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. IPR2025-00693
U.S. Patent No. 7,373,510

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

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 opinions 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.

1. I understand that the Petition involves U.S. Patent No. 7,373,510 ("the '510 Patent") (Ex. 1001) that is assigned to Arkose. I have been asked to provide my opinions as to the validity of claims 1–30 of the '510 Patent (collectively, the "Challenged Claims") of the '510 Patent in view of the grounds set forth in the Petition.

2. This Declaration sets forth the opinions that I have formed related to the Challenged Claims of the '510 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 or 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.

3. 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.

4. 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

5. 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 to this Declaration as Exhibit A.

6. 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.

7. 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.

8. 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.

9. 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.

10. 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.

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11. 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).

12. 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,

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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.

13. 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

14. 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.

15. In my opinion, Claims 1, 2, 7, 8, 13-15, 17-22, and 25-30 are not obvious over Lim in combination with Guthrie at least because:

i. The preambles to claims 1 and 20 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 20;

iii. Lim does not "stop[] processing of any further requests" if a challenge is not fulfilled, according to claims 1 and 20;

iv. Neither Lim nor Guthrie teaches or suggests "dropping or redirecting a TCP connection" if a challenge is not fulfilled, according to claims 1 and 20;

v. Neither Lim nor Guthrie teaches or suggests the use of IP address logging, IP address matching, and timers in connection with failed challenges in the manner claimed in claims 1 and 20;

vi. Lim or Lim in combination with Guthrie do not teach or suggest the additional limitations found in the dependent claims; and

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

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16. In my opinion, Claims 3, 9 and 23 are not obvious over Lim in combination with Guthrie and Lillibridge because:

i. Lim and/or Lim in combination with Guthrie do not disclose the limitations of claims 1 and 20 identified in the preceding paragraph;

ii. Lim or Lim in combination with Guthrie and/or Lillibridge do not teach or suggest the additional limitations found in the dependent claims; and

iii. A POSITA would not have been motivated to combine Lim with Guthrie and Lillibridge.

17. In my opinion, Claims 4-6, 10-12, 16, and 24, are not obvious over Lim in combination with Guthrie (with or without further combination with Lillibridge) because:

i. Lim and/or Lim in combination with Guthrie do not disclose the limitations of claims 1 and 20 identified in the preceding paragraphs;

ii. Lim or Lim in combination with Guthrie and/or Lillibridge do not teach or suggest the additional limitations found in the dependent claims; and

iii. A POSITA would not have been motivated to combine Lim with Guthrie with or without Lillibridge.

IV. MATERIALS CONSIDERED

18. In forming my opinions, I have reviewed the '510 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.

19. 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 '510 PATENT, AND THE PRIOR ART

20. The '510 Patent pertains to the prevention of robots from browsing a website beyond a welcome page. The '510 Patent discloses a method and computer process 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. The response from the undefined originator is processed, and if the challenge is successfully fulfilled (i.e., solved), 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.

21. 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 prosecution history of the '510 Patent, and the 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.

A. TECHNICAL BACKGROUND/STATE OF THE ART

22. 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. However, the disclosures in the shared specification for the '510 Patent and '427 Patent are focused on specific types of quizzes or challenges that are relatively easy for humans to solve and hard for bots, and on specific enforcement mechanisms to be employed when a quiz or challenge response fails. In particular, the invention claimed in the '510 Patent focuses on specific enforcement methods.

23. I have reviewed the Declaration of Dr. Daniel Lopresti (Ex. 1003), submitted in support of Petitioner's Petition. He generally characterizes the technological challenge of detecting and blocking bots while allowing human users to continue to access websites, but does not adequately address the evolving state of the art concerning specific types of challenges or quizzes and specific enforcement mechanisms. This is exemplified by Dr. Lopresti's repeated use of CAPTCHA—a term that was not coined until nearly three years after the priority date of the '510 and '427 Patents—to refer to the entire field of bot detection. In my opinion, this broad characterization fails to account for the particular developments in the technology, before and after the Patents' priority date, and obscures the novel aspects of the claimed inventions in these Patents.

