answered by humans. The paper explains, often in great mathematical detail, how CAPTCHA uses hard Artificial Intelligence problems that a bot or computer program cannot solve with higher accuracy than what is currently known in the AI community—where a “hard” problem is determined by a consensus in the AI community—and use of multiple challenges of hard problems in a row allows a CAPTCHA to differentiate a human from a bot or computer program.

27. It was in the midst of these early years of CAPTCHA that the ’510 Patent, and in turn the ’427 Patent, presented a method and computer process designed to prevent harmful bots from entering websites by providing a mechanism to test unwanted “guests” at the door: hard problems for bots to solve, but easy for humans. The patents describe a method and computer process of *differentiating* between a bot and human, not just authenticating a user. While passwords and secret handshakes have been around for thousands of years in analog contexts, what truly set the ’510 and ’427 Patents apart was their ability to tell automated threat from a

human user at the threshold, and to drop or block the automated threat while letting the human user proceed.

28. The '427 Patent built on the '510 Patent's foundation and teaches a method and computer program for preventing bots from browsing a website beyond a welcome page based on presenting a challenge consisting of a plurality of graphical forms and an accompanying textual expression. An unidentified originator must identify a location on the graphical forms described by the expression in order to move past the website's welcome page.

29. While methods for authenticating users upon a request to access certain information on the Internet may have existed at the time of the invention, the graphical direction-giving and the accompanying written expression taught by the '427 Patent proved unique. Previous inventions focused on predetermined sequences of letters or numbers, such as entering a password or a PIN. But the '427 Patent, based on visual puzzles, disclosed an interactive method of responding to a challenge, where a user, without any predetermined password or user account, had to solve the visual puzzle to proceed beyond a welcome page. In this way, '427 Patent's invention required more than rote memorization; upon presentation of a graphical form, a user would have to actively engage with a visual puzzle. The intentional decision required by the '427 Patent separated it from other technology at the time.

30. In addition to the visual puzzle, the '427 Patent disclosed a multifactor method and computer process that logged, matched, and analyzed IP addresses, started and monitored a timer, and, based on the IP address and timer, could redirect or drop a TCP connection if analysis of the IP address and timer necessitated.

31. The inventive gatekeeping of the '427 Patent presented unique advantages over other conventional technology at the time by providing a more general and principled approach to stop a robot from browsing a website. This broad approach avoided user account management and profiling that would have required a website to maintain lists of users. Instead, the '427 Patent's Abstract presents various types of application requests as connections from an undefined entity, and posts challenges to and time-out restrictions on an undefined entity rather than an application-specific entity, such as one that associates with a user profile. This streamlined the process of allowing users past a welcome page, which made the '427 Patent's system generally applicable to a wide range of applications. Its visual puzzles also provided a graphically appealing alternative to the bland fill-in-the-blank type of challenges.

32. As demonstrated by the references cited in the Petition, and as discussed in more detail herein, the method and computer process taught by the '427 Patent are unique and different from those presented by other systems.

B. THE '427 PATENT

33. United States Patent No. 9,148,427, titled “System and Method for Implementing a Robot Proof Website,” issued on September 29, 2015. The '427 Patent relates to a method and computer program for preventing robots from browsing a website beyond a welcome page. When an “undefined originator” provides an initial request to the website, the website responds with a welcome page that includes a challenge. Ex. 1001, Abstract. Upon receiving further requests from the undefined originator, the website can check whether the challenge is fulfilled or not, and if fulfilled, “the undefined originator is assumed to be a human being and authorized to go on.” *Id.* “If the challenge is not fulfilled, the undefined originator is assumed to be a robot,” in which case further site access is denied. *Id.* In this way, the invention described by the '427 Patent prevents a website's contents from being investigated by robots without requiring a user to have to log in. *Id.*

1. Specification

34. The '427 Patent discloses an “exemplary welcome page as seen by an individual accessing a Web site” *Id.* at 3:12-16. “Then, according to a first method to prohibit robot's access, the welcome page implements a dummy challenge that can be simply answered by a human being, but which a robot should certainly fail.” *Id.* at 3:18-22. A typical challenge, according to the invention, is a welcome page that “shows an image [120] including, in this particular example, a few

geometric forms that can be unambiguously referred to by a single word or expression in a language that the individual accessing the Web is assumed to be capable of reading.” *Id.* at 3:25-28. “Then, associated with the image which [can include] a square, a circle, a cross and a triangle, the reader is prompted [130] to click e.g., on the cross [121].” *Id.* at 3:29-31. This is illustrated in Fig. 1 of the patent, which is reproduced below:

[FIG. 1]

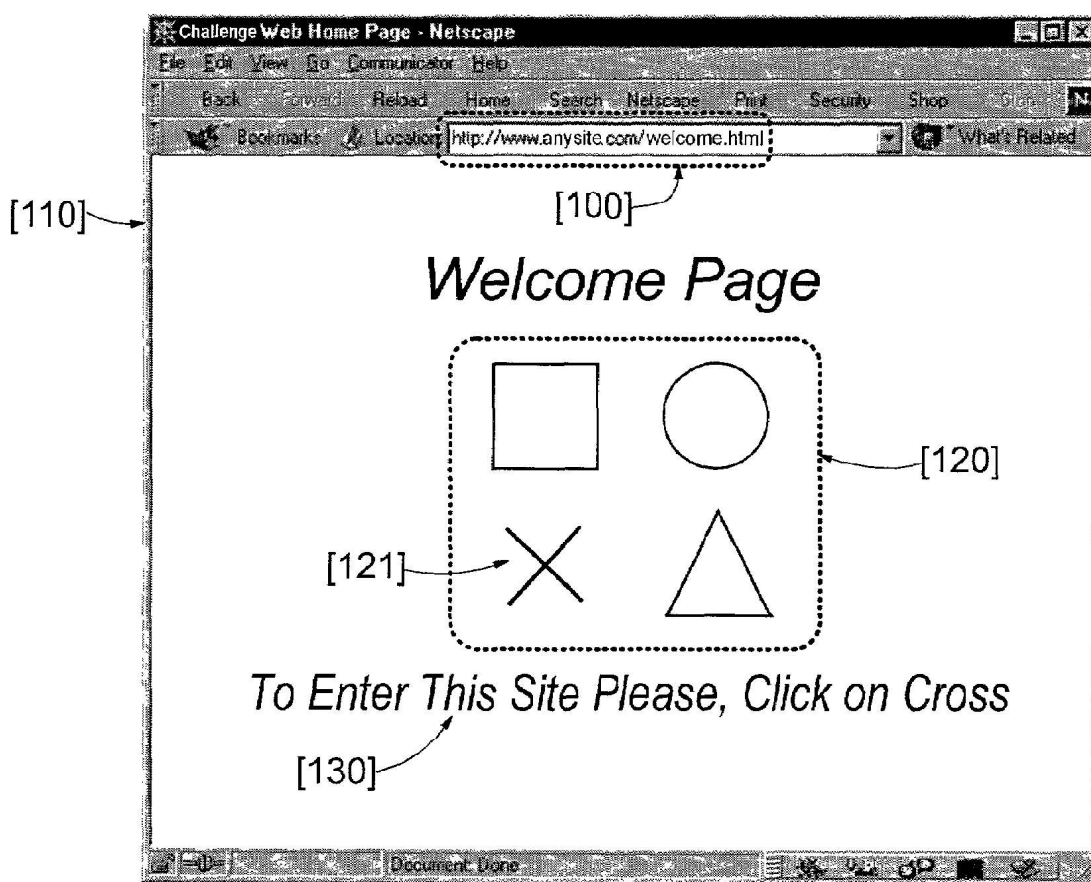


Figure 1

35. When prompted to select the cross, for example, a human being should “naturally” complete the challenge while a robot will “do nothing, or will do it

wrongly” because the robot “does not understand the graphic symbols or which of them may be a cross.” *Id.* at 3:32-35. In this way, the invention “easily allows discrimination of a human being from a robot on the basis of their respective levels of abstract reasoning,” which is high in humans but “totally lacking” in robots. *Id.* at 3:35-39. A robot’s lack of capacity to reason abstractly “allows achievement of the objectives of the invention,” which is “to prevent robots from browsing the site beyond the welcome page,” without having human users register and log in or site administrators manage a list of “legitimate users.” *Id.* at 3:39-44.

36. To prevent “smart” robots, which are programmed to adapt to a given, predictable challenge, from entering a website, “prompting can be made random so that every time someone accesses the site, the challenge is different,” or, “the prompting request can change.” *Id.* at 3:46-53.

37. Figure 2 shows the source HTML code [140] for the example depicted by Fig. 1. *Id.* at 3:54-55:

[140]

```
<!doctype html public "-//w3c//dtd html 4.0 transitional//en">
<html><head><title>Cross</title></head>
<body text="#000000" bgcolor="#000000" link="#0000EE" vlink="#551A8B" alink="#FF0000">

<h1><i><font color="#3366FF">Welcome Page</font></i></h1></center>

<hr WIDTH="100%"><br>
<a href="/cgi-bin/challenge.exe?id=XD34F739"><img SRC="cross.gif" ismap ...
... height=135 width=183></a>
</body>
</html>
```

[141] [142] [143] [149]

Figure 2

[FIG. 2]

38. The example in Fig. 1 “uses a server side map i.e., ismap [142], included in an anchor tag created with the <a . . . > . . . construct form [149] of the HTML language,” which means, “when the user clicks on the cross [121], the browser sends a request back to the server URL (/cgi-bin/challenge.exe) [141] including the X and Y coordinates of the user’s click contained in an ismap [142] so that the server can check whether the click coordinates indeed matche [sic] the cross position.” *Id.* at 3:55-63. The anchor tag also carries an identification field i.e., id=XD34F739 [143] “which is useful to correlate the answer, including the click

coordinates, with the current challenge” when there is a change of prompt from one user to another. *Id.* at 3:63-66.

39. Figure 3 depicts “the steps of the method according to the invention when an originator of an initial request to access a Web site is responded to with a challenge.” *Id.* at 4:1-3:

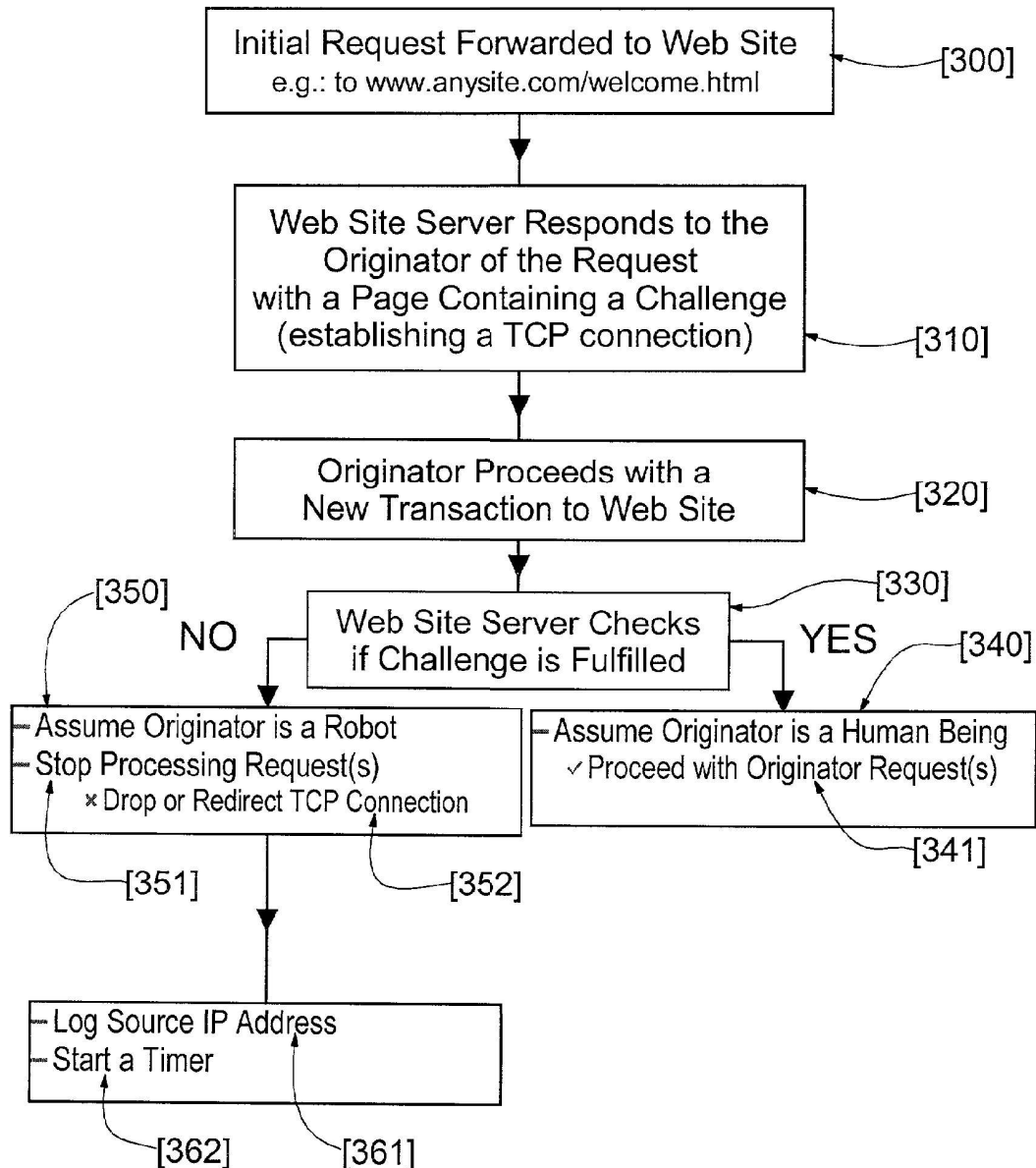


Figure 3

[FIG. 3]

40. When the website receives the initial request, “the [300] Web site server responds with the challenge [310]” through the “establishment of a TCP connection

with the originator,” and the response from the server with the challenge “is in the form of a Web page including a challenge” like the one depicted in Fig. 1. *Id.* at 4:4-9.

41. Once the originator receives the server’s response, the “originator proceeds with a new transaction containing his click response directed towards the Web site [320].” *Id.* at 4:10-12. “On receiving the new transaction, the Web site server checks whether the challenge is fulfilled or not [330],” and if the response “matches the challenge prompt [340], then the site server assumes that the originator is a human being and permits further access.” *Id.* at 4:12-16. On the other hand, if the “Web server finds that challenge is not properly answered, it must assume that the originator is a robot [350],” and thus “stops processing all current and further requests, if any [351], which includes dropping the TCP connection or redirecting it to another site [352].” *Id.* at 4:16-21.

42. In addition to establishing a TCP connection, an “IP source address [361] may be remembered and a timer started [362] so that access to the site may be temporarily barred” from that IP source address, as shown in Fig. 4. *Id.* at 4:21-24:

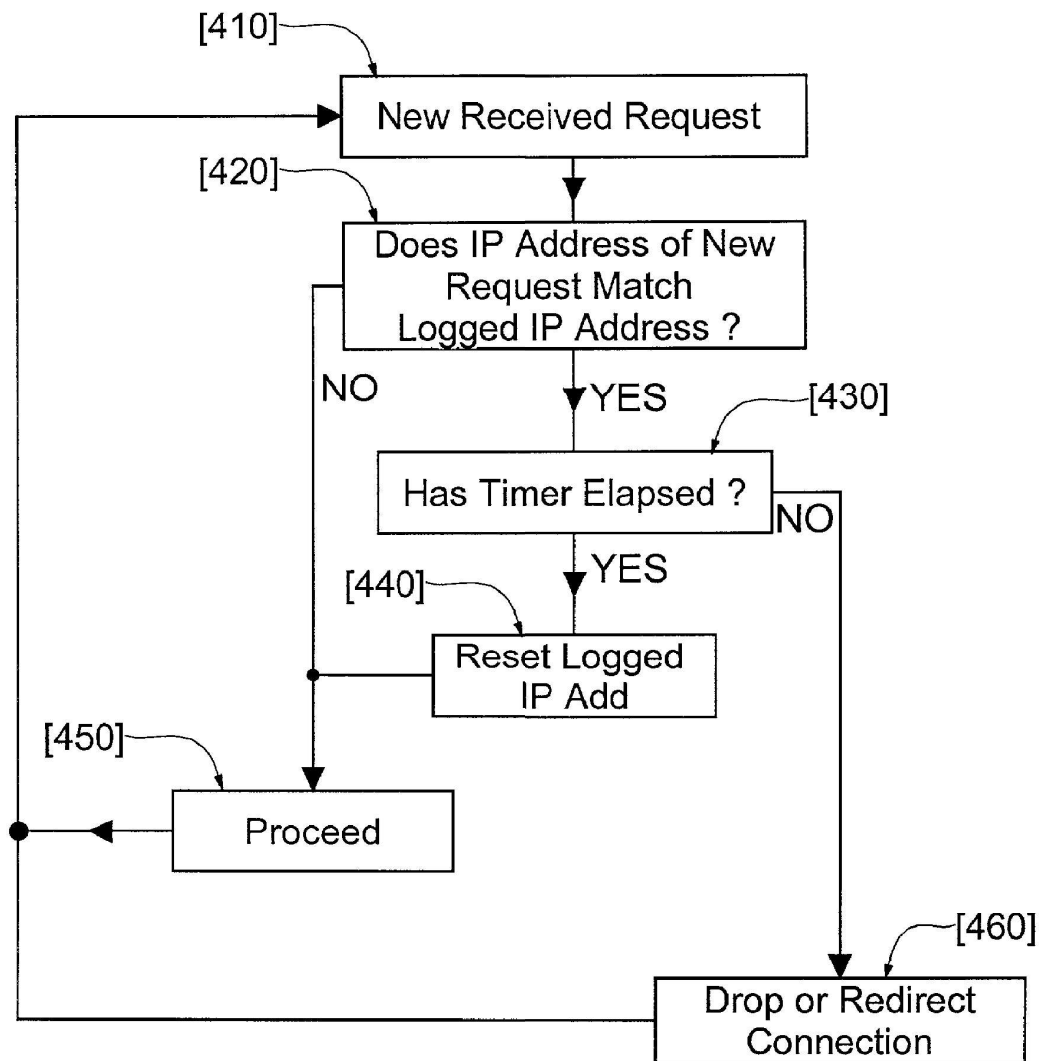


Figure 4

[FIG. 4]

43. In Fig. 4, “the IP address of an assumed robot originator is remembered.” *Id.* at 4:25-26. The server “temporarily drop[s] or redirect[s]

immediately all requests issued with this particular source IP address,” because all subsequent access request from that address “are assumed to come from a robot,” with the caveat that this may be incorrect if a robot is “behind a proxy or firewall performing a network address translation of all the IP source addresses it has to forward.” *Id.* at 4:27-33. Regardless, because “the IP source address of the request was logged and a timer started . . . each time a new request is received [410] the server first checks for whether the same logged source IP address is found [420].” *Id.* at 4:33-36; Fig. 3. If the new request comes from a different address, “access may proceed normally [450],” but if the address is the same, “a timer is checked [430].” *Id.* at 4:36-38. The “logged IP address is reset [440]” if the timer interval has elapsed, which will allow a new request to be “normally handled [450]” with the issuance of a new challenge. *Id.* at 4:39-41. But, if the timer has not elapsed, “the TCP connection is dropped or redirected [460] before the server resumes handling of newly received requests [410].” *Id.* at 4:41-43.

44. The exemplary challenges illustrated in Figure 5 are examples of challenges that are easily answered by humans. *Id.* at 4:44-45. As seen in Fig. 5-a, the challenge takes the “form of a quiz [510] which could be made as simple as shown [500] or as sophisticated as necessary” to defeat “smart” robots as defined above, or “to adapt to a particular end-user population sharing a common type of skill.” *Id.* at 4:46-50.