24. At the time of the '510 Patent's invention 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.

25. 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.

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27. It was in the midst of these early years of CAPTCHA that 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.

28. Specifically, the ’510 Patent provided a method and computer process for preventing bots from browsing a website beyond a welcome page. On receiving an initial request from an undefined originator, the website responds to the request with a welcome page including a challenge. Then, on receiving a further request from the undefined originator, the website can check whether the challenge is fulfilled or not. 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. The invention prevents website 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.

29. Furthermore, while certain methods for protecting websites, like authenticating users upon a request to access certain information on the Internet, may have existed at the time of the invention, none used the graphical direction-giving that the '510 Patent described. Previous inventions focused on predetermined sequences of letters or numbers, such as entering a password or a PIN. But the '510 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.

30. Moreover, the '510 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 '510 Patent presented unique advantages over other conventional technology at the time of its invention. It allowed a more general and principled approach to stop a robot from browsing a website, rather than a narrower approach for specific application scenarios such as user account management and profiling that would have required a website to maintain lists of users. In particular, the '510 Patent's Abstract presents various types

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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 '510 Patent's system generally applicable to a wide range of applications.

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 '510 Patent are unique and different from those presented by other systems.

B. THE '510 PATENT

33. United States Patent No. 7,373,510 ("the '510 Patent"), titled "System and Method for Implementing a Robot Proof Web Site," issued on May 13, 2008. The '510 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 '510 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 '510 Patent discloses an "exemplary welcome page as seen by an individual accessing a Web site, e.g., at following URL [**100**] (Uniform Resource Locator) 'http://www.anysite.com/welcome.html' is shown. Accessing a Web site can be done with any available Web browser, e.g., Netscape browser [**110**] . . . ." *Id.* at 3:6-10. "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 3:12-15. 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 3:16-22. "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 3:22-24. This is illustrated in Fig. 1 of the patent, which is reproduced below:

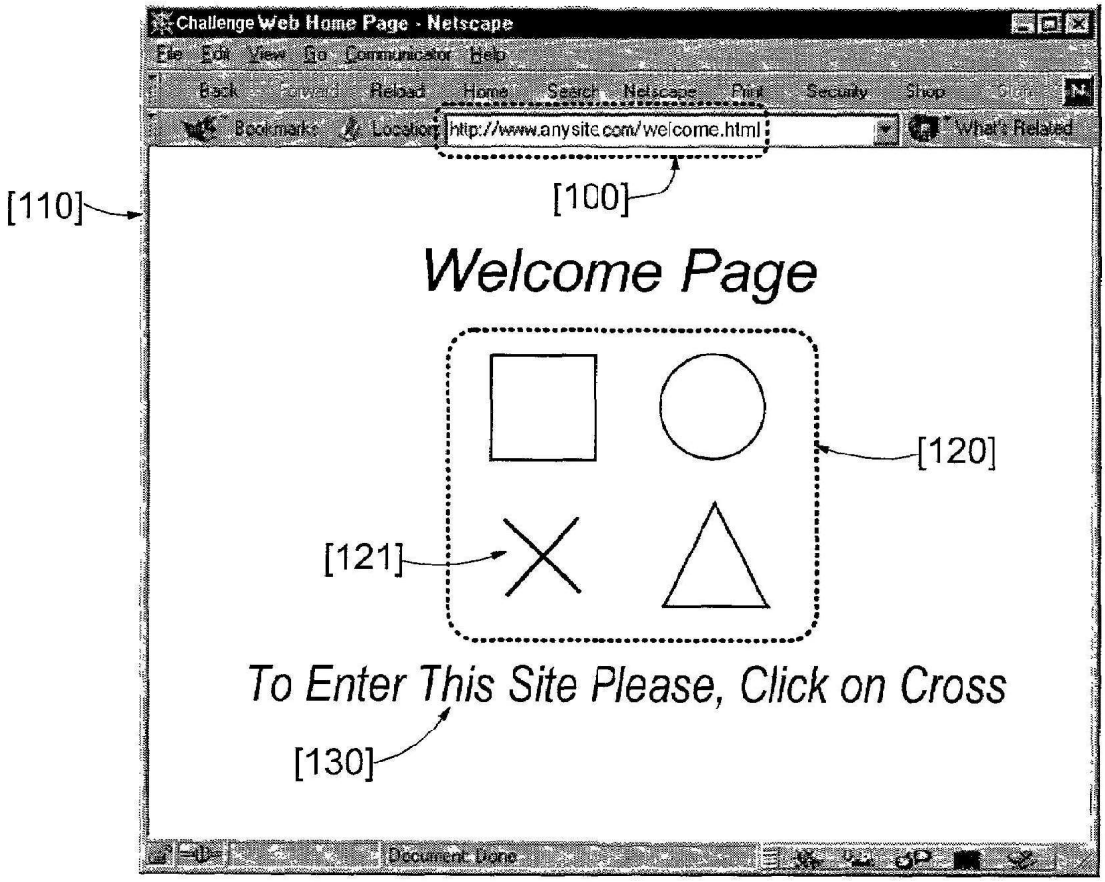


Figure 1

[FIG. 1]

35. When prompted to select the cross, 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 3:24-28. 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 3:28-32. 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 3:32-37.

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." *Id*. at 3:38-42. For example, the cross in Fig. 1 can be "moved to a different position on the image map so that the coordinates returned, when clicking on it, are different." *Id*. at 3:42-44. Alternatively, "the prompting request can change," requiring, for example, a user selection of the triangle in Fig. 1 instead. *Id*. at 3:45-46.