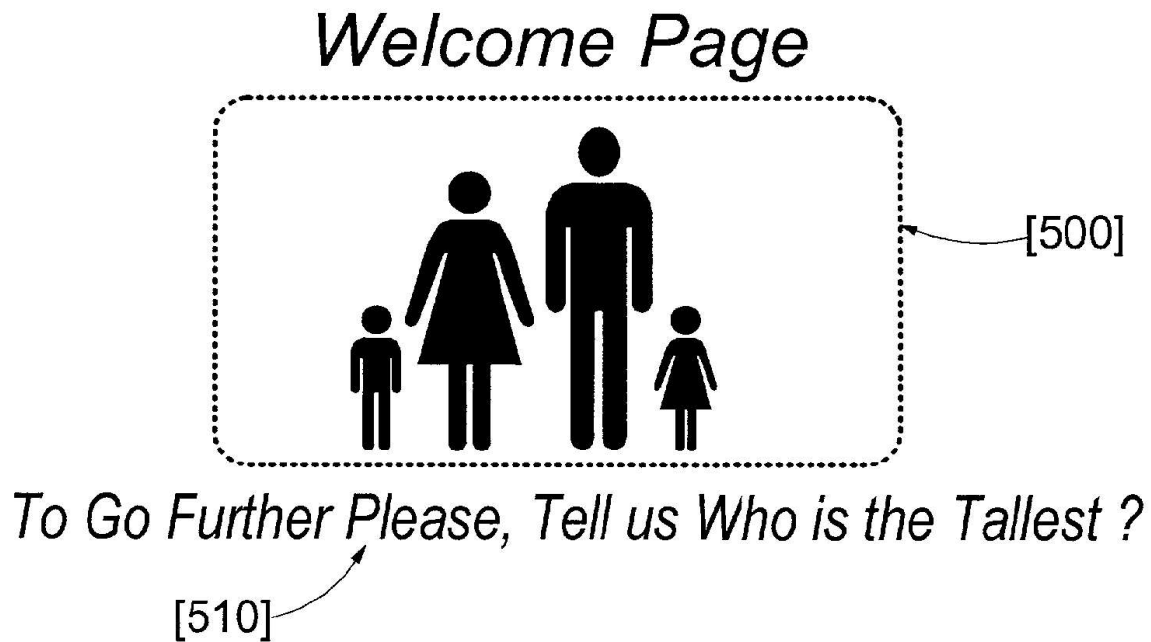


Figure 5-a

[FIG. 5-a]

45. The challenge illustrated in Fig. 5-b “combines images [520] and text [530] in an even more abstract way where the answer is suggested by the text, so it is even better adapted to discriminate a human being from a robot.” *Id.* at 4:51-54.

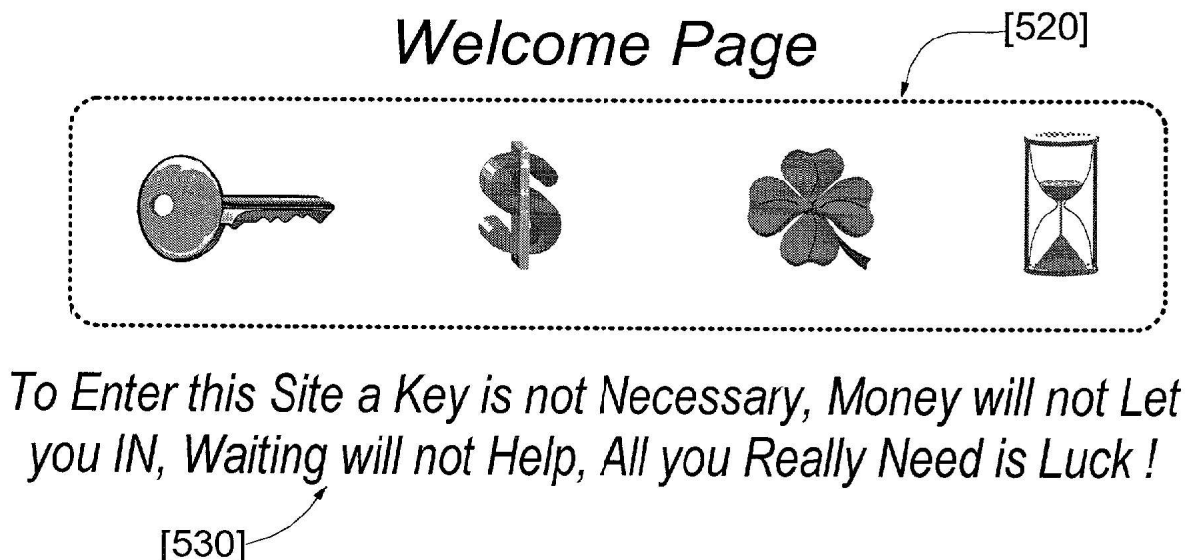


Figure 5-b

[FIG. 5-b]

46. The challenge in Fig. 5-b is culture dependent, however, and it should be noted that such a challenge could serve as well to discriminate human beings on the basis of their social or ethnic origins. *Id.* at 4:54-57.

2. Claims

47. The '427 Patent has two independent and eighteen dependent claims. I understand that the Petitioner has asserted that all the claims of the '427 Patent, i.e., claims 1-20, are invalid as obvious based on one of three grounds.

48. Independent claim 1 is produced below:

1. A method for preventing robots from browsing a Web site beyond a welcome page, comprising:

receiving an initial request, directed to the Web site, from an undefined originator;

responding to the initial request with a challenge that prompts a response to the challenge from the undefined originator; and

receiving the response to the challenge from the undefined originator, wherein

the challenge includes:

a plurality of graphical forms, and

an accompanying textual expression describing one of the plurality of graphical forms, and

the response to the challenge includes an identification of a location of the described one of the plurality of graphical forms.

Ex. 1001, claim 1.

49. Independent claim 11 is structured similarly to claim 1 but is drawn to a computer program comprising computer executable steps.

50. The dependent claims add permutations of 9 additional limitations:

- a. “modifying the challenge in response to a second initial request”; claims 2, 12.
- b. modifying “includes varying coordinate location of the described one of the plurality of graphical forms”; claims 3, 13.

- c. modifying also “includes varying which one of the plurality of graphical forms is described by the accompanying textual expression”; claims 4, 14.
- d. “processing further requests from the undefined originator after the challenge has been successfully fulfilled”; claims 5, 15.
- e. “stopping processing of further request from the undefined originator after the challenge has not been successfully fulfilled”; claims 6, 16.
- f. “the stopping processing includes dropping or redirecting a TCP connection established with the undefined originator”; claims 7, 17.
- g. “logging a source IP address of the undefined originator, and starting a timer”; claims 8, 18.
- h. “receiving a new request; determining whether a source IP address of the new request matches the logged source IP address of the undefined originator; determining whether said timer is expired; and upon the source IP address of the new request matching the logged source IP address of the undefined originator and the timer being expired, responding to the new request with a second challenge that prompts a response to the

second challenge”; claims 9, 19.

i. “the location is X and Y coordinates of the undefined originator’s click associated with the challenge”; claims 10, 20.

3. Prosecution History

51. United States Patent No. 9,148,427 (“the ’427 Patent”), titled “System and Method for Implementing a Robot Proof Web Site,” issued on September 29, 2015. The named inventors are Marc Lamberton, Eric Levy-Abegnoli, and Pascal Thubert. The assignee shown on the face of the patent is International Business Machines Corporation (“IBM”). In my summary of the prosecution history of the ’427 Patent, I refer generally to the named inventors and IBM as “Applicant,” and I am unaware of any reason to draw a more granular distinction between them for the purposes of addressing the issues raised in the Petition.

52. The U.S. patent application leading to the ’427 Patent, No. 12/113,607 (“the ’607 application”), was filed on May 1, 2008. It is a continuation of application number 09/901,442 (“the ’442 application”), filed on July 9, 2001, which became the ’510 Patent.

53. The ’607 application included 2 independent claims, claims 1 and 27, and 18 dependent claims. The initial claim set in the ’607 application originated from the ’442 application. In light of the ’510 Patent’s prosecution history, Applicant modified the ’442 application by cancelling and amending claims from that original

claim set, which resulted in a reduction from 55 claims as found in the '442 application, to the 20 claims disclosed by the '607 application.

54. Claim 1 disclosed a method for preventing robots from browsing a website beyond a welcome page, which comprised steps of receiving a request from an “undefined originator,” responding to the request with a challenge, receiving the response to the challenge, analyzing the response, and determining whether to process further requests. As a continuation of the '510 Patent, the '607 application augmented the '442 application in the following ways: by cancelling claims 4, 6, 11-13, 15-21, 23-26, 30, 32, 37-39, 41-47, and 49-55. The '607 application amended claims 7, 8, 10, 14, 22, 33, 34, 36, 40, and 48, claims that were originally in the '442 application, but were amended and modified during prosecution of the '510 Patent.

55. Two years later, on August 27, 2010, the Examiner issued a first Office Action, rejecting claims 1-3, 5, 7-10, 14, 27-29, 31, 33-36, 40, and 48 for nonstatutory obviousness-type double patenting, and rejecting them further under 35 U.S.C. §§ 101, 102(a) and (e), and 103(a).

56. Regarding double patenting, the Examiner contended that claims 1-3, 5, 7-10, 14, 27-29, 31, 33-36, 40, and 48 were unpatentable over claims 1-30 of the '510 Patent. According to the Examiner, the limitations in the '510 Patent were mirrored in the '607 application, rendering the claims in the application unpatentable.

57. Furthermore, the Examiner rejected claims 27-29, 33, 34, 36, 40, and 48 under 35 U.S.C. § 101.

58. Claims 1-3, 7-10, 14, 22, 27-29, 33, 34, 36, 40, and 48 were rejected under 35 U.S.C. §§ 102(a) and (e) as being anticipated by U.S. Patent No. 6,195,698 (“Lillibridge”). The Examiner stated that Lillibridge disclosed a method and a computer process for preventing robots from browsing a web site beyond a welcome page, comprising computer-executable steps. Specifically, the examiner pointed to Lillibridge 6:40-49 for the disclosure of receiving an initial request from an undefined originator and responding to said initial request with a challenge that prompts a response from said undefined originator; 6:50-57 for the disclosure of receiving a response from said undefined originator and checking said response to determine whether said challenge is fulfilled; 6:58-67 for the disclosure of processing or stopping processing of any further requests and dropping or redirecting a TCP connection established with said undefined originator; 7:35-45, 8:6-19, and 8:37-46 for the disclosure of logging a source IP address of said undefined originator and starting a timer; 4:45-5:40 and 6:40-43 for the disclosure of the computer process further including computer-executable steps for prompting said undefined originator to perform a specific action and changing said prompting at each access of said website; and 9:19-36 for the disclosure of the computer process prompting the undefined originator to respond to the challenge.

59. Last, the Examiner rejected claims 5, 31, and 35 under 35 U.S.C. § 103(a) as unpatentable over Lillibridge in view of U.S. Patent No. 7,051,369 (“Baba”). The Examiner incorporated the rejections of claims 2, 29, 33, and 35 under 35 U.S.C. 102 (a) and (e) as being anticipated by Lillibridge in this section as well.

60. The Examiner contended that Lillibridge discloses the feature of determining whether the server has recently honored a request with a unique transaction identifier, and responding to the request if it has not. Yet, according to the Examiner, Lillibridge does not disclose that the transaction identifier is a source IP address, which, according to the Examiner, meant that Lillibridge does not expressly disclose computer-executable steps, including: checking whether a source IP address of a new request matches a logged source IP address; and if the source IP address matches the logged source IP address; checking whether the timer has expired and, if expired, resetting the logged IP address and proceeding normally with a new request; and, alternatively, if the timer is not expired, dropping or redirecting the TCP connection; and, if the source IP address does not match a logged source IP address, proceeding normally with a new request and executing all the above steps with each newly received request.

61. Nevertheless, the Examiner then pointed out that Baba discloses a method and apparatus to monitor IP packets and taking certain actions when an attack is identified. The Examiner contended that Baba is analogous to the art of

Lillibridge, and as such, it would have been obvious to a POSITA to include computer-executable steps to Lillibridge for logging and matching an IP address, setting and checking a timer, redirecting or dropping a TCP connection, and processing new requests. According to the Examiner, this covered the '607 application's claims 5, 31, and 35.

62. On November 24, 2010, Applicant responded to the August 27, 2010 Office Action by amending the application as follows: by cancelling claims 1-55, which were all claims initially included in the '607 application. In their place, Applicant added claims 56-75, which disclosed a method and computer program for preventing robots from browsing a website beyond a welcome page. The updated limitations included two independent claims, 56 and 66, which disclosed receiving an initial request from an undefined originator, responding to the initial request with a challenge that prompts a response from the undefined originator, and receiving the response to the challenge, but, to differentiate these independent claims from the previous versions, Applicant included a description of the challenge itself: wherein the challenge includes a plurality of graphical forms, and an accompanying textual expression describing one of the plurality of graphs, where the response from the undefined originator identifies the location of the described one of the plurality of graphical forms. Claims 57-65 then described the method of modifying the challenge in response to a second initial request, which includes varying the coordinate

location of the described one of the plurality, which then changes the description of the accompanying textual expression. If successfully fulfilled, the method describes processing further requests from the undefined originator, and if unsuccessfully fulfilled, stopping processing requests, which includes dropping or redirecting TCP connections. These dependent claims also disclosed logging and matching source IP addresses, starting a timer and determining whether it has expired in connection to subsequent requests from an undefined originator, and receiving and processing new requests. Claims 67-75 disclose the same features and abilities, but in the context of a computer program rather than a method. Applicant streamlined the dependent claims, while retaining the original gist of processing challenge responses.

63. The Examiner provided a response on February 17, 2011, rejecting claims 56-75 under 35 U.S.C. §§ 101 and 103(a) as well as several written informalities.

64. Under 35 U.S.C. § 103(a), the Examiner rejected claims 56-61, 65-71, and 75 as being unpatentable over U.S. Patent No. 6,209,104 (“Jalili”) in view of U.S. Patent No. 5,855,020 (“Kirsch”). The Examiner contended that Jalili disclosed a method and a computer program product that covered the limitations outlined in the ’607 application because Jalili disclosed receiving an initial request (6:4-7, 32-33; 9:40-57); responding to the request with a challenge (6:34-36; 9:40-57); receiving a response to the challenge, where the challenge includes a plurality of

graphical forms, and an instruction describing the plurality (6:32-48; 7:25; 8:31, 33-41); reviewing the challenge response and modifying the challenge for subsequent initial requests where the modifications include varying coordinate location and accompanying description (9:1-10); processing further requests after the challenge has been successfully fulfilled (6:4-28; 8:10-15); stopping processing of further requests when challenge unsuccessfully fulfilled (8:10-15); and tracking of an undefined originator's clicks on a challenge grid (figs. 6, 7; 7:62-8:15; 8:49-54).

65. According to the Examiner, because the Jalili authentication process to prevent robots from browsing a website requires user interaction, conventional web crawlers, as described in Kirsch (2:53-65), would not have been able to access a site that used the Jalili authentication process.

66. Regarding claims 56-61, 65-71, and 75, the Examiner contended that Jalili, while not expressly disclosing instructions accompanying a textual expression, impliedly did so because it was “notoriously” well known, and the Examiner took official notice of this teaching.

67. Turning to claims 62, 63, 72, and 73, the Examiner also rejected them under 35 U.S.C. 103(a) as being unpatentable over Jalili in view of Kirsch, and further in view of Lillibridge. Claims 62, 63, 72, and 73 disclose a method and computer program whose stopping processing of requests includes dropping or redirecting a TCP connection, logging a source IP address, and starting a timer. In

the Examiner's interpretation of the prior art, Jalili does not expressly disclose the step of stopping processing includes dropping or redirecting a TCP connection, or that the method further comprising the step of logging a source IP address of the undefined originator and starting a timer. To the Examiner, however, Lillibridge fills in the gaps by teaching a method restricting access to a network service available over the Internet by requiring the correct response to a riddle (Abstract; 5:40-64); if the user's response is not correct, the server terminates the connection (6:58-67); and, in response to a generic request for service, the system sends a riddle and a server time to the client, the client responds with an answer, and if the answer is correct, access is granted, all while there is logging of the client's IP address (8:37-46). The Examiner contended that Lillibridge supplied obvious modifications to Jalili that a POSITA would be motivated to combine by teaching a TCP drop/redirect and logging a source IP address of the undefined originator and starting a timer with which a POSITA would have been motivated to combine to ensure that the authentication was performed by the user who initiated the request (same IP address) and that the authentication procedure did not timeout (starting and monitoring a timer).

68. Turning to claims 64 and 74, the Examiner also rejected them under 35 U.S.C. 103(a) as being unpatentable over Jalili in view of Kirsch and Lillibridge, and further in view of U.S. Patent No. 6,199,065 ("Kenyon"). Claims 64 and 74

disclose receiving a new request, determining whether a source IP address of the new request matches the logged source IP address, determining whether a timer is expired, and upon the source IP address of the new request matching the logged source IP address, and the timer being expired, responding to the new request with a second challenge that prompts a response to the second challenge. While the Examiner stated that Jalili did not disclose these limitations, he contended that it was obvious at the time of the invention to re-authenticate a user once a session had timed out because network servers conventionally terminated a user's session and required re-authentication to avoid security lapses. The Examiner cited to Kenyon for a method and system that provides online services for users who are required to authenticate themselves to establish a valid session. But, if a session times out, Kenyon teaches that the user is required to login again (2:15-40); and, as disclosed in Lillibridge and, in the Examiner's view, what was conventional at the time, such sessions were identified and monitored by the logging of the IP address of the user's transmissions (8:36-46). To the Examiner, Jalili in view of the teachings of Kenyon and Lillibridge would suggest checking the IP source of a new request, and if the source had already established a session, but that session had timed out, then reinitiating the authentication procedure, concluding that a POSITA would have modified Jalili in view of the teachings of Kenyon and Lillibridge to prevent unauthorized access to stale user sessions.

69. Because the Applicant's amendment necessitated new grounds of rejection, the action was made final. In response, Applicant filed a notice of appeal on May 17, 2011, and an appeal brief ("the Brief") on July 13, 2011. In the Brief, Applicant requested review of the following: the rejection of claims 66-75 under 35 U.S.C. § 101 as being directed to non-statutory subject matter; the rejection of claims 56-61, 65-71, and 75 under 35 U.S.C. § 103(a) as being unpatentable over Jalili in view of Kirsch; the rejection of claims 62-63 and 72-73 under 35 U.S.C. § 103(a) as being unpatentable over Jalili in view of Kirsch and further in view of Lillibridge; the rejection of claims 64 and 74 under 35 U.S.C. § 103(a) as being unpatentable over Jalili in view of Kirsch and Lillibridge and further in view of Kenyon.

70. Addressing the § 101 rejections, the Brief argued that "storage" and "storage medium" indicate a tangible, not transitory, medium that stores data, and is thus patentable.

71. Addressing the § 103 rejections of claims 56-61, 65-71, and 75, the Brief argued Examiner had not found that the prior art included each properly construed element claimed, and failed to establish a prima facie case of obviousness. The brief incorporated the § 103 rejections of 62-64 and 72-72 in this section.

72. The Examiner provided a response to the appeal on October 17, 2011 ("the Response Brief"). The Response Brief considered the § 101 arguments and found them unpersuasive, standing by the Examiner's rejections. On the other hand,

the Response Brief considered the § 103 arguments and found them to be persuasive, and withdrew the Examiner's rejection under § 103. Yet, a new ground of rejection was made in view of U.S. Patent No. 5,559,961 ("Blonder") and made new rejections of claims 56-61, 65-71, and 75 as unpatentable over Jalili in view of Kirsch and further in view of Blonder. Furthermore, claims 62, 63, 72, and 73 were rejected as being unpatentable over Jalili in view of Kirsch, and in further view of Blonder and Lillibridge, and claims 64 and 74 were rejected as being unpatentable over Jalili in view of Kirsch, Blonder, Lillibridge, and further in view of Kenyon.