37. Figure 2 shows the source HTML code [**140**] for the example depicted by Fig. 1. *Id.* at 3:46-47:

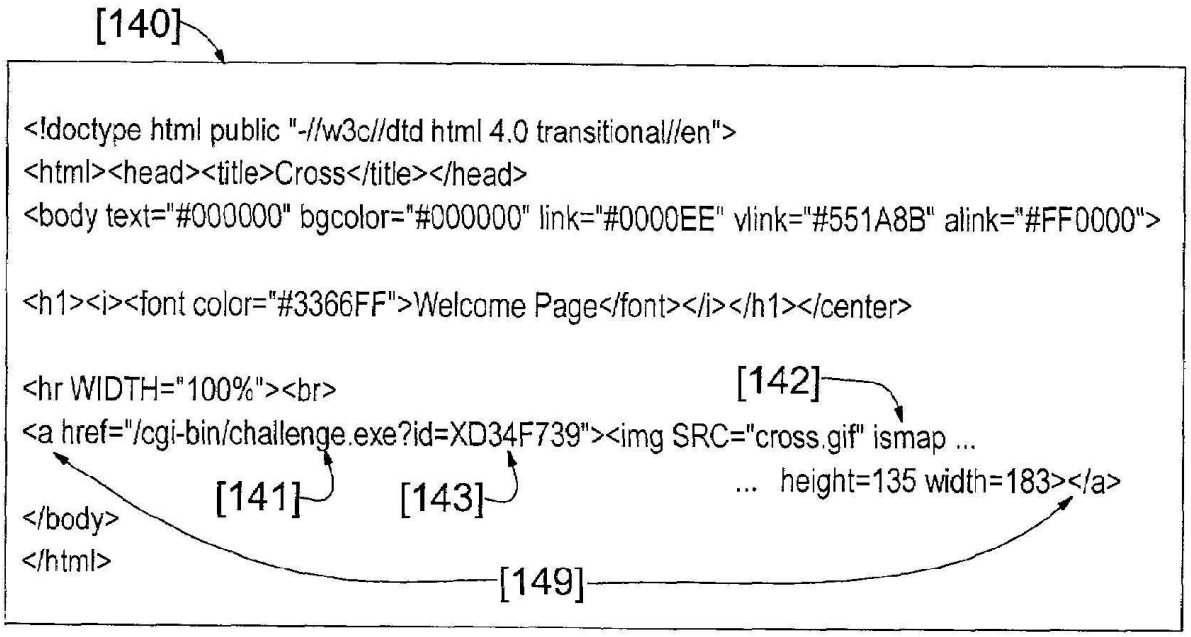


Figure 2

[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 .. > . . <la> 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 3:47-58. The anchor tag also carries an identification field i.e., id=XD34F739 [**143**] "which is useful to correlate the answer, including the click

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coordinates, with the current challenge" when there is a change of prompt from one user to another. *Id.*

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 3:59-61.