73. Applicant filed another notice of appeal on January 17, 2012, and filed the second appeal brief ("the Second Brief") on March 15, 2012. In the Second Brief, Applicant requested review of the following: the rejection of claims 66-75 under 35 U.S.C. § 101 as being directed to non-statutory subject matter; the rejection of claims 56-61, 65-71, and 75 under 35 U.S.C. § 103(a) as being unpatentable over Jalili in view of Kirsch further in view of Blonder; the rejection of claims 62-63 and 72-73 under 35 U.S.C. § 103(a) as being unpatentable over Jalili in view of Kirsch and further in view of Blonder further in view of Lillibridge; the rejection of claims 64 and 74 under 35 U.S.C. § 103(a) as being unpatentable over Jalili in view of Kirsch, Blonder and Lillibridge and further in view of Kenyon.

74. Regarding the renewed § 103 rejections against 56-61, 65-71, and 75, the Second Brief argued that the Examiner failed to locate all claimed teachings in

the combination of cited references—Jalili, Kirsch, and Blonder. The Second Brief argued that the plurality of graphical forms accompanied by textual expressions describing one of the plurality is a limitation that is not disclosed by any of the cited references. The Second Brief pointed out alleged deficiencies in the Examiner’s interpretation of Blonder, such as Blonder teaching what the user is required to do, but not describing one of the plurality of graphical forms; and Jalili and Blonder teaching users to enter passwords is different from the textual expression that describes the answer of a challenge so a user can select the correct graphical form. Claims 62-63 and 72-74 were incorporated into the argument above.

75. The Examiner provided a response (“the Second Response Brief”) on May 22, 2012. Addressing the § 103 claims, the Second Brief argued that the cited prior art does in fact teach that a challenge includes a plurality of graphical forms accompanied by a textual expression describing one of the plurality, especially in combining Jalili in view of Kirsch further in view of Blonder.

76. The Board of Patent Appeals and Interferences (“the Board”) rendered a decision as to claims 56-75 on March 3, 2015. The two issues on appeal were (1) whether the Examiner erred in finding that a “computer usable storage medium,” as recited in claim 66, encompassed non-statutory subject matter; and (2) whether the Examiner erred in finding that the combination of Jalili and Blonder teaches or suggests “a plurality of graphical forms, and an accompanying textual expression

describing one of the plurality of graphical forms,” as recited in claim 56. To the first issue, the Board affirmed the Examiner’s rejection, holding that claims 66-75 covered both non-statutory and statutory subject matter.

77. As to the second issue, the Board reversed the Examiner’s rejection, finding that, while Blonder does teach a plurality of graphical forms, its graphical password entry function, even in combination with Jalili and Kirsch, does not teach or suggest an accompanying textual expression describing the graphical form. The Board explained that the claim language of the ’607 application required that the textual expression describe one of the plurality of graphical forms. Conversely, the section of Blonder relied upon by the Examiner related to the setting of a password by tapping various regions on a graphical image, prompting a user to select a tap region and position it within a password region (Blonder, 3:35-66). The Board did not find this prompt to describe one of the plurality of graphical forms as required by the ’607 application’s claims. In fact, once the password has been set, the password routine taught in Blonder displays the graphical image without also displaying tap regions. *Id.* at 4:30-36. The Board explained that Blonder teaches the password routine “waits until the user makes a location selection on [the] display.” *Id.* at 4:40-41. Thus, the Board held that the Examiner’s findings did not persuasively show that Blonder’s graphical password entry function, even in combination with

the other references, taught or suggested an accompanying textual expression describing the graphical form.

78. A Notice of Allowance and Fee(s) Due issued on May 18, 2015, as well as a Notice of Allowability, under the condition of an Examiner's Amendment, which added the modifier "non-transitory" to "computer usable storage medium" in independent claim 66. This amendment overcame the § 101 rejection of claims 66-75. On July 24, 2015, Applicant requested an amendment to the specification, adding the language "now U.S. Patent No. 7,373,510, which also claim priority to European Patent Application 00480085.0, filed September 12, 2000," referring to the original European patent on which the '510 Patent was based. The Examiner approved this addition on August 7, 2015.

79. On September 9, 2015, a Determination of Patent Term Adjustment ("PTA") issued under 35 U.S.C. 154(b), adding 2019 days to the term of the patent. The patent issued on September 29, 2015. Due to the PTA, the '427 Patent has an adjusted expiration date of January 18, 2027.

C. CITED REFERENCES

1. Lim

80. The U.S. Patent No. 8,527,337 (“Lim”) (Ex. 1004)¹ focuses on the management of user accounts and profiles, and reward credits, and the authentication of human users serves these business purposes. This is quite specific and encapsulates a goal with a different and much narrower focus than the ’427 Patent.

81. At the time of the invention claimed in Lim, the Internet was configured to return information to users based on keywords or search strings provided by the user. Ex. 1004, 1:58-59. Results were ranked by matching the user’s search terms with a website’s metatags and returned based on the quality of the match. *Id.* at 1:35-38, 58-64. To get more engagement, advertisers and website owners would often repeat terms or include multiple similar metatag terms, to the potential detriment of the Internet user. *Id.* at 2:1-10.

82. To address this, Lim describes a method of returning information to registered and logged-in users, where the information is ranked according to reward

¹ Petitioner has also included as Exhibits 1005-1007 the three provisional applications leading to Lim, and Dr. Lopresti has included with his declaration several charts detailing his opinions about the support for Lim provided in the three provisional applications. For the purposes of this declaration in connection with Patent Owner’s Preliminary Response, I have not considered evidence or arguments that the inventors of the ’427 Patent are entitled to a conception date earlier than September 12, 2000; however, I understand that if the Board institutes review, Patent Owner has reserved the right to submit such evidence.

credits, instead of the quality of match between search terms and metadata terms. *Id.* at 4:10-13. These reward credits could be offered by advertisers and website owners to Internet users who engaged with their content, and redeemed those reward credits for cash, gift certificates, airline miles, and more. *Id.* at 4:10-18. Advertisers or website owners could offer more rewards if a user had the profile of their target demographic, which would rank the ad or website higher in a user's search return. *Id.* at 4:25-30. Thus, a user may be incentivized to provide their demographic profile information to advertisers and content providers in exchange for more reward credits. *See id.* at 2:63-65. Lim also identifies a need for managing this reward system, to ensure that only human Internet users were able to receive these rewards. *Id.* at 9:54-56.

83. Because users are paid per ad and/or site viewed, an automated system that establishes or employs a registered user account would be able to earn money or credits without a desired human actually viewing the advertising or visiting the site. Accordingly, "some embodiments of the present invention make use of periodic quizzes ... to verify that a particular user is a human." *Id.* 13:18-24. This is the context for Lim's disclosure that quizzes may be provided during new user registration. *Id.* 9:53-64 ("Before being allowed to register, these new users may be asked to answer one or more questions of a quiz to test whether they are a human users [sic] or not . . . [otherwise bots might otherwise be able to sign up] and thereby

garner any rewards associated therewith, without having to subject a human user to this process.”).

84. To manage the reward system and authenticate human use, Lim describes a method that transmits a prompt, consisting of one or more graphical images, from a server to the user’s computer system. *Id.* at 23:50-54. Users may be provided a text-input box to write their answer in or may select the answer from the image itself. *Id.* 13:52-56. Due to the simple nature of these questions, this method allows a human operator, but not an automated one, to provide the correct response to the prompt. *Id.* at 13:43-45.

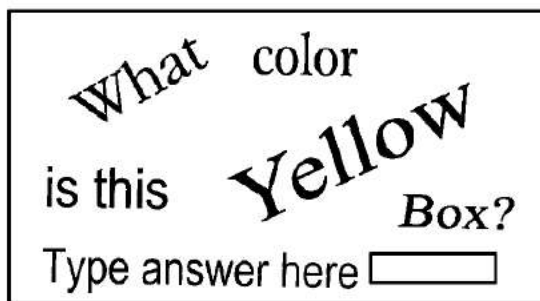


FIG. 4A

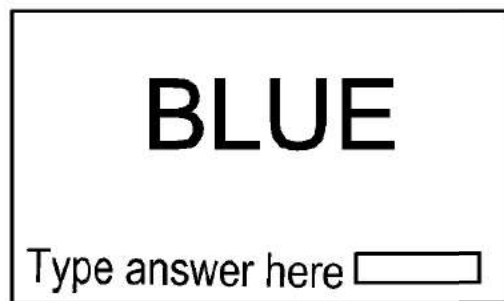


FIG. 4D

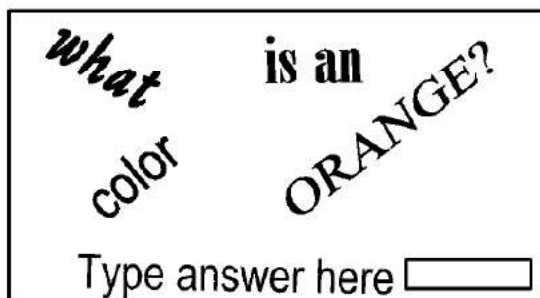


FIG. 4B

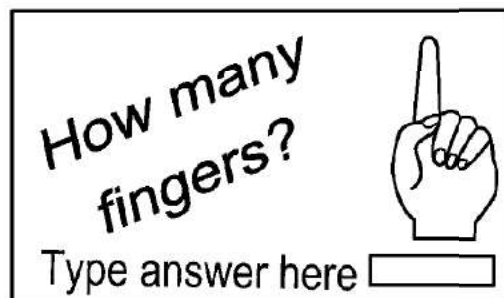


FIG. 4E

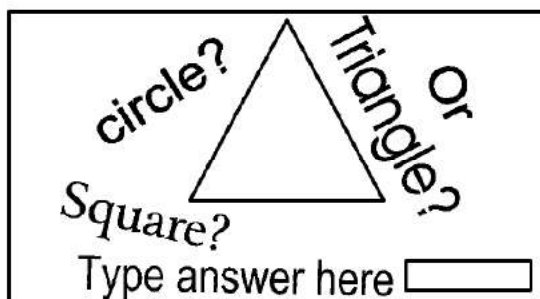


FIG. 4C

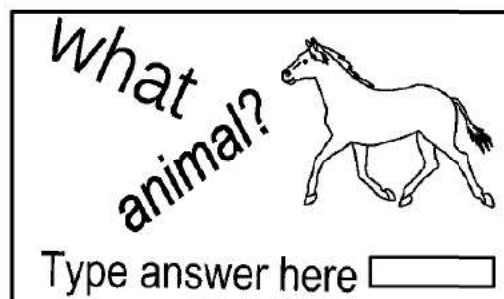


FIG. 4F

[Ex. 1004 FIGs. 4A-4F]

85. Upon confirmation of the correct response by the logged-in registered user, the server computer grants access to the computer-based resource, enabling the user to receive reward credits. *Id.* at 24:4-8. The server computer determines the amount of time the human operator has access to the resource before another prompt

is given. *Id.* at 24:9-16. This interval of time may increase when more correct responses are given, as the response is inferred to have been provided by a human operator. *Id.* at 24:11-16. If the user fails a test, a retest is offered, and the retest resets the testing interval. *Id.* at 14:56-67.

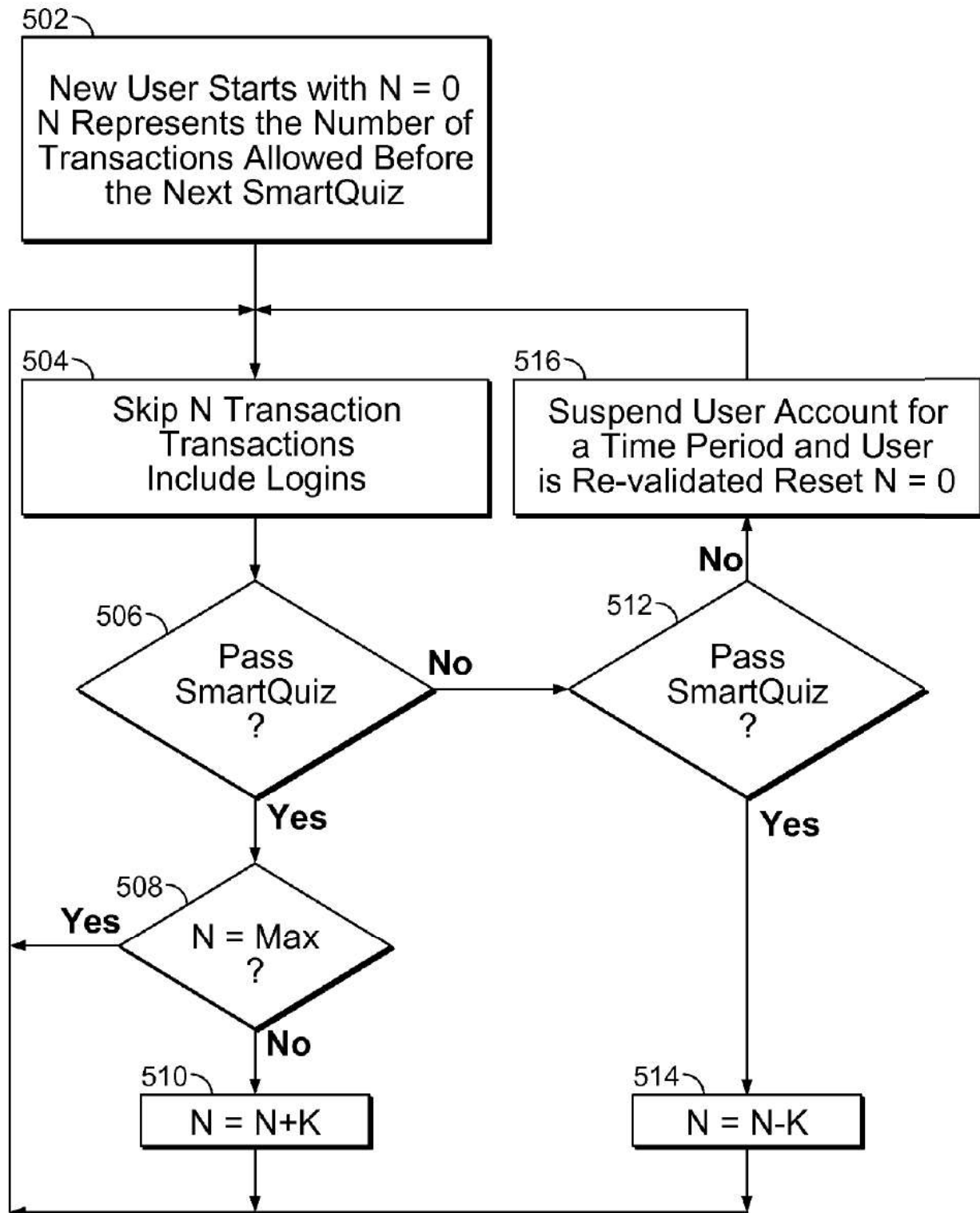


FIG. 5

[Ex. 1004 FIG. 5]

86. Lim’s system is focused primarily on providing additional benefits for registered users. Registered users, according to Lim, are those who, at the time of submitting an HTTP request to access a web page, have created a user account on Lim’s system and are logged into that account (e.g., host **104** in FIG. 1) using credentials such as a username and password (*id.* at 10:1-3), or via cookies for automatic login (*id.* at 11:52-56; *see also* 15:26-33, noting that logging in provides access to an account). Lim further describes placing a cookie on the user’s device for “automatic login for future sessions.” *Id.* at 11:26-33. This cookie stores account information, enabling Lim’s system to recognize returning users without requiring repeated credential entry. *See id.* at 11:26-29, 11:50-61. Collectively, these mechanisms ensure that registered users’ identities are defined, maintained, and recognized by Lim’s system through authentication. *See also id.* at 10:1-3 (describing the requirement for a username and password to access account-related features). Lim repeatedly characterizes users (whether or not registered) as human—as distinct from “automated computer processes.” *E.g., id.* at 2:67-3:1, 9:55, 9:63-64, 9:67, 13:17.

87. While Lim prevents robotic systems from registering or logging into accounts which are linked to monetary rewards, the disclosed system permits access by others—including *robotic* systems—to access search features that lack financial

incentives. *Id.* at 13:9-14 (explaining that Lim’s system allows “automated access,” such as robotic access, from a limited number of devices).

88. For instance, Lim allows search without verification, even after a putative new user fails registration quizzes. *Id.* at 15:18-23. After a logged-in registered user fails verification challenge sufficient to trigger account suspension (*id.* at step 516 in FIG. 5; 15:1), a registered user may log out and submit requests as an unregistered user from any device. Lim’s system processes such anonymous requests without authentication or tracking (*id.* at 15:18-22 (“If a user is not logged in, he/she will be able to perform searches”)), rendering account suspension ineffective at stopping requests. Lim’s system does not track users by IP address but rather tracks only registered users who are logged into their accounts. *Id.* at 10:1-5 (noting that registered users are tracked); *see also* 11:26-29. Lim would not prevent new connections from the same or different devices, as Lim lacks user-level tracking for guests. *Id.* at 15:15-22.

89. In sum, Lim describes a system that allows “guests” to engage with a website by submitting search queries, but their lack of registration and login credentials prevents them from accessing account-based functions, such as earning/redeeming rewards or receiving search results that are sorted/ranked according to “user-supplied demographic information” (*id.* at 9:20-24), which must be associated with a registered user’s account (*id.* at 10:38-56).

2. Lillibridge

90. U.S. Patent No. 6,195,698 (“Lillibridge”) (Ex. 1008) describes challenges that take the form of noisy graphical representations of random alphanumeric strings. This is very specific and much narrower than the ’427 Patent, which includes graphical challenges. As explained above, the Patent Examiner addressed Lillibridge in the ’427 Patent’s prosecution history, and the Applicant overcame rejections based on Lillibridge.

91. Lillibridge identifies and attempts to address the problem of automated agents mimicking human users to gain access to Internet services. Ex. 1008, 1:20-28.

92. Lillibridge addresses this problem by proposing a particular method to selectively grant access requests. *Id.* at 2:66-67. The server computer, upon receiving an access request from the client computer via a network, generates a predetermined number of “human-perceptible random characters,” which are then used to form a string in the server computer. *Id.* at 2:66-3:11. Lillibridge claims a method that adds visual or audial noise to a string to restrict automated agents from gaining access to Internet services. *Id.* at 9:48-10:46. The string is then randomly modified, either visually (overlaid on a visually “noisy” background) or audibly (distorted through a speech synthesizer), creating a distorted image only a human could easily discern.

Id. at 3:12-21. The server computer then presents this modified string to the client computer. *Id.* at 3:21-23:

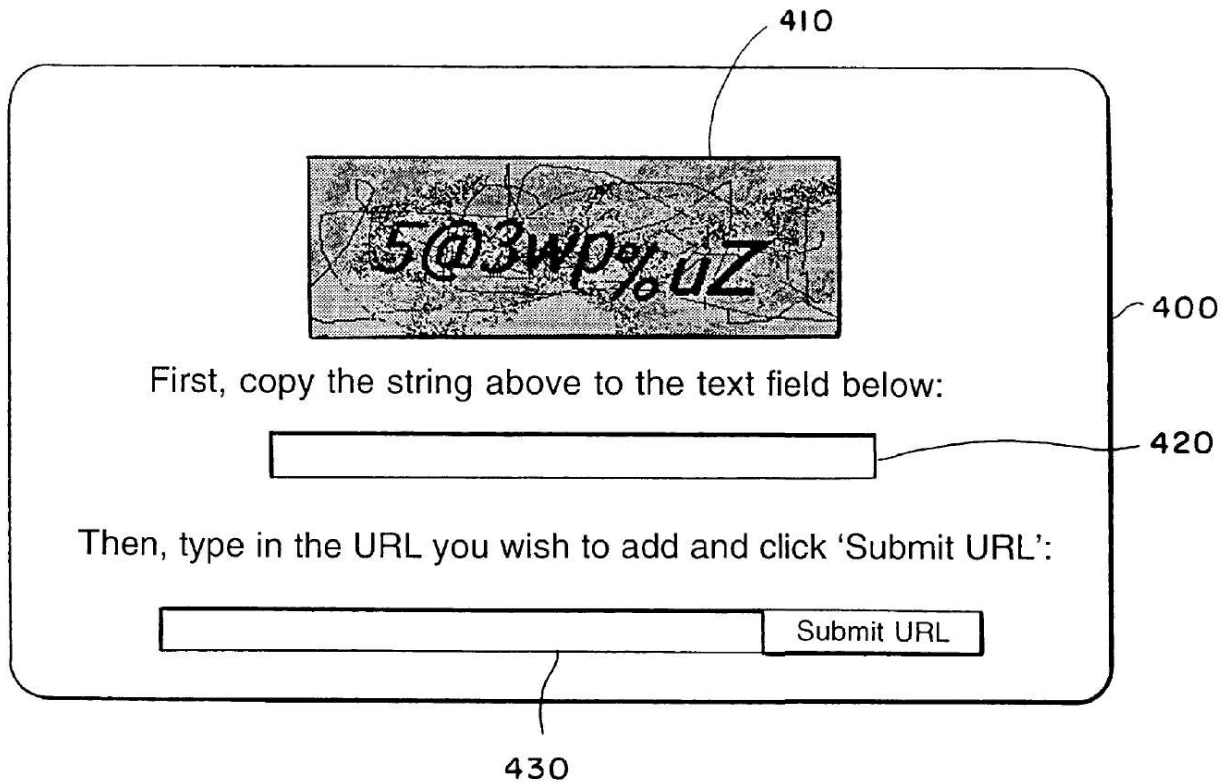


FIG. 4

[Ex. 1008, FIG. 4]

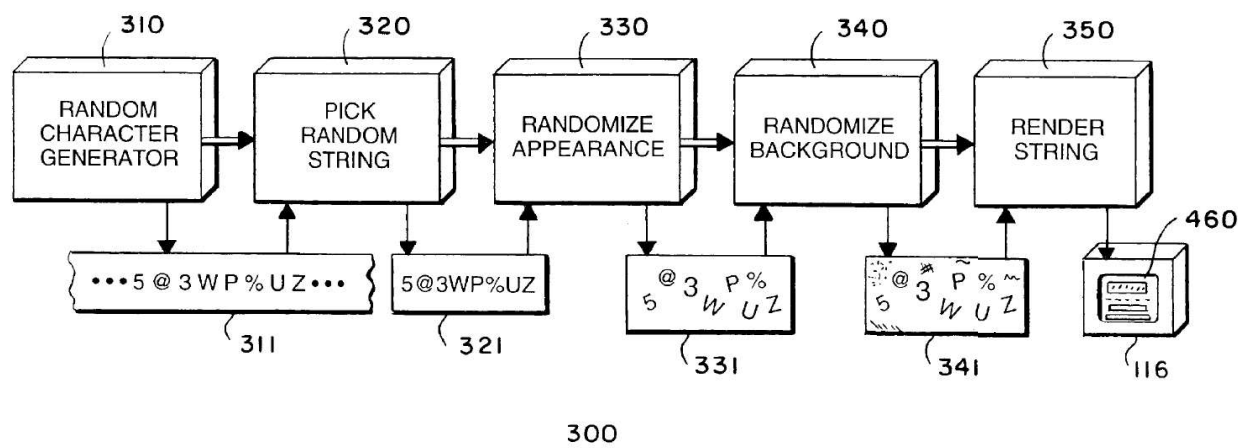


FIG. 3
[Ex. 1008, FIG. 3]

93. The user inputs the string. *Id.* at 3:23-24. If the user input is the same as the unmodified string and has been received within a predetermined amount of time, the access request is accepted. *Id.* at 3:28-29.

3. Guthrie

94. U.S. Patent No. 6,161,185 (“Guthrie”) (Ex. 1009) focuses on user authentication by combining the use of a password, response to a challenge from the server, and a serial number assigned to the client. The challenge-and-response method here is much weaker than the system described in the ’427 Patent because in Guthrie, the challenges, e.g., completing the words based on parts of words already provided, are not based on known hard problems that would be difficult for computer programs to solve accurately and quickly. While Guthrie describes a lock-

out timer, it functions as a timer for user logins, which is fundamentally different from the timer described in the '427 Patent.

95. Guthrie asserts that traditional password systems are vulnerable to attacks because they provide only one level of security. Ex. 1009 1:22-25. Guthrie addresses this by claiming an authentication system that provides multiple levels of security, including: providing a challenge to the user, instituting a lockout timer, and creating a password lifecycle. *Id.* at 16:60, 17:49-50, 17:65-18:02.

96. However, Guthrie's "lock-out timer" applies to failures during the initial login process—namely, incorrect username and password entries—but does not apply to its challenge/response mechanism. Specifically, Guthrie explains that "The lock-out timer flag is activated when the server **104** detects too many successive authorization failures in a row" (*id.* at 8:10-12) where "'login' and 'authorization' are used interchangeably" (*id.* at 8:29-30), which limits the lock-out timer's function to login failures: "the server **104** returns a failure message to the client **102**" over the existing TCP connection when the lock-out timer flag is set. *Id.* at 9:6-10.

97. As discussed in Section VIII.C.1 below, a POSITA would understand TCP redirection, in the context of the '510 Patent's claim 1, to involve an HTTP redirect response, such as a 301 or 302 status code with a new URL, directing the client to establish a connection to a different resource. *See* Ex. 2010 (RFC 2616,

Section 10.3). Guthrie teaches or suggests no such URL transmission, HTTP redirect response, or initiation of a new connection to another server or resource. Rather, the failure message in Guthrie is merely a notification of authentication denial, sent within the same client-server session. A POSITA would not interpret Guthrie's failure message as teaching redirection of a TCP connection.

98. Moreover, Guthrie's challenge/response mechanism is a distinct and subsequent phase of the process that occurs only after successful login. As such, it is not subject to the lock-out timer. Guthrie explains:

The user **114** initially inputs the user's account and correct password to the client **102**. Secondly, the client **102**, via the client application **112**, transmits the user account and account password to the server **104**. Third, the server **104** validates the user account and password... If such initial validation is successful, then the server **104** employs a challenge generator... and transmits the challenge to the client **102**.

Ex. 1009, 7:16-25. This passage, along with the data flow sequence depicted in FIG. 4, confirms that the login step is a prerequisite to the challenge/response phase and that the two are logically and functionally distinct. *Id.* at FIG. 4:

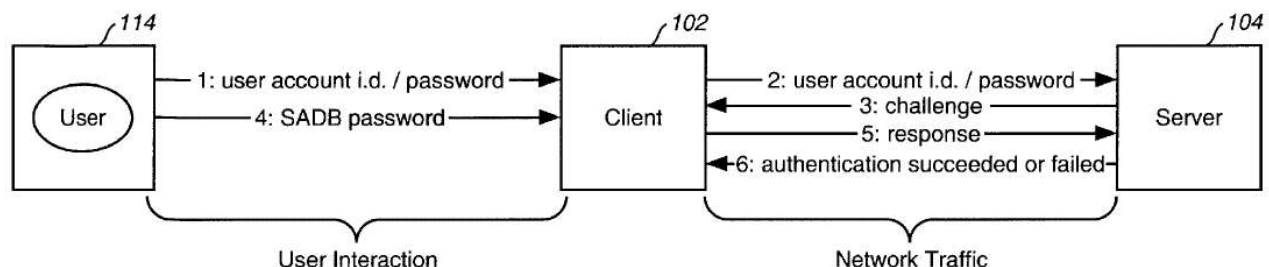


FIG. 4
[Guthrie FIG. 4]

99. Guthrie also states that “The server **104** records audit information for each log-on attempt” (*id.* at 13:46-47), reinforcing that monitoring and enforcement—including the lock-out timer—are exclusively tied to the login phase and are unrelated to the challenge/response phase. Guthrie further clarifies the purpose of the lock-out timer is “to thwart an unauthorized user from repeatedly ‘hammering’ the server **104** manually or through an automated application with authorization attempts, while still eventually allowing a legitimate user access... (as used generally herein, ‘login’ and ‘authorization’ are used interchangeably).” *Id.* at 8:24-30.

100. Furthermore, Guthrie’s challenge/response process authenticates users by generating an encrypted response (*id.* at FIG. 3 (showing secure hashing algorithm)) from a server-issued challenge, client serial number, and user’s password, avoiding password transmission (*id.* at Abstract; FIG. 3 (showing a secure hashing algorithm); 6:10-27 (explaining process of generating an encrypted response using the secure hashing algorithm). A POSITA would understand that this encryption mechanism resists brute-force attacks as valid responses require the password and algorithm, unlike password guessing during login attempts. *Id.* at 2:37-42 (“a predetermined number of system accesses are permitted before being locked out”). Guthrie’s lock-out timer, which counters repeated guessing, activates only *after* failed login attempts due to incorrect credentials exceeding a threshold, not

during the challenge/response phase. *Id.* at 4:3-6. Thus, Guthrie ties its timer solely to login failures—not its challenge/response phase.

VI. PERSON HAVING ORDINARY SKILL IN THE ART

101. I understand that the validity of a patent must be analyzed from the perspective of a hypothetical person having ordinary skill in the art in the same field as the patent at the time of the invention.

102. In determining the level of ordinary skill in the relevant art, I have been informed that the Board must consider several factors: (i) the type of problems encountered in the art, (ii) the prior art solutions to those problems, (iii) the rapidity with which innovations are made, (iv) the sophistication of the technology, and (v) the educational level of active workers in the field.

103. I understand that the Petitioner has argued that a POSITA “at the time of the alleged invention would have had at least a Bachelor’s degree in computer science or computer engineering, or a similar discipline, along with 2-3 years of computer security, information security, or cybersecurity experience.” Ex. 1003, Section V(C).

104. I do not disagree with the Petitioner’s description of a POSITA, as far as it goes. However, I would add several important qualifications. In my opinion, a POSITA should also have university-level courses or work experiences in networking and Internet and the web, cybersecurity, machine learning and artificial

intelligence, computer graphics, and computer vision. Additionally, a POSITA may have an advanced degree in lieu of work experience, or a mix thereof. For example, I would consider someone with a Doctorate in computer science or computer engineering, or a similar discipline, and no work experience, to be a POSITA. Similarly, someone with a Master's degree in one of those fields plus 1-2 years of work experience could also qualify as a POSITA. Accordingly, my opinions contained herein are based on this level of ordinary skill in the art at the time of the invention.

105. I am qualified as a POSITA, both now and at the time of the invention.

VII. LEGAL UNDERSTANDING

106. I use the legal principles below, of which I have been informed by counsel, as a guide in formulating my opinions.

A. Claim Interpretation

107. My opinions concern what I believe the person of ordinary skill in the art would have understood the meaning of certain claim terms to be based on the patent documents.

108. I have been informed that assessing the validity of a patent claim requires a two-step analysis. The first step involves the proper interpretation or construction of the claim language in order to determine its scope and meaning. The

second step requires comparing the claim, as properly construed, to the alleged prior art to determine whether the limitations of the claim are met by the prior art.

109. I have been informed that this standard is the same as that used in United States district courts, in which claim terms are given their ordinary and customary meaning as would be understood by a person of ordinary skill in the art at the time of the invention having taken into consideration the language of the claims, the specification, and the prosecution history of record.

B. Prior Art

110. It has been explained to me by counsel for Patent Owner that information which satisfies one of the categories of prior art set forth in 35 U.S.C. § 102 (“pre-AIA”)² may be used in an invalidity analysis under §103. If information is not properly classified as prior art under one of the subsections of §102 of the Patent Code, then it may not form the basis of an obviousness determination.

111. I understand that IPR petitions can rely on patents and printed publications or other public disclosures, prior art public uses, and on-sale activities. I understand that Petitioner has not asserted an invalidity ground on prior art public uses or on-sale activities. I also understand that extrinsic evidence such as a

² I have also been informed and am aware that a law change occurred in 2011. Because all three of the alleged prior art references are U.S. patents, I have been informed and am aware that there is no material difference between pre-AIA and post-AIA law.

declaration may only be considered to explain the meaning of a reference and cannot expand the meaning of a reference. I understand that the Board cannot accept general conclusions about what is “basic knowledge” or “common sense” as a replacement for documentary evidence for core factual findings in a determination of patentability.

112. Each of the cited references in the Petition are U.S. Patents; as such, I understand that they are the type of publicly available information that may be considered prior art, if they predate the '427 Patent's priority date

C. Obviousness

113. I understand that a proper 35 U.S.C. §103 obviousness analysis requires a searching comparison of the claimed invention—including all its limitations—with the teachings of the prior art. I understand that obviousness of a claim under 35 U.S.C. §103 requires a four-prong analysis: (1) a determination of the scope and content of the prior art; (2) the differences between the prior art and the claim at issue; (3) the level of ordinary skill in the pertinent art; and (4) secondary considerations, if any, such as long felt need, commercial success, failed efforts by others, praise for the invention, unexpected results, disbelief of experts, general skepticism of those in the art, commercial acquiescence, and simultaneous development. I understand that a claimed invention is not proved obvious merely by demonstrating that each of its elements was known independently from the prior art.

114. In addition, I understand that a patent challenger must identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements. In determining whether a claimed invention is obvious, each claim must be considered separately, and hindsight may not be used, but only what was known at the time of the invention. I understand that when considering the issue of obviousness, expressly recited claim features are not mere peripheral issues where conclusions of a party or the Board may substitute for core factual findings based on evidence that the feature is met by the prior art. I also understand that if an independent claim is not obvious then its dependent claims also cannot be obvious because they all depend from a nonobvious claim.

115. I further understand that there are a number of “secondary considerations,” or “objective indicia” concerning non-obviousness. Because I do not address those in this declaration, I do not consider any legal understandings of that concept. However, I understand that if review is instituted, Patent Owner may elect to address these secondary considerations concerning non-obviousness in its Response, and I reserve the right to provide opinions on the topic at that time.

VIII. CLAIM CONSTRUCTION

116. I understand that the Petitioner has not proposed constructions for any terms in the Challenged Claims of the '427 Patent. In my opinion, the term “undefined originator” requires construction. Petitioner has used a variety of terms,

including “unknown user,” as synonyms for “undefined originator.” In my opinion, Petitioner’s use of substitute terms is improper and distorts the meaning of the claims. In my opinion, the terms “dropping or redirecting a TCP connection” and “initial request” also require construction. My opinions for each of these constructions are set forth below.

A. “Undefined Originator”

117. Petitioner has not proposed a construction for “undefined originator,” as that term is used in the ’427 Patent. Patent Owner proposes to construe “undefined originator” as **“a requester of access to a website, which is not a registered user and whose status as either a robot or a human being has not been determined by the system receiving the request at the time of the request.”** I agree with Patent Owner’s proposed construction. The construction is supported by intrinsic evidence.

118. Patent Owner’s proposed construction is fully supported by the specification. The requirement that the undefined originator requests access to a website is supported by Ex. 1001, Abstract (“When an initial request from an undefined originator is received, the Web site responds to it”), Fig. 3 (“Initial Request Forwarded to Web Site”), 2:47-50 (“On receiving an initial request from an undefined originator, the Web site responds to the request with a welcome page including a challenge.”), and 4:1-4 (“FIG. 3 depicts the steps of the method according to the invention when an originator of an initial request to access a Web

site is responded to with a challenge. Upon receiving this initial request, the **300** Web site server responds . . .”).

119. The requirement that it be not a registered user and not logged in is supported by Ex. 1001, Abstract (“The invention prevents Web site contents from being investigated by robots while not requiring users to have to log on.”), 2:12-18 (“The standard way of achieving this is to protect a Web site through some form of authentication, of which the more common method is to manage a list of registered users having a password so as they have to sign on upon accessing the site. The obvious drawback of this is that administrators must manage and update a closed list of users.”), 2:33-34 (“ . . . to proceed further by not imposing a registration at first access and a log on procedure at each Subsequent access.”), 2:58-61 (“The invention prevents Web site contents from being investigated by robots without requiring end users to register or the site administrator to have to manage an access list of authorized users.”), and 3:41-44 (“ . . . while neither imposing to the people accessing it the burden of having to register and to log on, nor requiring the administrators of the site to manage a list of legitimate users.”).

120. And the requirement that its status as a robot or human has not been determined by the website at the time of the request is supported by Ex. 1001, Abstract (“Then, on receiving a further request from the undefined originator, the Web site can check whether the challenge is fulfilled or not. If fulfilled, the

undefined originator is assumed to be a human being and authorized to go on. If the challenge is not fulfilled, the undefined originator is assumed to be a robot, in which case site access is further denied.”), Fig. 3 (“Web Site Server Checks if Challenge is Fulfilled”), 2:52-57 (“If fulfilled, the undefined originator is assumed to be a human being and the site keeps processing the further request and all Subsequent ones, if any. However, if the challenge is not fulfilled, the undefined originator is assumed to be a robot, in which case all requests from that originator are not further processed.”), 4:14-18 (“If the response matches the challenge prompt **340**, then the site server assumes that the originator is a human being and permits further access. However, if the Web server finds that challenge is not properly answered, it must assume that the originator is a robot **350**.”), and 4:51-54 (“FIG. 5-b is another alternative that combines images **520** and text **530** in an even more abstract way where the answer is suggested by the text, so it is even better adapted to discriminate a human being from a robot.”).

B. “Dropping ... a TCP Connection”

121. Petitioner has not proposed a construction for “dropping ... a TCP connection,” as that term is used in the ’427 Patent. Patent Owner proposes to construe “dropping ... a TCP connection” as **“intentionally terminating an established TCP connection between a client and a server.”** I agree with Patent Owner’s proposed construction. This construction is the standard meaning to a

POSITA of this term in the art, and is supported by both intrinsic and extrinsic evidence.

122. Intrinsically, the '427 Patent specification repeatedly describes “dropping” a TCP connection as a purposeful server-side action taken in response to a failed challenge (e.g., as opposed to a lost connection or timeout due to poor connectivity), thereby terminating communication with the originator. For example, Figure 3 and the accompanying text at column 4, lines 16-21 state that if the challenge is not fulfilled, the server “stops processing all current and further requests,” which “includes dropping the TCP connection or redirecting it to another site.” This is not a passive timeout but an active decision to sever the connection. Similarly, Figure 4 and the description at column 4, lines 33-43 explain that if a request is received from a previously logged IP address before a timer expires, “the TCP connection is dropped or redirected,” again confirming that “dropping” is a deliberate act of terminating the connection. The specification also clarifies that the TCP connection is “established” when the server initially responds to the originator with a challenge (*id.* at 4:1-8), further supporting that “dropping” refers to the termination of an already-established connection.

123. Extrinsically, RFC 2616: Hypertext Transfer Portal – HTTP/1.1 (June 1999) (Ex. 2010) provides additional context, which supports the conclusion that Patent Owner’s proposed construction is how a POSITA would have understood the

term. Section 8.1.1 explains that persistent TCP connections are maintained to allow multiple requests and responses between client and server, but may be closed by either party to manage resources or in response to errors or timeouts. *See* Ex. 2010 at 44. More importantly, Section 8.1.2 states: “Once a close has been signaled, the client **MUST NOT** send any more requests on that connection.” *Id.* at 45 (emphasis in the original). This confirms that once a TCP connection is dropped, whether it is closed or terminated, it cannot be reused for further communication. This supports the interpretation that “dropping” a connection is an intentional act of severing the communication channel, consistent with the Patent Owner’s proposed construction.

C. “Redirecting a TCP Connection”

124. Petitioner has not proposed a construction for “redirecting a TCP connection,” as that term is used in the ’427 Patent. Patent Owner proposes to construe “redirecting a TCP connection” as “**directing an established TCP connection to a different destination such as a different website.**” I agree with Patent Owner’s proposed construction. This construction is supported by both intrinsic and extrinsic evidence.

125. Intrinsically, the ’427 Patent specification describes redirection as a deliberate server-side action taken in response to a failed challenge. At column 4, lines 16-21, the patent states that if the challenge is not fulfilled, the server “stops processing all current and further requests, if any ..., which includes dropping the

TCP connection or redirecting it to another site.” This language makes clear that redirection is an intentional alternative to termination, involving the active rerouting of the connection to a different website. Figures 3 and 4 reinforce this understanding, depicting “Drop or Redirect TCP Connection” as a server-side action taken in response to a failed challenge (Fig. 3, step 352) or a repeated request from a logged IP address (Fig. 4, step 460). These disclosures confirm that “redirecting a TCP connection” refers to a purposeful act of instructing the client to initiate a new connection to a different website.

126. Extrinsically, Ex. 2010 provides further support. Section 10.3, titled “Redirection 3xx,” explains that redirection is a mechanism by which a server informs the client that the requested resource resides temporarily or permanently under a different URI. Specifically, it states: “This class of status code indicates that further action needs to be taken by the user agent in order to fulfill the request.” Ex. 2010 at 61. This redirection is communicated through specific HTTP status codes (e.g., 301, 302, 307), which are defined in Section 10.3 as requiring the client to take additional steps, such as issuing a new request to a different URI, based on the server’s instruction. *See, generally*, Ex. 2010 §10.3. Additionally, Section 8.1.2 of Ex. 2010 clarifies that once a TCP connection is closed, it cannot be reused: “Once a close has been signaled, the client MUST NOT send any more requests on that connection.” *Id.* at 45. This distinction reinforces that redirection is not a

continuation of the same connection, but rather a separate and intentional rerouting process, consistent with the Patent Owner's proposed construction.

D. "Initial Request"

127. Petitioner has not proposed a construction for "initial request," as that term is used in the '427 Patent. Patent Owner proposes to construe "initial request" as **"a request to browse a website beyond a welcome page."** I agree with Patent Owner's proposed construction. This construction is supported by intrinsic evidence.

128. Patent Owner's proposed construction is fully supported by multiple disclosures in the '427 Patent. These consistent disclosures confirm that the "initial request" is not merely *any* request, but specifically a request to browse a website beyond a welcome page. For example, the Abstract states that "[t]he invention prevents robots from browsing a Web site beyond a welcome page." Ex. 1001, Abstract. Similarly, the specification explains that the invention describes "[a] method and a system for preventing robots from browsing a Web site beyond a welcome page." *Id.* at 2:46-47. Figure 1 is described as "illustrat[ing] the method according to the invention to prohibit robots from accessing a Web site beyond its welcome page." *Id.* at 3:10-12. The specification further states that the invention "prevent[s] robots from browsing the site beyond the welcome page." *Id.* at 3:40-41.

129. It is my opinion that the preamble of claim 1 also fully supports Patent Owner’s proposed construction, which recites: “A method for preventing robots from browsing a Web site beyond a welcome page, said method in said Web site comprising” The phrase, “beyond a welcome page” is consistent with the claim’s use of “initial request” and a POSITA would construe the two phrases together.

130. Importantly, this preamble is not merely a statement of intended use or purpose; rather, it provides essential context for understanding the scope of the claimed method. The body of claim 1 refers back to the “initial request” received by the website, and the steps that follow are directed to determining whether that request is from a human or a robot. Because the entire method is framed around the goal of preventing access beyond a welcome page, the “initial request” must necessarily be understood as a request to proceed past that welcome page. This interpretation is consistent with the specification, as demonstrated in the preceding paragraph, which details multiple disclosures confirming that the invention is directed to preventing robots from accessing content beyond the welcome page. Accordingly, the preamble provides a necessary limitation that informs the meaning of “initial request,” and should be read as part of the claim.

IX. THE CHALLENGED CLAIMS ARE NOT OBVIOUS BASED ON THE GROUNDS PROPOSED BY PETITIONER

131. In my opinion, all Grounds of Invalidity presented by Petitioner fail to establish unpatentability of the Challenged Claims. The independent claims of the '427 Patent describe a method and computer program for preventing robots from browsing a website past a welcome page, which includes receiving a request from an undefined originator and responding with a challenge and a prompt. The claims further describe the challenge as including a plurality of graphical forms and an accompanying textual expression describing one of the plurality of forms. The response to the challenge will include an identification of a location of the described one of the plurality of graphical forms. The Grounds asserted by Petitioner do not disclose or fairly teach these features.

132. Ground 1 of the Petition alleges that Lim renders obvious the '427 Patent's claims 1, 5-6, 10-11, 15-16 and 20.

133. Ground 2 of the Petition alleges that Lim alone, and in combination with Lillibridge, renders obvious the '427 Patent's claims 2-4 and 12-14.

134. Ground 3 of the Petition alleges that Lim alone, and in combination with Guthrie, renders obvious the '427 Patent's claims 7-9 and 17-19.

A. Ground 1: Claims 1, 5-6, 10-11, 15-16, and 20 Are Not Obvious Over Lim Alone

1. Independent Claim 1

135. In its Challenged Claim Listing (Petition, p. viii), Petitioner parses claim 1 into the preamble plus two broad groupings of limitations. Petitioner's parsing is not consistent with the structure of claim 1 as published in the '427 Patent or as explained in the specification. In the chart below, the structure of claim 1 as published is reflected in the indentations of the limitations. Accordingly, I have identified the correct structure of the claim limitations and have set it forth in the table below (identified in the second column and denoted with a prime (') mark after the capital letters). For comparison, Petitioner's parsing is identified in the first column of the table below.

136. The proper parsing of claim 1 is as follows. Following the preamble, the first limitation (1-A') is receiving the initial request, (1-B') is responding to the request with a challenge. The third limitation (1-C') entails receiving a response to the challenge. The fourth limitation (1-D') describes the challenge itself. The fifth limitation (1-E') describes the response to the challenge. Claim 11 is properly parsed into similar limitations. Additionally, claims 9 and 19 should be parsed into multiple limitations as shown.

Claim	Pet. Lim. #	P.O. Lim. #	Limitation
1	[1-PRE]		1. A method for preventing robots from browsing a Web site beyond a welcome page, comprising:
	[1-A]	[1-A']	receiving an initial request, directed to the Web site, from an undefined originator;
		[1-B']	responding to the initial request with a challenge that prompts a response to the challenge from the undefined originator; and
	[1-B]	[1-C']	receiving the response to the challenge from the undefined originator, wherein
		[1-D']	the challenge includes:
		[1-D'-1]	a plurality of graphical forms, and
		[1-D'-2]	an accompanying textual expression describing one of the plurality of graphical forms, and
		[1-E']	the response to the challenge includes an identification of a location of the described one of the plurality of graphical forms.
9	9		9. The method of claim 1, further comprising:
		[9-A']	receiving a new request;
		[9-B']	determining whether a source IP address of the new request matches the logged source IP address of the undefined originator;
		[9-C']	determining whether said timer is expired; and
		[9-D']	upon the source IP address of the new request matching the logged source IP

Claim	Pet. Lim. #	P.O. Lim. #	Limitation
			address of the undefined originator and the timer being expired, responding to the new request with a second challenge that prompts a response to the second challenge.
11	[11-PRE]		11. A computer program product comprising a non-transitory computer usable storage medium having stored therein computer usable program code preventing robots from browsing a Web site beyond a welcome page, the computer usable program code, which when executed by a computer hardware device, causes the computer hardware device to perform:
	[11-A]	[11-A']	receiving an initial request, directed to the Web site, from an undefined originator;
		[11-B']	responding to the initial request with a challenge that prompts a response to the challenge from the undefined originator; and
	[11-B]	[11-C']	receiving the response to the challenge from the undefined originator, wherein
		[11-D']	the challenge includes:
		[11-D'-1]	a plurality of graphical forms, and
		[11-D'-2]	an accompanying textual expression describing one of the plurality of graphical forms, and
		[11-E']	the response to the challenge includes an identification of a location of the described one of the plurality of graphical forms.
19	19	[19-PRE]	19. The computer program product of claim 11, wherein

Claim	Pet. Lim. #	P.O. Lim. #	Limitation
			the computer hardware device is further caused to perform:
		[19-A]	receiving a new request;
		[19-B]	determining whether a source IP address of the new request matches the logged source IP address of the undefined originator;
		[19-C]	determining whether said timer is expired; and
		[19-D]	upon the source IP address of the new request matching the logged source IP address of the undefined originator and the timer being expired, responding to the new request with a second challenge that prompts a response to the second challenge.

137. Irrespective of how the limitations are labeled, Lim fails to render claim 1 of the '427 Patent obvious for the reasons stated below. In addition, Lim does not render obvious claims 5-6, 10-11, 15-16, and 20 for the reasons further stated below.

a. [1-PRE] (“A method for preventing robots from browsing a Web site beyond a welcome page”)

138. I understand that the preamble to a patent claim is considered limiting if it gives life, meaning, and vitality to the claim or if it recites essential structure or steps.

139. In my opinion, the preamble to claim 1 meets this standard. In particular, the preamble makes clear that, among the types of “undefined originators” with which the claimed method interacts, robots are intended to be blocked. Moreover, the preamble makes clear that the blocking is to occur at the threshold of the web site, preventing such robots from browsing “beyond a welcome page” to the website. These elements are essential structures or steps to the claim, and are necessary to give life, meaning, and vitality to the claim.

140. Petitioner contends that Lim alone teaches or suggests this limitation. Petition § VIII.A.1.a, Ex. 1003 ¶¶92-95. Petitioner cites several passages from Lim (Ex. 1004, Abstract, 2:33-39, 8:25-30, 9:45-67, 13:15-28, Fig. 1).

141. In my opinion, none of those cited passages make any reference to preventing a robot—or any user or other entity—from browsing beyond a welcome page. Instead, the purpose of quizzes in Lim is very different. Lim’s primary focus is on paying users for viewing ads and/or interacting with the website. *See* 2:19-31 (“The information may be returned in a ranked order according to reward credits offered by advertisers and/or content providers associated with the advertising information and/or web sites represented by the search results. An advertiser-controlled portion of such reward credits may be posted to an account maintained by the user upon selection by the user of cursor-selectable objects (e.g., icons, banner ads, hyperlinks, radio buttons, checkboxes, etc.) associated with the advertising

information and/or search results. The remaining portion of the credit may be paid to the hosting service. Ultimately, the reward credits may be redeemed through the Internet service for cash, Internet content or other value.”).

142. Thus, as Lim explains, “Because users are paid per ad and/or site viewed, an automated system would be able to earn money or credits without the desired human actually viewing the advertising or visiting the site. Accordingly, some embodiments of the present invention make use of periodic quizzes ... to verify that a particular user is a human.” *Id.* 13:18-24. This is the context for Lim’s disclosure that quizzes may be provided during new user registration. *Id.* 9:53-64 (“Before being allowed to register, these new users may be asked to answer one or more questions of a quiz to test whether they are a human users [sic] or not ... [Bots might otherwise be able to sign up] and thereby garner any rewards associated therewith, without having to subject a human user to this process.”). Contrary to Petitioner’s assertion, the cited passages do not have the purpose or effect of excluding robots from browsing beyond a welcome page.

143. Accordingly, in my opinion, Lim does not “prevent[] robots from browsing a Web site beyond a welcome page.”

b. [1-A’] (“receiving an initial request, directed to the Web site, from an undefined originator”)

144. Petitioner contends that Lim alone teaches or suggests this limitation. Petition § VIII.A.1.b, Ex. 1003 ¶¶96-99.

145. In my opinion, Lim does not teach or suggest this limitation, for two reasons. First, many of the passages in Lim relied on by Petitioner do not disclose “initial requests.” Second, none of the passages in Lim cited by Petitioner disclose “undefined originators.”

146. First, the passages relied on by Petitioner do not disclose “initial requests.” The periodic quizzes discussed in Lim at columns 13-14 occur after a registered user is logged in (*see, e.g.*, Ex. 1004, 13:24-28 (“As noted above, these quizzes may be employed during the registration process to verify that a user is a human. Additionally, such quizzes can be used in conjunction with follow up registrations, and/or between transactions using some embodiments of the invention.”)), or when an unregistered user initiates the process to “sign up” and become a registered user (Ex. 1004, 9:53 (“Before being allowed to register”)). Such quizzes therefore do not occur following an “initial request,” but rather “during the registration process” or “in conjunction with follow up registrations.” Lim’s system never sends quizzes to “guests” that are simply performing “searches”. Ex. 1004, 15:15-22.

147. In contrast, the ’427 Patent teaches a method and computer program of providing a challenge in order for a user to avoid registering/logging in. Lim, on the other hand, describes a question-and-answer quiz before users are allowed to register (Ex. 1004, 9:53-57). It is my opinion that Lim’s registration does not clearly equate

to the '427 Patent's "initial request" that takes place at the initial visit to the welcome page (i.e., the very first page or landing page) of a website. That is, under Lim, the welcome page may encourage previously-unregistered visitors to register, then if the visitors agree, they would go on to a registration page, in connection with which the quiz takes place. In such a scenario, I do not consider the registration request that prompts a quiz in Lim at 9:53-57 to equate to the "initial request" as claimed in the '427 Patent.

148. Lim does not teach or suggest "receiving an initial request, directed to the Web site, from an undefined originator" and "responding to the initial request with a challenge that prompts a response to the challenge from said undefined originator." As explained below, Lim's system is fundamentally different in purpose and operation, and it does not teach or suggest issuing a challenge in response to an initial request "to brows[e] a Web site beyond a welcome page" from an undefined originator, as required in claim 1 of the '427 Patent.

149. The '427 Patent is directed to preventing automated bots from accessing content beyond a welcome page of a website. *See* Ex. 1001, Abstract. It achieves this by issuing a challenge in response to an initial request from an "undefined originator," which is a user who has not yet been authenticated or identified by the system receiving the request. *See* Ex. 1001, Abstract. The challenge

is issued in response to an attempt to browse the site, not in response to a request to register for an account.

150. In contrast, Lim is concerned with protecting registered user accounts from abuse by bots, particularly because those accounts can be used to earn financial rewards. *See* Ex. 1004, 13:18-21. To protect these accounts, Lim uses quizzes to verify that a user is human. However, Lim only sends these quizzes to users attempting to gain access to an account—either registered users performing transactions (Ex. 1004, Fig. 5) or unregistered users attempting to register for an account (Ex. 1004, 9:53-56). Lim does not send quizzes to “guests” who are merely browsing or performing searches. *See* Ex. 1004, 15:18-22 (“If a user is not logged in, he/she will be able to perform searches, but without the benefit of receiving the rewards”).

151. As discussed more thoroughly below, registered users cannot qualify as “undefined originators” under the ’427 Patent. Lim is clear that its system only issues a quiz to an unregistered user if that user sends a request to register for an account. *See* Ex. 1004, 9:53-56. However, a request to register for an account is not the same as an initial request to browse a website beyond a welcome page.

152. That is, a POSITA would understand that a registration request is a request to create a persistent identity within the system, typically involving the submission of personal information (Ex. 1004, 10:3-5 “This form of registration

process is commonly used in the Internet environment to track users”; *see also* 10:8-11 (explaining that users can provide “personal information”). In contrast, an initial browsing request—such as clicking a link to access content beyond a welcome page—does not imply any intent to create an account or identify oneself. (Ex. 1004, 15:18-22). The ’427 Patent is specifically designed to address this anonymous browsing scenario, without requiring user registration. *See* Ex. 1001, 2:58-61.

153. As a result, Lim does not teach or suggest “responding to the initial request with a challenge that prompts a response to the challenge from the undefined originator,” as required by the ’427 Patent, because Lim does not send quizzes to “guests” who are simply sending search requests. Although Lim may send quizzes during the account registration process, a registration request is not equivalent to a request to browse beyond a welcome page of a website.

154. Second, the cited passages of Lim do not relate to an “undefined originator” as that term is used in the ’427 Patent. Petitioner has not proposed a construction of “undefined originator.” Nonetheless, throughout its argument on 1-A’, Petitioner attempts to use the phrase “unknown user” as synonymous with “undefined originator,” as used in the claim. Petition § VIII.A.1.b. The two phrases are not interchangeable, particularly since an “originator” is not a registered user and has not yet been determined to be a new user. *See, supra*, § VIII.A.

155. As a threshold matter, Lim distinguishes between registered users and “guests.” Registered users, according to Lim, are those who, at the time of submitting an HTTP request to access a web page, have created a user account on Lim’s system and are logged into that account (e.g., host 104 in FIG. 1) using credentials such as a username and password (Ex. 1004, 10:1-3), or via cookies for automatic login (Ex. 1004, 11:52-56; *see also* 15:26-33, noting that logging in provides access to an account). On any plausible definition or interpretation of “undefined originator,” a registered user who has logged into an account is not an “undefined originator.” Accordingly, the portions of Lim relating to logged-in registered users are inapplicable to robot-detection from among undefined originators.

156. In asserting that Lim invalidates claim 1, Petitioner erroneously relies on several passages describing how Lim’s system processes registered users, such as those requiring users to “sign up” (Ex. 1004, 9:30-31), provide “a username and a password” (Ex. 1004, 10:1-3), or use cookies for “automatic login” (Ex. 1004, 11:26-33), as well as passages discussing “accounts,” “user rewards,” “credits,” or “transactions,” which are exclusively associated with registered users’ accounts.

157. Registered users as described in Lim do not qualify as “undefined originators” as recited in claim 1 of the ’427 Patent. Under the definition of “undefined originators” proposed by Patent Owner, a requester of access to a website

is not a registered user, is not logged in, and has yet to be identified by the website as a human or robot. *See supra*, § VIII.A. But Lim’s registered users have accounts that are maintained by the website administrator (EX.1004, 10:1-14) so they can log back onto the website and earn rewards by interacting with advertisements (*see, e.g., id.* at 12:4-8). In other words, the website described in Lim recognizes, logs, and monitors registered users who log into their accounts. *Id.* at 10:3-7; 11:52-57, 14:58-60. Conversely, the website described in the ’427 Patent has yet to define the requester of access and does not maintain a list of registered users; in fact, the goal of the ’427 Patent is to avoid the need of maintaining lists of users. Ex. 1001, 3:39-44. But even if “undefined originators” is not separately construed and is given its plain and ordinary meaning, it is clear that a registered user is, by definition, one whose identity is known or defined. As such, the registered user defined in Lim cannot be an “undefined originator.”

158. Lim outlines a formal registration process for registered users that enables Lim’s system to define their identity. This is the exact opposite goal of the ’427 Patent, which discloses an invention meant to bypass a formal registration process, eliminating the burden of managing usernames and passwords. *Id.* Lim explains that users can “‘sign up’ (i.e., register and create a profile),” and that this registration process establishes an “account” for the user, allowing access to features like tracking account balance or managing user profiles. Ex. 1004, 9:30-31; *see also*

FIG. 11 (showing a registration sign-in screen); 11:26-29; *see also* 11:62-66, 12:4-8. To register, Lim's system requests "a username and a password." *Id.*, 10:1-3.

159. Additionally, Lim's use of login credentials allows Lim's system to authenticate and verify the *identity* of users during login. *See* Ex. 1004, 10:1-7; *see also* 11:55-56 ("the user's password may be requested to verify his/her *identity*") (emphasis added). Lim explains that this process is designed "to track users," meaning Lim's system maintains a record of registered users' identities for account management. Ex. 1004, 10:3-5. Lim's disclosures relating to registered users is irrelevant to claim 1. Registered users, whose identities are defined by Lim's system through authentication, do not qualify as undefined originators.

160. Lim further describes placing a cookie on the user's device for "automatic login for future sessions." Ex. 1004, 11:26-33. This cookie stores account information, enabling Lim's system to recognize returning users without requiring repeated credential entry. *See* Ex. 1004, 11:26-29, 11:50-61. Collectively, these mechanisms ensure that registered users' identities are defined, maintained, and recognized by Lim's system through authentication, disqualifying them as "undefined originators." *See also* Ex. 1004, 10:1-3 (describing the requirement for a username and password to access account-related features). Registered users as defined in Lim are known and remembered upon requesting access to a website, not

unknown and undefined, and fail to take the place of the “undefined originator” as described in the ’427 Patent.

161. By contrast, with Lim’s registered users, “guests” in Lim are users who do not have a user account and lack login credentials at the time they submit an HTTP request (Ex. 1004, 15:10-22). Lim’s Internet-based system allows both registered users (logged-in or not logged-in) and “guests” to view content or advertisements, but provides rewards only to registered users who are logged into the system. *See* Ex. 1004, Abstract; *see also* 15:18-22.

162. Lim permits registered users and “guests” to send a “search query” (Ex. 1004, 9:28; *see also* 15:18-23 (showing that non-logged-in users can perform searches without receiving rewards)) to Lim’s system without authentication. While the system described in Lim allows only registered users to receive rewards for performing a “transaction” (Ex. 1004, 12:63-66) on the website because of the lack of an associated account, Lim explicitly states that “if a user is not logged in, he/she *will be able to perform searches*, but without the benefit of receiving the rewards (e.g., for the release of demographic profile information) and without receiving search results having a corresponding sorting.” Ex. 1004, 15:18-22 (emphasis added); *see also* FIG. 18A (“the customer’s profile will create a unique search result list sorted by resulting bids”).

163. Similarly, Lim’s system allows “guests” and non-logged-in users to perform searches without authentication, usernames, passwords, or cookies. Ex. 1004, 15:18-21.

164. For the reasons discussed above, it is my opinion that registered users cannot be “undefined originators” as defined by the ’427 Patent. Lim is clear that its system only issues a quiz to an unregistered user if that user sends a request to register for an account. *See* Ex. 1004, 9:53-56. A request to register for an account is *not* the same as an initial request to browse a website beyond a welcome page.

c. [1-B’] (“responding to the initial request with a challenge that prompts a response to the challenge from the undefined originator”)

165. Petitioner contends that Lim alone discloses this limitation. Petition § VIII.A.1.b, Ex. 1003 ¶¶96-99. In my opinion, Lim does not disclose this limitation.

166. The ’427 Patent is directed to preventing automated bots from accessing content beyond a welcome page of a website. *See* Ex. 1001, Abstract. It achieves this by issuing a challenge in response to an initial request from an “undefined originator.” *See* Ex. 1001, Abstract. As explained above, Petitioner fails to distinguish between Lim’s registered and unregistered users, and so mischaracterizes Lim’s system’s interactions with users. In the ’427 Patent, the challenge is issued in response to an attempt to browse the site, *not* in response to a request to register for an account.

167. In contrast, Lim is concerned with protecting registered user accounts from abuse by bots, particularly because those accounts can be used to earn financial rewards. *See* Ex. 1004, 13:18-21. To protect these accounts, Lim uses quizzes to verify that a user is human. But Lim only sends these quizzes to users attempting to gain access to an account—either registered users performing transactions (Ex. 1004, Fig. 5) or unregistered users attempting to register for an account (Ex. 1004, 9:53-56). Lim does not send quizzes to guests, unregistered users, or non-logged-in registered users who are merely browsing or performing searches. *See* Ex. 1004, 15:18-22 (“If a user is not logged in, he/she will be able to perform searches, but without the benefit of receiving the rewards”).

168. For the reasons discussed above, it is my opinion that registered users cannot be “undefined originators” as defined by the ’427 Patent. Under Lim, a request to register for an account, and the provision of a challenge or quiz in connection with that request (*see* Ex. 1004, 9:53-56) is *not* the same as an initial request to browse a website beyond a welcome page.

169. A POSITA would understand that a registration request is a deliberate, user-initiated action to create a persistent identity within the system, typically involving the submission of personal information (Ex. 1004, 10:3-5 “This form of registration process is commonly used in the Internet environment to track users”; *see also* 10:8-11 (explaining that users can provide “personal information”)). On the

other hand, an initial browsing request—such as clicking a link to access content beyond a welcome page—does not imply any intent, effort, or step taken, to create an account or identify oneself. Ex. 1004, 15:18-22. The '427 Patent is specifically designed to address this anonymous browsing scenario without requiring user registration. *See* Ex. 1001, 2:31-34.

170. Thus, Lim does not teach or suggest “*responding to said initial request with a challenge* that prompts a response from said undefined originator,” because Lim does not send quizzes to those who are simply sending search requests. While Lim may send quizzes during the account registration process, a registration request is not equivalent to an “initial request”—a request to browse beyond a welcome page of a website.

d. [1-C'] (“receiving the response to the challenge from the undefined originator”)

171. As discussed above, Lim does not teach or suggest “receiving the response to the challenge from the undefined originator” because Lim’s system does not send quizzes to “guests” or unregistered users in response to receiving a request to browse beyond a welcome page of a website. Consequently, the unregistered user is not prompted to send a response to a challenge to Lim’s system.

e. [1-D’-1] (“a plurality of graphical forms”)

172. As discussed above regarding limitation 1-A’, Lim does not teach or suggest “responding to the initial request with a challenge that prompts a response

to the challenge from the undefined originator” as required by claim 1 of the ’427 Patent. Accordingly, Lim fails to disclose this limitation. *See, supra*, § VIII.A.

f. [1-D’-2] (“an accompanying textual expression describing one of the plurality of graphical forms”)

173. As discussed above regarding limitation 1-A’, Lim does not teach or suggest “responding to the initial request with a challenge that prompts a response to the challenge from the undefined originator” as required by claim 1 of the ’427 Patent. Accordingly, Lim fails to disclose this limitation. *See, supra*, § VIII.A.

g. [1-E’] (“the response to the challenge includes an identification of a location of the described one of the plurality of graphical forms”)

174. Petitioner’s argument that Lim teaches or suggests “the response to the challenge includes an identification of a location of the described one of the plurality of graphical forms” is unsupported by the cited disclosures. Petition at 33. Petitioner’s position depends on the assertion that “[a]n image map is a standard HTML input method to accomplish this by providing a server with the location of a user’s click in x,y coordinates and a POSITA would understand Lim’s image map to operate this way.” Petition at 35. Petitioner further contends that “it would have been most obvious for a POSITA to implement Lim’s image map on the server side.” Petition at 46. However, this assertion is both technically incorrect and inconsistent with the teachings of Lim.

175. While Lim describes quizzes that use image maps and instruct users to click on a described object, such as to “[c]lick on the yellow triangle,” (Ex. 1004, 14:51-53), Lim does not teach or suggest that the system receives or processes any data **identifying the location of the selected graphical form**. Rather, Lim’s system interprets the user’s click as a selection of a predefined answer choice associated with a region of the image map—not as a submission of coordinate data or any form of location identifier (*see* Ex. 1004, 14:51-53).

176. Indeed, the use of image maps in Lim is consistent with standard web development practices, particularly the implementation of HTML image maps **on the client-side**. (See HTML 4.01 Specification: W3C Recommendation (24 December 1999) (Ex. 2014) §13.6). A client-side image map is a built-in feature of the HTML specification that allows developers to define interactive, clickable regions on an image using the <map> element in combination with one or more <area> elements. *Id.* Each <area> element specifies a region of the image using attributes such as shape and coords, which define the geometry and coordinates of the region, and the href attribute, which specifies the action to be triggered when that region is clicked. *Id.* These inputs defining the clickable area and the associated action **are processed entirely by the browser on the client side**. As explained in the HTML 4.01 Specification, “when a user activates a region of a client-side image map with a mouse, the pixel coordinates are interpreted by the user agent.” *Id.* In

other words, the browser itself determines whether the user's click falls within a defined region and, if so, executes the corresponding action. Importantly, the browser does not transmit the actual X and Y coordinates of the user's click to the server. Instead, it only performs the action associated with the predefined region that was clicked. As a result, the server receives no information about the spatial location of the click itself, only that the user selected a particular choice from the presented multiple choices.

177. This client-side behavior is consistent with Lim's design, which relies on predefined answer choices rather than raw coordinate data. In contrast, Petitioner's suggestion that a POSITA would implement Lim's image map on the server side is speculative and contrary to the default and preferred implementation of image maps in HTML. As stated in the HTML 4.01 Specification, "**client-side image maps are preferred** over server-side image maps" (Ex. 2014 §13.6) (emphasis added). Server-side image maps, which use the ismap attribute, are rarely used in modern web development due to their complexity and inefficiency. Furthermore, Lim itself confirms that its system is intended to operate on the client side. For example, Lim states that the system includes "JavaScript or other code to embed in the relevant web site to enable such operation" (Ex. 1004, 20:50–51), and further explains that "the interface to the user is conventional HTML and JavaScript, allowing users of the system to rely on conventional web browsers for access" (Ex.

1004, 23:9–12). These disclosures make clear that Lim’s architecture is built around client-side execution. JavaScript is a scripting language that executes in the browser, not on the server, and its use in Lim reinforces that the image map logic and user interaction were intended to be handled entirely on the client side.

178. Moreover, implementing Lim’s system using a server-side image map would introduce ambiguity and undermine the clarity of the user’s response. For example, if a ten-by-ten-pixel image were used, the browser could send one hundred different coordinate-based responses to the server, one for each pixel. This proposed modification would fundamentally alter the operation of Lim’s system and render it unsuitable for its intended purpose. Lim’s claim 1 expressly requires that the system receive “a corresponding **single correct and distinct response** to the respective prompt presented by said graphical image.” Ex. 1004, Claim 1 (emphasis added). A server-side implementation, as proposed by Petitioner, would allow the browser to send numerous coordinate-based responses, any of which could be interpreted as correct. This would defeat the requirement for a single distinct answer and undermine the reliability of the system’s verification process.

179. Therefore, the proposed modification would not merely be an obvious design alternative. It would change the principle of operation of Lim’s system in a way that is inconsistent with its intended function. Such a modification teaches away from the claimed invention and cannot support a conclusion of obviousness.

180. Accordingly, in systems like Lim that rely on image maps for user interaction, *the user's response does not include or convey any location data*. The response is limited to the selection of a predefined region, which is functionally equivalent to choosing a labeled answer in a multiple-choice format. Furthermore, Lim does not teach or suggest that the system verifies the correctness of a response based on the location of the user's click. Instead, verification is based on whether the user selected the correct predefined region of the image map (*see* Ex. 1004, 13:54-14:5 (noting that the answers are “selectable from the image itself”)). There is no disclosure in Lim that the system receives or evaluates the spatial coordinates of the user's click as part of the response.

181. Consequently, Lim does not teach or suggest a response that “includes an identification of a location of the described one of the plurality of graphical forms,” as required by claim 1 of the '427 Patent.

2. Independent Claim 11

182. For each of the same reasons as set forth above with respect to claim 1, Lim likewise does not render obvious.

183. For each of the same reasons as set forth above with respect to claim 1, Lim likewise does not render claim 11 of the '427 Patent obvious. In particular, and as discussed in more detail above, Lim (1) does not disclose the limitations in claim 1's preamble, (2) does not disclose an “undefined originator” in the roles claimed,

(3) does not disclose issuing a challenge in response to an initial request to browse a Web site beyond a welcome page from an undefined originator, and (4) does not disclose an identification of the location of one of the plurality of graphical forms.

184. As to claim 11 and Elements [11-A'] through [11-E'], Petitioner and its expert incorporate by reference their arguments concerning Elements [1-A'] through [1-E']. Petition §VIII.A.5.b; Ex. 1003 ¶157. Thus, for the same reasons that Lim fails to render obvious Elements [1-A'] through [1-E'], as set forth in detail above, it is my opinion that Lim fails to render obvious these portions of claim 11.

Claim 11 differs from claim 1 in that claim 11's preamble describes a computer program comprising computer-executable steps rather than a method comprising steps. *Compare* Ex. 1001, 4:59-60 *with* 5:47-53. Like the preamble to claim 1, the preamble to claim 11 is limiting.

185. This difference does not impact my analysis. In my opinion, claim 11 is not obvious in view of Lim for the same reasons that claim 1 is not obvious.

3. Dependent Claim 5 (“The method of claim 1, further comprising processing further requests from the undefined originator after the challenge has been successfully fulfilled”)

186. As discussed above, § IX.A.1.d, Lim does not teach or suggest “receiving the response to the challenge from the undefined originator” because Lim's system never sends quizzes to unregistered users in response to receiving a request from the unregistered user to browse beyond a welcome page of a website.

Consequently, the unregistered user is never prompted to send a response to any challenge to Lim's system.

187. Furthermore, Petitioner asserts that Lim discloses this limitation and that after a user answers a quiz correctly, "further requests will be processed *because* they have been determined to be a human." Petition § VIII.A.2, Ex. 1003. (emphasis added). This is not correct. Lim does not disclose access or restrictions based on correct or incorrect responses to quizzes. Instead, quizzes are used to validate user accounts as humans, in order to allow the user to be paid or credited for viewing ads or websites. *See, e.g.*, Ex. 1004, 13:16-21. Guest access and browsing are generally permitted, regardless of whether quizzes have been passed, failed, provided, or not provided. *See, e.g., id.* at 15:10-21. Thus, Petitioner is incorrect in asserting that further requests for access to web pages are processed "because" the requester has been determined to be human.

188. Accordingly, Lim does not teach or suggest "processing further requests from the undefined originator after the challenge has been successfully fulfilled," as required by claim 5 of the '427 Patent.

4. Dependent Claim 6 ("The method of claim 1, further comprising stopping processing of further requests from the undefined originator after the challenge has not been successfully fulfilled")

189. Petitioner argues that Lim teaches or suggests "stopping processing of any further requests." Petition at 42. It is my opinion that Lim does *not* teach or

suggest “stopping processing of further requests from the undefined originator after the challenge has not been successfully fulfilled,” as required by claim 6 of the ’427 patent. Petitioner *erroneously* relies on FIG. 5 of Lim and its corresponding description at 14:58-15:2 (Petition at 42-43) to assert that Lim teaches or suggests the limitation requiring the system to stop processing further requests if a challenge is not fulfilled.

190. Lim does not teach or suggest “stopping processing of any further requests” to access web pages based on incorrect answers to a challenge quiz. Petitioner has conflated Lim’s discussion of suspending a user account with stopping access to web pages. Petition at 42-43. The two are not the same. Users and “guests” alike are permitted to navigate around the web site of Lim, i.e., request access to web pages, regardless of quiz status, because the focus of Lim is the compensation of logged-in users and protecting advertisers from robots who may earn credits for viewing advertisements. Ex. 1004, 9:20-24, 28; 15:18-23; FIG. 18A. Lim is therefore concerned with activity that comes *after* a welcome page, not with initial requests to move past the welcome page itself, and thus suspension of an account as described by Lim does not block access to the *web page* itself, only access to a user’s account.

191. It is my opinion that Petitioner erroneously relies on FIG. 5 of Lim and its corresponding description at 14:58-15:2 (Petition at 42-43) to support its position

on “stopping processing of any further requests.” Figure 5 pertains solely to registered users, as evidenced by steps 502, 504, 508, 510, 514, and 516, which involve processing “N Transactions”, and step 516, which addresses “suspending the user account” (Ex. 1004, 15:1). *See*, Ex. 1004, FIG. 5:

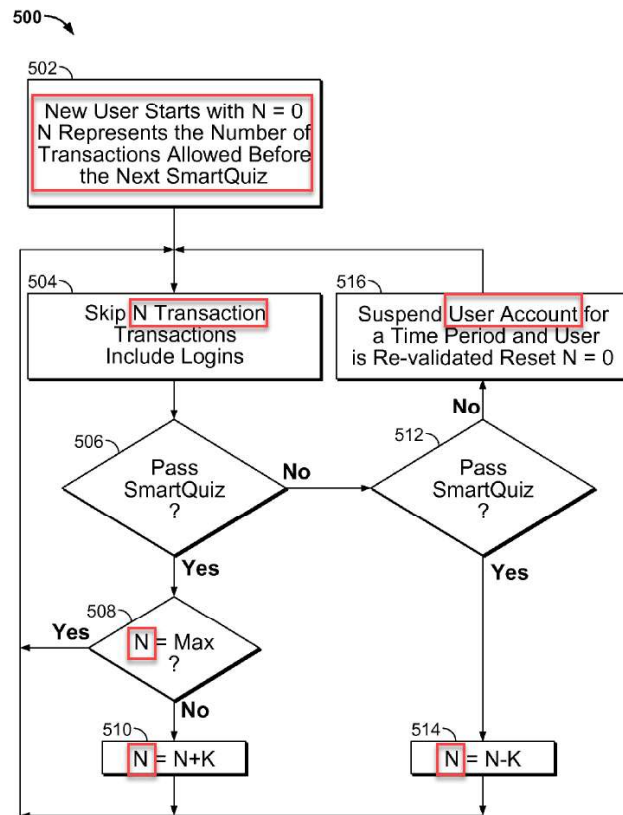


FIG. 5
Ex. 1004, FIG. 5 (Annotated)

192. As previously discussed, registered users, who require accounts with credentials to perform transactions and earn rewards (Ex. 1004, 10:1-3; 10:19-24; 11:62-66), have defined identities and thus do not qualify as “undefined originators”

under claim 6 of the '427 patent. Only unregistered users, who access Lim's system anonymously without authentication or tracking (Ex. 1004, 15:18-22), meet this requirement. Consequently, FIG. 5's focus on registered users is irrelevant to the claimed limitation of "stopping processing of any further requests."

193. Further, Figure 5's account suspension step (Ex. 1004, 15:1, step 516) does not prevent a registered user from submitting further requests after logging out. Lim's system processes searches from non-logged-in users without authentication or tracking. *See* Ex. 1004, 15:18-22 ("If a user is not logged in, he/she will be able to perform searches"). Lim's system does not selectively stop processing further requests from those who are not registered users, as it does not track such users.

194. According to Lim, then, "guests" and unregistered users perform searches anonymously as their access to Lim's system does not require authentication, credentials, or accounts, and no identifying information is collected. Ex. 1004, 15:18-22. A user who fails to correctly answer a quiz during the registration process remains free to submit a subsequent request for access to the computer-based resource in Lim's system, and Lim's system lacks the capability to decline or "stop[] processing" such a request in the manner described by the '427 Patent.

195. Petitioner also cites several other portions of Lim, but none disclose "if said challenge is not fulfilled: stopping processing of any further requests."

Specifically, Petitioner references the Abstract, 2:32-39, and 9:45-67 of Ex. 1004 (Petition at 42-43), each of which discusses a quiz process for verifying that an Internet operation is being performed by a human or an automated process. These sections, however, do not address the consequences of failing to answer a quiz correctly and do not disclose that Lim's system stops processing further requests in the same way as described in the '427 Patent.

196. Petitioner also cites Lim claim 1 (Petition at 42), impliedly equating “quizzes may be introduced at various levels to thwart such automated processes and allow access only by live, human users” (Ex. 1004, claim 1), to “stopping processing of any further requests,” as recited in claim 1 of the '427 Patent. But read in the context of Lim as a whole, it is clear that the claim's use of the phrase “further requests” in the plural highlights that the limitation requires stopping the processing of any requests that follow the initial request. Merely denying access to “a” computer-based resource in Lim's system does not teach or suggest that Lim's system would also cease processing *all* subsequent requests from an “undefined originator.” On the contrary, as discussed above, Lim's system continues to process requests regardless of prior quiz results, even from devices that previously failed quizzes. Ex. 1004, 15:10-21.

197. Moreover, as previously discussed, Lim's system does not selectively stop processing further requests from a particular “guest” or unregistered user.

Rather, Lim's system does not track "guests" or unregistered users as they perform searches without authentication, credentials, or accounts, and no identifying information is collected. Ex. 1004, 15:18-22. Therefore, contrary to the Petitioner's assertion, a "guest" or unregistered user remains free to submit a subsequent request for access to the "computer-based resource" (Ex. 1004, claim 1) in Lim's system, even if that user fails to correctly answer a quiz, and Lim's system lacks the capability to decline or stop processing such a request. Ex. 1004, 15:18-22. Moreover, because Lim's system lacks the capability to track such users, it cannot prevent or block the submission of future request, nor can it avoid initiating the processing of such requests. In other words, Lim's system does not and cannot stop processing in the sense of refusing to begin processing subsequent requests at all. Ex. 1004, 15:18-22.

5. Dependent Claim 10 ("The method of claim 1, wherein the location is X and Y coordinates of the undefined originator's click associated with the challenge")

198. As discussed above regarding limitation 1-A', Lim does not teach or suggest "the response to the challenge includes an identification of a location of the described one of the plurality of graphical forms" as required by claim 1 of the '427 Patent.

199. Accordingly, Lim does not teach or suggest “wherein the location is X and Y coordinates of the undefined originator's click associated with the challenge,” as required by claim 10 of the '427 Patent.

6. Dependent Claim 15

200. As to claim 15, Petitioner incorporates by reference its arguments concerning claim 5. Petition §VIII.A.6, Ex. 1003 ¶¶158-159. Thus, for the same reason that Lim fails to render obvious claim 5, as set forth in detail above, Lim fails to render obvious these portions of claim 15.

201. Claim 15 differs from claim 5 in that claim 15 describes a computer program comprising computer-executable steps rather than a method comprising steps. *Compare* Ex. 1001, 5:19-21 *with* 6:23-26.

202. This difference does not impact my analysis. In my opinion, claim 15 is not obvious in view of Lim for the same reasons that claim 5 is not obvious.

7. Dependent Claim 16

203. As to claim 16, Petitioner incorporates by reference its arguments concerning claim 6. Petition §VIII.A.7, Ex. 1003 ¶¶160-161. Thus, for the same reason that Lim fails to render obvious claim 6, as set forth in detail above, Lim fails to render obvious these portions of claim 16.

204. Claim 16 differs from claim 6 in that claim 16 describes a computer program comprising computer-executable steps rather than a method comprising steps. *Compare* Ex. 1001, 5:22-25 *with* 6:27-31.

205. This difference does not impact my analysis. In my opinion, claim 16 is not obvious in view of Lim for the same reasons that claim 6 is not obvious.

8. Dependent Claim 20

206. As to claim 20, Petitioner incorporates by reference its arguments concerning claim 10. Petition §VIII.A.8, Ex. 1003 ¶¶162-163. Thus, for the same reason that Lim fails to render obvious claim 10, as set forth in detail above, Lim fails to render obvious these portions of claim 20.

207. Claim 20 differs from claim 10 in that claim 20 describes a computer program comprising computer-executable steps rather than a method comprising steps. *Compare* Ex. 1001, 5:44-46 *with* 6:52-54.

208. This difference does not impact my analysis. In my opinion, claim 20 is not obvious in view of Lim for the same reasons that claim 10 is not obvious.

B. Ground 2: Claims 2-4 and 12-14 Are Not Obvious Over Lim Alone or in Combination with Lillibridge

1. Dependent Claim 2 (“The method of claim 1, further comprising modifying the challenge in response to a second initial request”)

209. Petitioner’s argument that Lim teaches or suggests or otherwise renders obvious the limitation of “modifying the challenge in response to a second initial

request,” as recited in claim 2 of the ’427 Patent, is not supported by the cited disclosures.

210. Petitioner relies on Lim’s Figure 5 (which discusses “transactions” and “accounts”), claim 1 of Lim (which discusses “adjusting an interval for a next prompt”), and various passages (e.g., Ex. 1004, 4:7-35, 7:62-8:17, and 9:20-30) that describe user profiles, credits, rewards, and the process of registering and creating an account. As discussed above for limitation 1-A’, however, all of these features relate only to *registered* users. Only registered users have accounts that store profile and demographic information, track credits and rewards, and enable the performance of transactions.

211. Lim’s registered users are not “undefined originators” as required by claim 1 of the ’427 Patent because they are *authenticated* users *known* to Lim’s system. Therefore, any challenge logic that applies only to registered users cannot satisfy the limitations of claim 1 and cannot satisfy the “modifying the challenge” limitation of claim 2.

212. Petitioner has not identified any disclosure in Lim that teaches or suggests modifying a challenge in response to a second initial request from an undefined originator. Because Petitioner’s argument is based entirely on portions of Lim that are directed to a different class of users than those recited in the claims, it

fails to establish that Lim teaches or suggests or renders obvious the limitation of claim 2.

213. Petitioner also argues that Lillibridge teaches or suggests or renders obvious the limitation of “modifying the challenge in response to a second initial request,” as recited in claim 2 of the ’427 Patent. However, Lillibridge does not disclose this subject matter.

214. Lillibridge teaches generating a new riddle for each request, with each riddle selected at random from a pool of riddles. For example, Lillibridge explains that “the server computer generates a predetermined number of random characters” and that “[t]he string is randomly modified either visually or audibly to form a riddle” (Ex. 1008, 2:45–52). The riddle is then rendered to the user, and the original string becomes the correct answer (*id.*, 2:52-55).

215. This process is repeated for each access request. Lillibridge states that “by default, the server computer requires the user to solve one riddle for each request” (*id.*, 8:48-49), and that this default behavior may be relaxed to present a new riddle less frequently (*id.*, 8:50-52).

216. Yet, Lillibridge does not describe modifying a previously issued riddle in response to a second request. Instead, each riddle is independently generated and selected from a pool of available riddles. This is *fundamentally different* from modifying a challenge. Selecting a new riddle as disclosed by Lillibridge involves

choosing a different challenge from a predefined set, whereas modifying a challenge, as required by claim 2, involves altering the content or structure of a previously issued challenge in response to a subsequent request from the same originator. Lillibridge's riddles are not "modified versions" of earlier challenges; they are entirely new challenges generated for each request. Because Lillibridge does not disclose modifying a challenge in response to a second initial request from the same undefined originator, it does not teach or suggest the subject matter of claim 2.

217. Accordingly, neither Lim nor Lillibridge, whether alone or in combination, teach or suggest the subject matter of claim 2.

2. Dependent Claims 3-4 ("The method of claim 2, wherein the modifying includes varying a coordinate location of the described one of the plurality of graphical forms" and "The method of claim 2, wherein the modifying includes varying which one of the plurality of graphical forms is described by the accompanying textual expression")

218. As discussed immediately above, neither Lim nor Lillibridge, whether alone or in combination, teaches or suggests "modifying the challenge in response to a second initial request" as required by claim 2 of the '427 Patent.

219. Accordingly, Lim does not teach or suggest "wherein the modifying includes varying a coordinate location of the described one of the plurality of graphical forms," nor does it teach or suggest that "the modifying includes varying which one of the plurality of graphical forms is described by the accompanying textual expression," as required by claims 3 and 4, respectively, of the '427 Patent

3. Dependent Claim 12

220. As to claim 12, Petitioner and its expert incorporate by reference their arguments concerning claim 2. Petition §VIII.B.3, Ex. 1003 ¶¶199-200. Thus, for the same reasons that Lim alone or in combination with Lillibridge fails to render obvious claim 2, as set forth in detail above, Lim alone or in combination with Lillibridge also fails to render obvious these portions of claim 12.

221. Claim 12 differs from claim 2 in that claim 12 describes a computer program comprising computer-executable steps rather than a method comprising steps. *Compare* Ex. 1001, 5:8-10 *with* 6:12-15.

222. This difference does not impact my analysis. In my opinion, claim 12 is not obvious in view of Lim and Lillibridge for the same reasons that claim 2 is not obvious.

4. Dependent Claims 13-14

223. As to claims 13-14, Petitioner and its expert incorporate by reference their arguments concerning claims 3-4. Petition §VIII.B.4, Ex. 1003 ¶¶201-202. Thus, for the same reasons that Lim alone or in combination with Lillibridge fails to render obvious claims 3-4, as set forth in detail above, Lim alone or in combination with Lillibridge also fails to render obvious these portions of claims 13-14.

224. Claims 13-14 differ from claims 3-4 in that claims 13-14 describe a computer program comprising computer-executable steps rather than a method comprising steps. *Compare* Ex. 1001, 5:11-17 *with* 6:16-22.

225. This difference does not impact my analysis. In my opinion, claims 13-14 are not obvious in view of Lim and Lillibridge for the same reasons that claims 3-4 are not obvious.

C. Ground 3: Claims 7-9 and 17-19 Are Not Obvious Over Lim Alone or in Combination with Guthrie

1. Dependent Claim 7 (“The method of claim 6, wherein the stopping processing includes dropping or redirecting a TCP connection established with the undefined originator”)

226. Petitioner does not assert that Lim teaches or suggests this step. Rather, Petitioner argues that a POSITA would find it obvious to suspend a user’s account in Lim’s system by dropping or redirecting their device’s TCP connection. Petition at 62. As an initial matter, this argument mischaracterizes Lim’s system as “suspending the user” (Petition at 61). FIG. 5’s step 516 is clear that Lim’s system suspends only a registered user’s *account*, not the *user* (Ex. 1004, step 516 in FIG. 5; *see also* 15:1), as registered users have defined identities via credentials (Ex. 1004, 10:1-3).

227. Furthermore, and contrary to Petitioner’s position (Petition at 61), a POSITA would *not* find it obvious to suspend a registered user’s account in Lim’s system by dropping or redirecting their device’s TCP connection. Users can access

accounts from any compatible device (Ex. 1004, 9:40-46), so terminating one device's connection would not prevent login attempts from another. Moreover, after a logged-in registered user fails verification challenge sufficient to trigger account suspension (Ex. 1004, step 516 in FIG. 5; 15:1), a registered user may log out and submit requests as a "guest" or unregistered user from any device. Lim's system processes such anonymous requests without authentication or tracking (Ex. 1004, 15:18-22: "If a user is not logged in, he/she will be able to perform searches"), rendering account suspension ineffective at stopping requests. Thus, dropping a TCP connection would not prevent new connections from the same or different devices, as Lim lacks user-level tracking for non-logged-in users. (Ex. 1004, 15:18-22).

228. Importantly, Lim's targeted approach to preventing robotic account access, while permitting robotic search activity, demonstrates that suspending a registered user's account by dropping or redirecting their TCP connection would not have been obvious to a POSITA, partially because Lim's focus on financial incentive. Lim prevents robotic systems from registering or logging into accounts that are linked to monetary rewards, but permits guests—including *robotic* systems—to access search features that lack financial incentives. Ex. 1004, 13:9-14 (explaining that Lim's system allows "automated access," such as robotic access, from a limited number of devices). Lim explicitly requires verification quizzes "Before being allowed to register" to ensure a human creates an account (Ex. 1004,

9:53–56), as “quizzes may be employed during the registration process to verify that a user is a human” (Ex. 1004, 13:24–28). Registered users earn credits for viewing advertisements or visiting sites, and an automated system could exploit this to accrue credits without human engagement. Ex. 1004, 13:18-21. Similarly, Lim uses quizzes “between transactions,” such as login attempts after account suspension, to verify human users and prevent robotic access to monetized features. Ex. 1004, 13:26-28; Fig. 5. This human verification requirement is driven by the financial risk of robotic abuse. Ex. 1004, 13:24-28.

229. The explicit use of quizzes for account activities, but their absence for searches, shows that Lim is not concerned with robotic search activity in its browser-based system, but rather actions related to user credits or rewards. This focus, which is dissimilar from that of the ’427 Patent, would render non-obvious to a POSITA suspension of a registered user’s account in Lim by dropping or redirecting their TCP connection because the dropping or redirecting would conflict with Lim’s design that permits robotic searches, provided they are not monetized.

230. While Lim does not teach or suggest, and Petitioner does not assert that Lim teaches or suggests, stopping processing of said further requests via “dropping or redirecting a TCP connection,” as required by claim 7 of the ’427 Patent, it is my opinion that Lim’s account suspension causes neither effect. This is because dropping or redirecting the TCP connection would prevent content viewing and quiz

delivery for re-validation, which is inconsistent with Lim's temporary suspension design.

231. To briefly contextualize Lim, with a priority date of July 20, 1999, it operates under HTTP/1.1, introduced in January 1997 (RFC 2068: Hypertext Transfer Protocol – HTTP/1.1 (January 1997) (Ex. 2009)) and adopted by browsers expressly identified in Lim, such as “Netscape Navigator” and “Internet Explorer,” by September 1997. Ex. 1004, 4:18-22. HTTP/1.1 specifies persistent TCP connections that remain open by default, absent server-initiated closure (e.g., “Connection: close” header) or redirection (e.g., 301/302 responses). RFC 2009, Section 8.1; Ex. 2010, Sections 8.1, 8.1.2, 10.3, 14.10.

232. Lim teaches suspending a registered user's account at 516 of FIG. 5, temporarily imposing a suspension for a period of time (Ex. 1004, FIG. 5; 14:10–14). Lim does not teach or suggest a server action to close or redirect the TCP connection. This suspension, therefore, permits the user to view content without earning account rewards or credits (Ex. 1004, 15:18-22) and requires that the user is “re-validated” after the expiration of the time period by delivering a quiz to the user's device (Ex. 1004, 13:18-24; step 516 of Fig. 5), which uses an active TCP connection. Ex. 1004, Fig. 1; 8-57-63 (demonstrating that quizzes are transmitted via a TCP-based network configuration). Dropping or redirecting the TCP connection would prevent content viewing and quiz delivery for re-validation, which

is inconsistent with Lim's temporary suspension design. Thus, Lim's temporary account suspension does not affect the TCP connection, which is contrary to claim

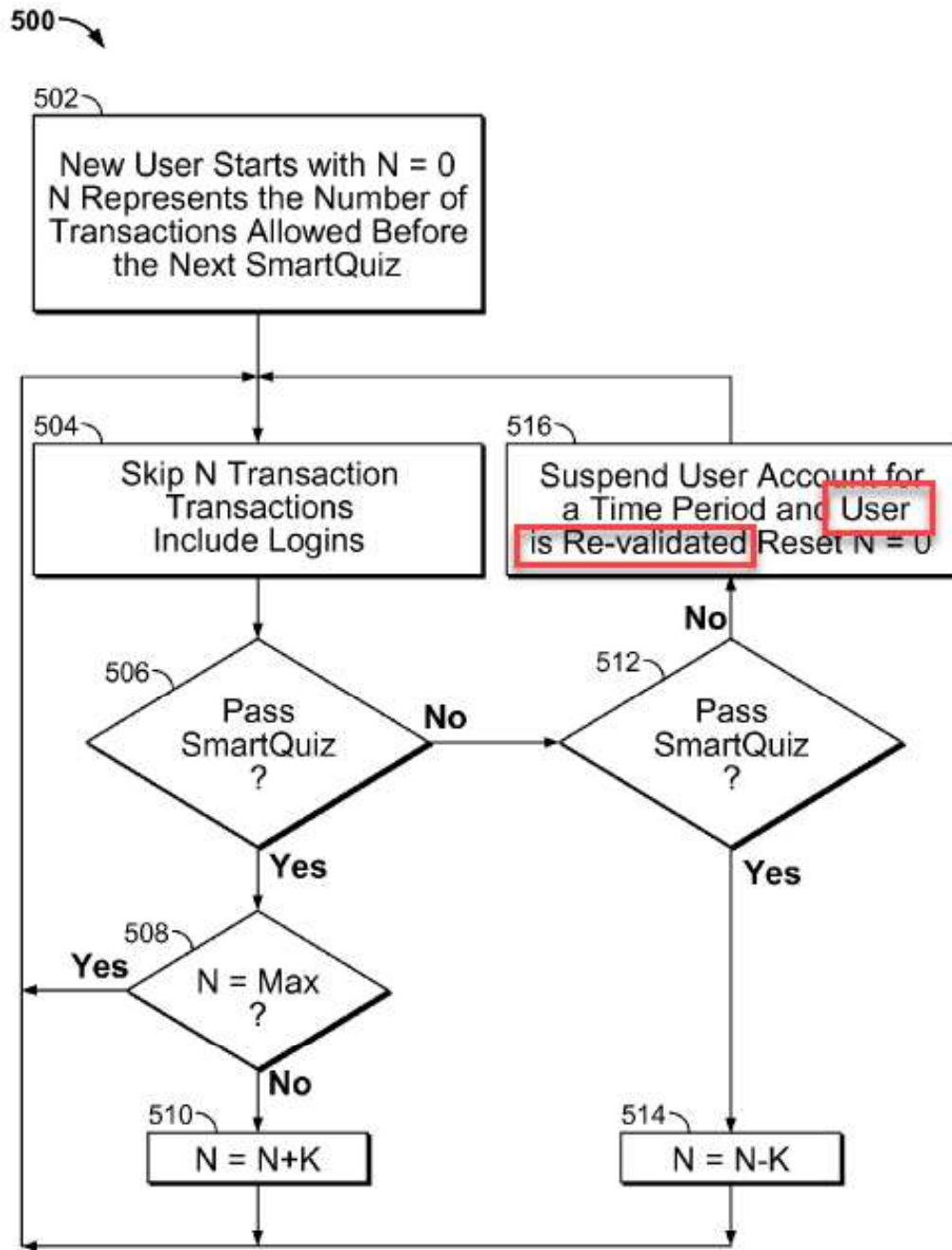


FIG. 5

7's requirement that further request processing be stopped by dropping or redirecting the TCP connection.

233. Nor does Guthrie disclose “dropping or redirecting a TCP connection established with said undefined originator.”

234. Petitioner incorrectly asserts that Guthrie teaches “redirecting a TCP connection” (Petition at 65), citing the server’s transmission of a failure message when a lock-out timer is active. Ex. 1009, 9:6-10. This action does not constitute redirecting a TCP connection. In Guthrie, “the server **104** returns a failure message to the client **102**” over the existing TCP connection when the lock-out timer flag is set. Ex. 1009, 9:6-10. A POSITA would understand TCP redirection, in the context of claim 1, to involve an HTTP redirect response, such as a 301 or 302 status code with a new URL, directing the client to establish a connection to a different resource (RFC 2616, Section 10.3). Guthrie does not teach or suggest URL transmission, HTTP redirect response, or initiation of a new connection to another server or resource. Rather, the failure message in Guthrie is merely a notification of authentication denial, sent within the same client-server session. Accordingly, and contrary to the Petitioner’s assertion, a POSITA would not interpret Guthrie’s failure message as teaching redirection of a TCP connection.

235. Moreover, as discussed above, there is no teaching, suggestion, or motivation to combine Lim with Guthrie. A POSITA would recognize that Lim suspends accounts server-side, storing user account information on host **104** (Ex.

1004, 8:38-40) and restricting login or activities until verification is completed (Ex. 1004, step 516 of FIG. 5) without manipulating TCP connections. Lim allows unregistered, non-logged-in users (including potential robots) to search without verification, even after failing registration quizzes. Ex. 1004, 15:18-23. Conversely, Guthrie's "failure message," if interpreted as dropping or redirecting a TCP connection, would disrupt the user's network session *and* block system access. Ex. 1009, 9:6-10. Applying a disruption of a network session or blocking system access, as taught in Guthrie to Lim would contradict Lim's objective of open access for non-monetized activities. *See* Ex. 1004, 4:18-24 (demonstrating that humans and robots can access Lim's features by using "standard web browsers"); *see also* 15:18-23 (showing that non-logged-in users can perform searches without receiving rewards). Consequently, a POSITA would neither view TCP redirection as the most obvious suspension method nor combine Guthrie with Lim, as server-side suspension is simpler, and redirection would frustrate Lim's functionality.

236. Second, even if Guthrie's feature were considered relevant, there is no teaching, suggestion, or motivation to combine Guthrie's lock-out mechanism (which starts a timer upon failed login attempts) with Lim's account suspension. While Guthrie logs IP addresses for all login attempts, its timer, triggered only by failed logins to registered accounts exceeding a failure threshold, is inapplicable to Lim's non-registered users, who access search features without logging in, *even after*

failing registration quizzes. Guthrie is aimed at stopping brute force attacks, which differs from Lim's user account management. Thus, a POSITA would lack motivation to combine Guthrie with Lim, as doing so would frustrate Lim's functionality.

237. Finally, Petitioner contends that dropping or redirecting a TCP connection is the most obvious way to suspend a user's account. Petition at 65. A POSITA would recognize, however, that Lim suspends accounts server-side, storing user account information on host **104** (Ex. 1004, 8:38-40) and restricting login or activities until verification is completed (Ex. 1004, step 516 of FIG. 5) without manipulating TCP connections. In turn, a POSITA would not be motivated to combine Guthrie's failure message with Lim's teaching, even assuming it teaches redirection, because this would undermine Lim's design of permitting unregistered, non-logged-in users (including potential robots) to perform searches. Indeed, Lim allows unregistered, non-logged-in users (including potential robots) to search without verification, even after failing registration quizzes. Ex. 1004, 15:18-23. Conversely, Guthrie's "failure message," if interpreted as dropping or redirecting a TCP connection, would disrupt the user's network session *and* block system access. Ex. 1009, 9:6-10. Applying a disruption of a network session or blocking system access as taught in Guthrie to Lim would contradict Lim's objective of open access for non-monetized activities. *See* Ex. 1004, 4:18-24 (demonstrating that humans and

robots can access Lim’s features by using “standard web browsers”); *see also* 15:18-23 (showing that non-logged-in users can perform searches without receiving rewards). Consequently, a POSITA would neither view TCP redirection as the most obvious suspension method nor combine Guthrie with Lim, as server-side suspension is simpler and redirection would frustrate Lim’s functionality.

2. Dependent Claim 8 (“The method of claim 1, further comprising logging a source IP address of the undefined originator, and starting a timer”)

238. Petitioner argues that Lim alone or in combination with Guthrie renders obvious the limitation, “logging a source IP address of said undefined originator and starting a timer.” According to Petitioner, Lim teaches that, when an unknown user fails a challenge, their account will be suspended for a time period, during which processing of their requests will be stopped because they have been determined to be a robot. Petition at 66. Petitioner also argues that Lim teaches using IP addresses to uniquely identify and restrict users. *Id.*

239. I disagree. Neither Lim nor Guthrie, alone or in combination, teaches or suggests this limitation.

240. As an initial matter, Petitioner mischaracterizes Lim, asserting that “when an unknown user fails a challenge, their account will be suspended for a time period, during which time processing of their requests will be stopped.” Petition at 66. This characterization is incorrect because Lim suspends accounts *only* for

registered users, who are logged in and identified by host **104**'s account information. *See* Ex. 1004, 8:38-40 (“host **104** stores information about user accounts”); *see also* 15:1-1 (“suspends the user’s account”); 10:1-3 (showing that a registered user logs into their account using “username and password”).

241. In contrast, non-registered users—who do not have accounts—face no suspension and are allowed to continue searching without verification, even after failing registration quizzes. *See* Ex. 1004, 15:18-23. In this way, Lim and Guthrie fail to teach the invention disclosed by the '427 Patent.

242. Petitioner further claims that Lim’s suspension “would most obviously be tracked by starting a timer,” citing FIG. 5’s step 516. Petition at 67-68. Yet, as discussed above, FIG. 5 pertains solely to registered users processing transactions (Ex. 1004, 15:1; steps 502, 504, 508, 510, 514), who have defined identities via credentials and are not “undefined originators” under claim 1 of the '427 Patent. Non-registered users, accessing the system anonymously (Ex. 1004, 15:18-23), face no suspension or timer. Thus, Lim does not teach or suggest starting a timer for non-registered users failing quizzes, and the Petitioner’s interpretation contradicts its design.

243. Lim also does not teach or suggest “logging a source IP address of said undefined originator,” as required by claim 1. Petitioner asserts that Lim “discusses limiting or restricting the number of users using unique identifiers, including their

IP address,” (Petition at 66) but supports this assertion by selectively merging portions of two separate sentences from Lim (e.g., Ex. 1004, 13:5-14) into a single, misleading interpretation that omits key phrases.

244. Specifically, Petitioner bases its argument on a revision of Lim to exclude the **bolded** text below from its quotation of this passage:

Computer systems configured in accordance with the present invention may limit or restrict **the number of users which are allowed access from a particular computer or terminal based upon a certain number of cookies or Java applets installed on the user’s computer or terminal. Such systems may also constrain automated access by allowing a limited number of users** access from computers or other web-capable devices associated with certain unique identifiers such as a medium access control (MAC) addresses, IP addresses, or central processing unit (CPU) serial numbers.

Ex. 1004, 13:5-14; *see* Petition at 66-67. This results in a mischaracterization of Lim, as it ignores several passages, including the phrase, “based upon a certain number of cookies or Java applets installed on the user’s computer or terminal.”

245. Read in context, a POSITA would have several reasons for concluding that the full passage pertains solely to registered users who do not qualify as “undefined originators.”

246. First, Lim explains that its system can limit or restrict the number of users which are allowed access from a particular computer or terminal “based upon a certain number of cookies or Java applets installed on the user's computer or terminal.” A POSITA would understand this to exclude anyone other than registered

users who are logged in, as Lim specifies that a cookie is placed on a user's device only "[a]fter creating the new user's account." Ex. 1004, 11:26-27. Lim also clarifies that a cookie is required to retrieve client-side information, such as the number of Java applets installed. *See* Ex. 1004, 11:29–33 (noting that a cookie is used to "store and retrieve information on the client-side of the connection"). Without such a cookie, Lim's system simply has no mechanism for determining the number of Java applets installed on a "guest" or unregistered user's device.

247. Second, a POSITA would understand that Lim's system is concerned only with limiting or restricting access for registered users because only registered users have access to accounts that could be abused for financial gain. Ex. 1004, 13:18-21. Indeed, limiting or restricting access for "guests" and unregistered users would contradict Lim's objective of open access for non-monetized activities. *See* Ex. 1004, 4:18-24 (demonstrating that humans and robots can access Lim's features by using "standard web browsers"); *see also* 15:18-23 (showing that non-logged-in users can perform searches without receiving rewards).

248. Third, the passage (Ex. 1004, 13:5-14) from Lim relied upon by Petitioner appears in a section of the specification titled "4. Constraints on Automated Usage" (Ex. 1004, 13:4). Immediately preceding this section is another section titled "3. Follow-up Registrations" (Ex. 1004, 12:3-13:3), which discusses how registered users can update their profile information and cookie information, as

well as view their account balance. *See* Ex. 1004, 12:4-13:3. These are activities that are exclusive to *registered users that have accounts*. A POSITA would understand that since Section 3 pertains solely to registered users, then Section 4 logically continues to address the same user group.

249. Thus, even assuming that Lim 13:5-14 discloses “logging a source IP address,” it does not do so for an “undefined originator,” as required by claim 8.

250. Alternatively, Petitioner contends that Guthrie teaches or suggests this limitation. Petition at 69.

251. I disagree. Claim 8 depends on claim 7, which requires that “starting a timer,” as recited in claim 8, occurs “**after the challenge has not been successfully fulfilled**” (emphasis added). Guthrie does not teach or suggest this subject matter. While Guthrie’s “lock-out timer” applies to failures during the initial login process—namely, incorrect username and password entries—it does not apply to its challenge/response mechanism. Specifically, Guthrie explains that “The lock-out timer flag is activated when the server **104** detects too many successive authorization failures in a row” (Ex. 1009, 8:10-12) where “‘login’ and ‘authorization’ are used interchangeably” (Ex. 1009, 8:24-30), which clearly limits the lock-out timer’s function to login failures.

252. By contrast, Guthrie’s challenge/response mechanism is a distinct and subsequent phase of the process that occurs only after successful login. As such, it is not subject to the lock-out timer. Guthrie explains:

The user **114** initially inputs the user’s account and correct password to the client **102**. Secondly, the client **102**, via the client application **112**, transmits the user account and account password to the server **104**. Third, the server **104** validates the user account and password... If such initial validation is successful, then the server **104** employs a challenge generator... and transmits the challenge to the client **102**.

Ex. 1009, 7:16-25. This passage, along with the data flow sequence depicted in FIG. 4, confirms that the login step is a prerequisite to the challenge/response phase and that the two are logically and functionally distinct. *See* Ex. 1009, FIG. 4:

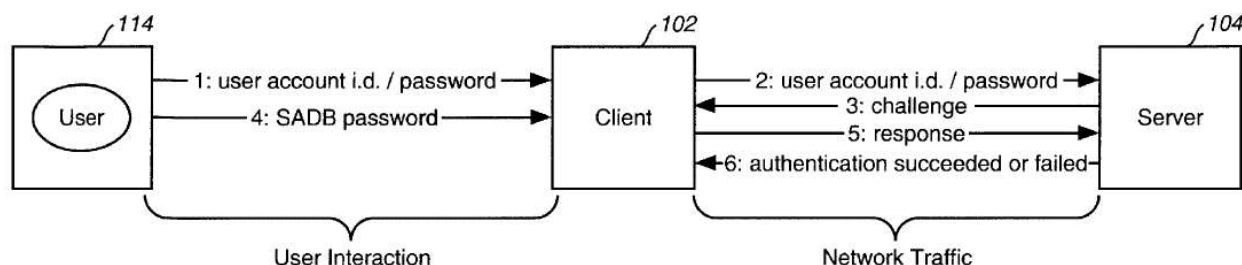


FIG. 4
[EX1009 FIG. 4.]

253. Guthrie states that “The server **104** records audit information for each log-on attempt” (Ex. 1009, 13:46-47), reinforcing that monitoring and enforcement—including the lock-out timer—are exclusively tied to the login phase and are unrelated to the challenge/response phase. Guthrie further clarifies the purpose of the lock-out timer is “to thwart an unauthorized user from repeatedly

‘hammering’ the server **104** manually or through an automated application with authorization attempts, while still eventually allowing a legitimate user access... (as used generally herein, ‘login’ and ‘authorization’ are used interchangeably)” (Ex. 1009, 8:24-30). This confirms that the lock-out timer is specifically designed to mitigate brute-force login attempts and is not designed to operate during the challenge/response phase, which fails to teach a timer as disclosed by ’427 Patent.

254. Furthermore, Guthrie’s challenge/response process authenticates users by generating an encrypted response (Ex. 1009, FIG. 3 (showing secure hashing algorithm)) from a server-issued challenge, client serial number, and user’s password, avoiding password transmission (Ex. 1009, Abstract; FIG. 3 (showing a secure hashing algorithm); 6:10-27 (explaining process of generating an encrypted response using the secure hashing algorithm)). A POSITA would understand that this encryption mechanism resists brute-force attacks as valid responses require the password and algorithm, unlike password guessing during login attempts. Ex. 1009, 2:37-42 (“a predetermined number of system accesses are permitted before being locked out”). Guthrie’s lock-out timer, which counters repeated guessing, activates only *after* failed login attempts due to incorrect credentials exceeding a threshold, not *during* the challenge/response phase. Ex. 1009, 4:3-6. Thus, Guthrie does not teach starting a timer “if said challenge is not fulfilled,” as it ties its timer solely to

login failures—*not* its challenge/response phase—rendering it inapplicable to claim 1.

255. Even if Guthrie’s feature were considered relevant, there is no teaching, suggestion or motivation to combine Guthrie’s lock-out mechanism (which starts a timer upon failed login attempts) with Lim’s account suspension feature to achieve “if said challenge is not fulfilled, ... logging a source IP address of said undefined originator and starting a timer.” Such a combination would contradict Lim’s intended design.

256. While Guthrie logs IP addresses for all login attempts, its timer, triggered only by failed logins to registered accounts exceeding a failure threshold, is inapplicable to Lim’s non-registered users, who access search features without logging in, *even after failing registration quizzes*. As previously discussed, Lim suspends accounts *only* for registered users, identified by host **104**, while permitting non-registered users, including robots, to search freely. Applying Guthrie’s lockout timer would block these users’ searches, contradicting Lim’s design of open access to non-monetized search features. Thus, a POSITA would lack motivation to combine Guthrie with Lim, as doing so would frustrate Lim’s functionality and fail to address the 427 Patent’s undefined originator requirement.

3. Dependent Claim 9

- a. **[9-PRE] (“The method of claim 1, further comprising”); [9-A’] (“receiving a new request”)**

257. There is no dispute as to the preamble of claim 9 and limitation 9-A’.

- b. **[9-B’] (“determining whether a source IP address of the new request matches the logged source IP address of the undefined originator”)**

258. Petitioner argues that Lim and Guthrie, whether alone or in combination, teach “checking whether a source IP address of said new request matches said logged source IP address,” as required by claim of the ’427 Patent. Petition at 74-75. This is not the case. In making this assertion, the Petitioner repeats several mischaracterizations of Lim.

259. First, as previously discussed, Lim’s system does not track users by IP address. Rather, Lim’s system tracks only registered users who are logged into their accounts. Ex. 1004, 10:1-5 (noting that registered users are tracked); *see also* 11:26-29 (noting that cookies are only placed on the computer systems for registered users). And, as discussed above, registered users who are logged into Lim’s system do not qualify as “undefined originators.”

260. Second, Petitioner also incorrectly asserts:

A POSITA would also have understood that, upon receipt of a new request, it would have been obvious for Lim to determine whether the source IP address of the new request matches the logged source IP address of the suspended undefined originator and present them with a new challenge if the timer measuring their suspension has expired. Ex. 1003, ¶255. This must be the case, because otherwise Lim would have

no way of determining that the interval that user is suspended for (as discussed immediately below) had passed or not. *Id.* Similarly, if Lim did not issue a new challenge after their suspension ends, Lim’s disclosure of suspending the user only for a particular time period would not make sense. *Id.*

Petition at 76.

261. This argument appears to rest on Petitioner’s continued mischaracterization of Lim as tracking and suspending the IP addresses of devices that are not permitted to use the system. However, as previously discussed, Lim *does not suspend IP addresses*—it suspends user accounts. Ex. 1004, 15:1 (“(step 516) suspends the user’s account”). The suspension mechanism disclosed in Lim is *account-based, not IP address-based*. Accordingly, tracking the duration of an account suspension does not require the system to monitor or compare IP addresses, as Petitioner suggests. Lim’s system relies on account credentials and stored user information (Ex. 1004, 8:38-40 (“host 104 stores information about user accounts”)), *not on IP address matching*, to enforce account suspensions. Petitioner’s argument conflates account-level control with network-level identifiers, and in doing so, imposes functionality that Lim neither teaches nor suggests.

262. Last, Petitioner asserts, incorrectly, that a POSITA’s understanding of Guthrie’s lockout time would prompt combination with Lim’s account suspension procedures. Petition at 77-78. This argument, however, fails because it both ignores the fundamental design principles of Lim and also misapplies Guthrie’s teachings.

First, there is no motivation to modify Lim to track IP addresses of “guests” or unregistered users. Lim is designed to allow users to perform searches and access content without authentication or identification. (Ex. 1004, 15:18-22). This reflects a deliberate design choice to support anonymous access. A POSITA would understand that introducing IP tracking of “guests” or unregistered users would undermine Lim’s stated goal of enabling frictionless, anonymous user interaction. (Ex. 1004, 15:18-22). Second, in regard to Guthrie, its system is fundamentally different from Lim’s. Guthrie logs IP addresses in the context of user login attempts, (Ex. 1009, 13:46-47) which is part of a broader security and auditing framework for managing authenticated user accounts. Guthrie does not suggest or teach logging IP addresses of users who are not attempting to authenticate. A POSITA would recognize that Guthrie’s IP address tracking is inapplicable to Lim’s unregistered user model, which lacks any login or account-based interaction.

c. [9-C’] (“determining whether said timer is expired”)

263. Petitioner argues that Lim and Guthrie, alone or in combination, disclose “checking whether said timer has expired.” Petition at 74-75. In my opinion, they do not.

264. Specifically, Lim does not disclose logging the IP address of “guests” or unregistered users. *See* § IX.C.2. Nor does Lim disclose starting a timer in response to an unregistered user failing to correctly answer a quiz. *See id.*

265. Furthermore, a POSITA would not be motivated to combine Guthrie's lock-out timer with Lim's handling of unregistered users, nor to combine Guthrie's IP logging with Lim's unregistered users. *See id.*

- d. **[9-D'] ("upon the source IP address of the new request matching the logged source IP address of the undefined originator and the timer being expired, responding to the new request with a second challenge that prompts a response to the second challenge")**

266. Petitioner argues that Lim and Guthrie, whether alone or in combination, teach or suggest "if said timer is expired, resetting said logged IP address; and proceeding normally with said new request." Petition 74-75.

267. This is simply not the case. Lim and Guthrie, alone or in combination, do not teach or suggest "upon the source IP address of the new request matching the logged source IP address of the undefined originator and the timer being expired, responding to the new request with a second challenge that prompts a response to the second challenge," as required by claim 9 of the '427 Patent. Specifically, Lim does not teach or suggest logging the IP address of "guests" or unregistered users (*see* § IX.C.2), nor starting a timer in response to a "guest" or an unregistered user failing to correctly answer a quiz. *See id.*

268. Furthermore, a POSITA would not be motivated to combine Guthrie's lock-out timer with Lim's handling of "guests" or unregistered users (*see id.*), nor to combine Guthrie's IP logging with Lim's "guests" or unregistered users (*see id.*).

Without disclosing both the logging of a source IP address and the starting of a timer, Lim cannot disclose “responding to the new request with a second challenge that prompts a response to the second challenge,” as required by claim 9, because this response must occur only “upon the source IP address of the new request matching the logged source IP address of the undefined originator and the timer being expired.”

4. Dependent Claim 17

269. As to claim 17, Petitioner and its Expert incorporates by reference its arguments concerning claim 7. Petition §VIII.C.4, Ex. 1003 ¶¶261-262. Thus, for the same reasons that Lim alone or in combination with Guthrie fails to render obvious claim 7, as set forth in detail above, Lim alone or in combination with Guthrie also fails to render obvious these portions of claim 7.

270. Claim 17 differs from claim 7 in that claim 17 describes a computer program comprising computer-executable steps rather than a method comprising steps. *Compare* Ex. 1001, 5:26-29 *with* 6:32-35.

271. This difference does not impact my analysis. In my opinion, claim 17 is not obvious in view of Lim and Guthrie for the same reasons that claim 7 is not obvious.

5. Dependent Claim 18

272. As to claim 18, Petitioner and its expert incorporate by reference its arguments concerning claim 8. Petition §VIII.C.5, Ex. 1003 ¶¶263-264. Thus, for the same reason that Lim alone or in combination with Guthrie fails to render obvious claim 8, as set forth in detail above, Lim fails to render obvious these portions of claim 18.

273. Claim 18 differs from claim 8 in that claim 18 describes a computer program comprising computer-executable steps rather than a method comprising steps. *Compare* Ex. 1001, 5:30-32 *with* 6:36-39.

274. This difference does not impact my analysis. In my opinion, claim 18 is not obvious in view of Lim and Guthrie for the same reasons that claim 8 is not obvious.

6. Dependent Claim 19

275. As to claim 19, Petitioner incorporates by reference its arguments concerning claim 9. Petition §VIII.C.6, Ex. 1003 ¶¶265-266. Thus, for the same reason that Lim alone or in combination with Guthrie fails to render obvious claim 9, as set forth in detail above, Lim fails to render obvious these portions of claim 19.

276. Claim 19 differs from claim 9 in that claim 19's preamble describes a computer program comprising computer-executable steps rather than a method comprising steps. *Compare* Ex. 1001, 5:33 *with* 6:40-41.

277. This difference does not impact my analysis. In my opinion, claim 19 is not obvious in view of Lim and Guthrie for the same reasons that claim 9 is not obvious.

X. REVISION OR SUPPLEMENTATION

278. In this report, I have presented my opinions regarding the invalidity of the claims of the '427 Patent based on the information available to me. My opinions are subject to change in view of opinions provided by the Patent Owner or its expert, or any additional information that I may receive. I reserve the right to supplement my opinions accordingly.

I hereby declare that all statements made herein of my own knowledge are true and that all opinions expressed herein are my own; and further that these statements were made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Date: July 14, 2025

A handwritten signature in black ink, appearing to read 'Wenke M. Lee', written over a horizontal line.

Wenke M. Lee