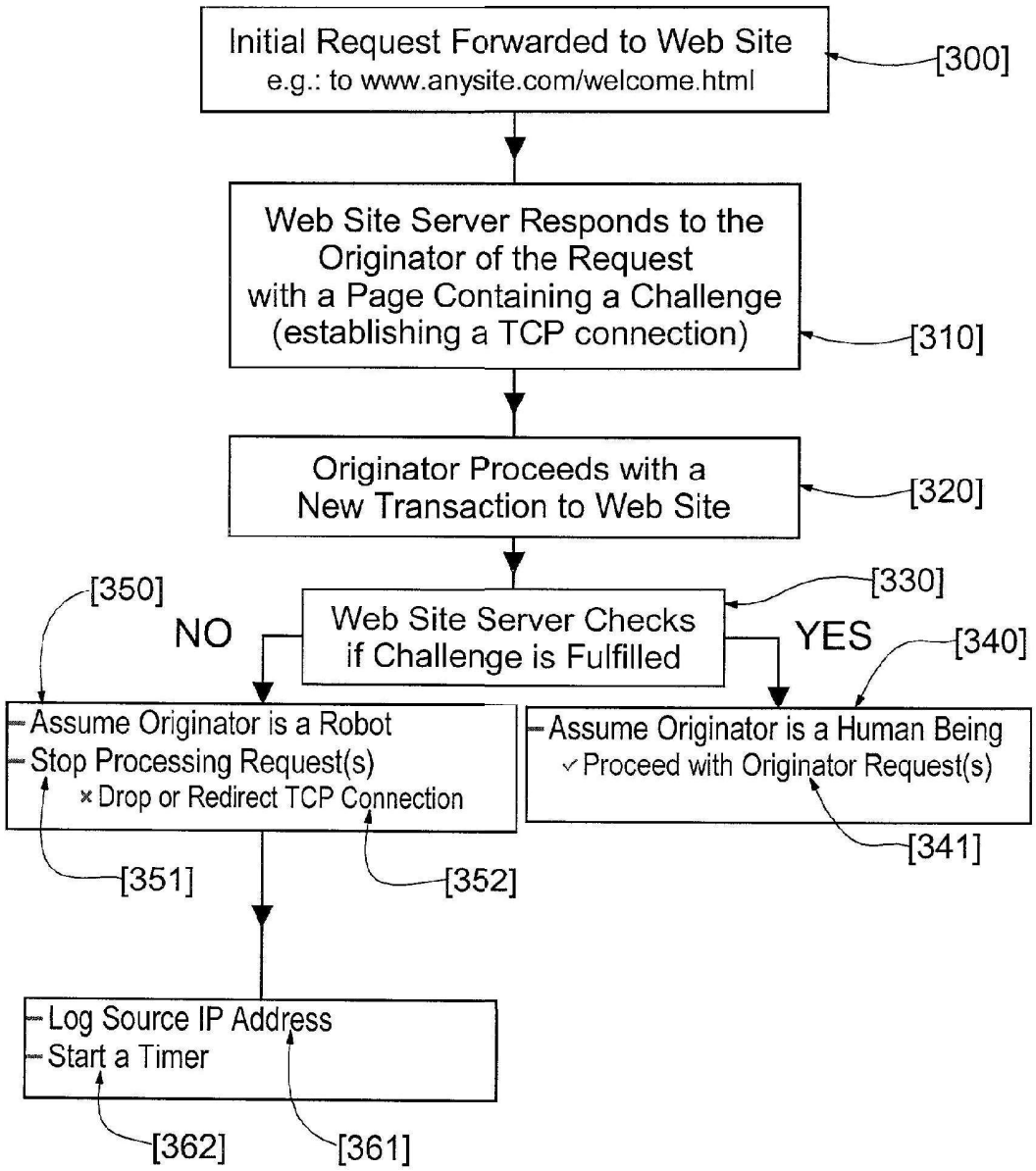


Figure 3

[FIG. 3]

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40. When the website receives the initial request, "the [**300**] Web site server responds with the challenge [**310**]." *Id.* at 3:62-63. The website server responds with the challenge 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 3:63-67.

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 4:1-3. "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 4:3-7. 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 4:8-12.

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 4:13-16:

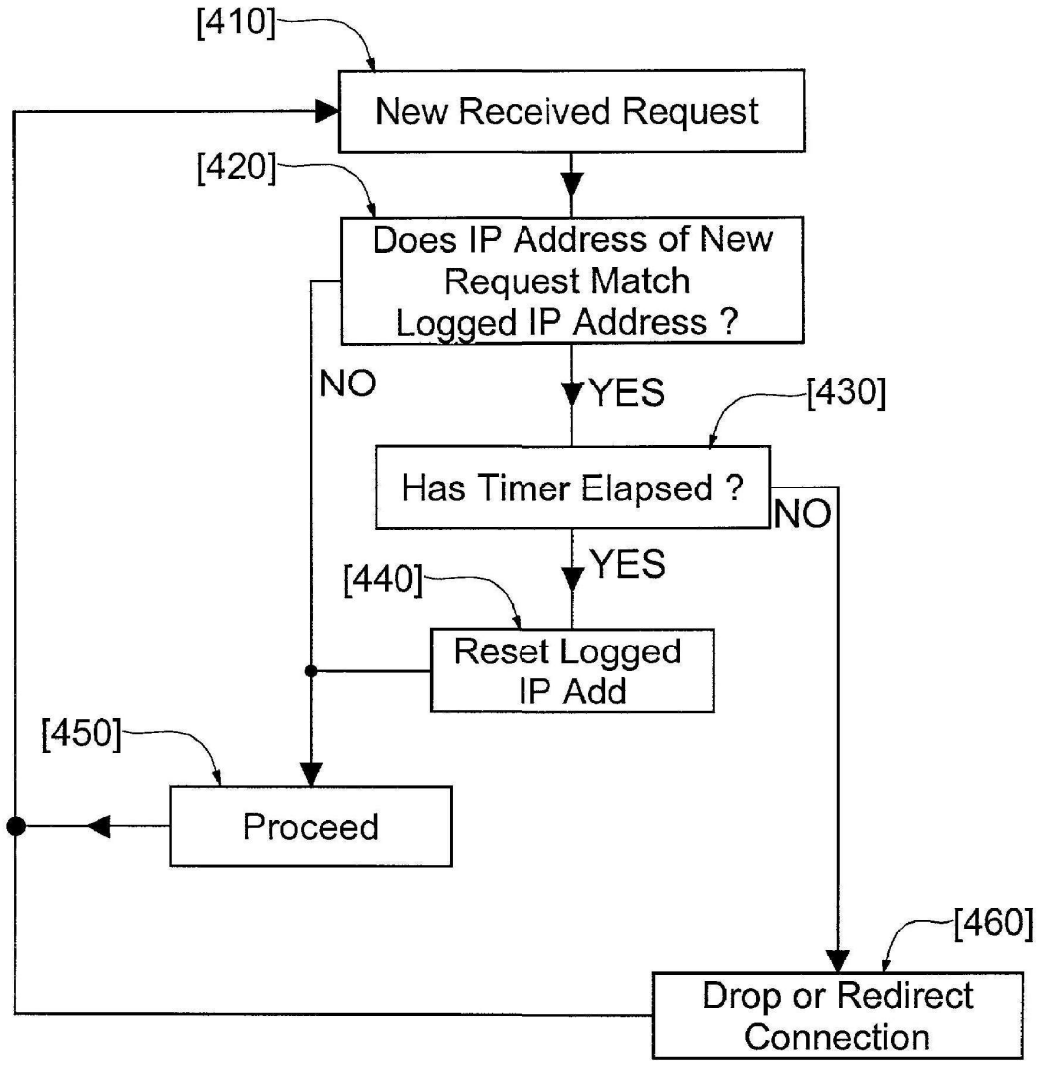


Figure 4

[FIG. 4]

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43. In Fig. 4, "the IP address of an assumed robot originator is remembered." *Id.* at 4:17-18. The server "temporarily drop or redirect 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 4:19-25. 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 4:25-28; 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 4:28-29. 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 4:30-32. 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 4:32-34

44. The exemplary challenges illustrated in Figure 5 are examples of challenges that are easily answered by humans. *Id.* at 4:35-36. 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

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above, or "to adapt to a particular end-user population sharing a common type of skill." *Id.* at 4:35-41.

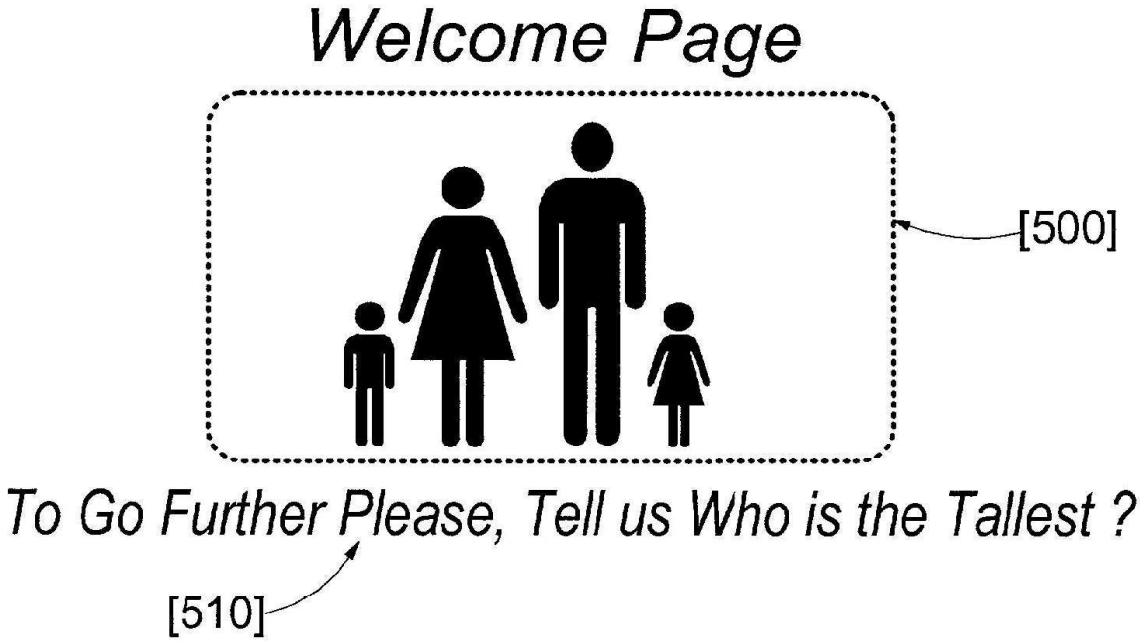


Figure 5-a

[FIG. 5-a]

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 4:42-45.

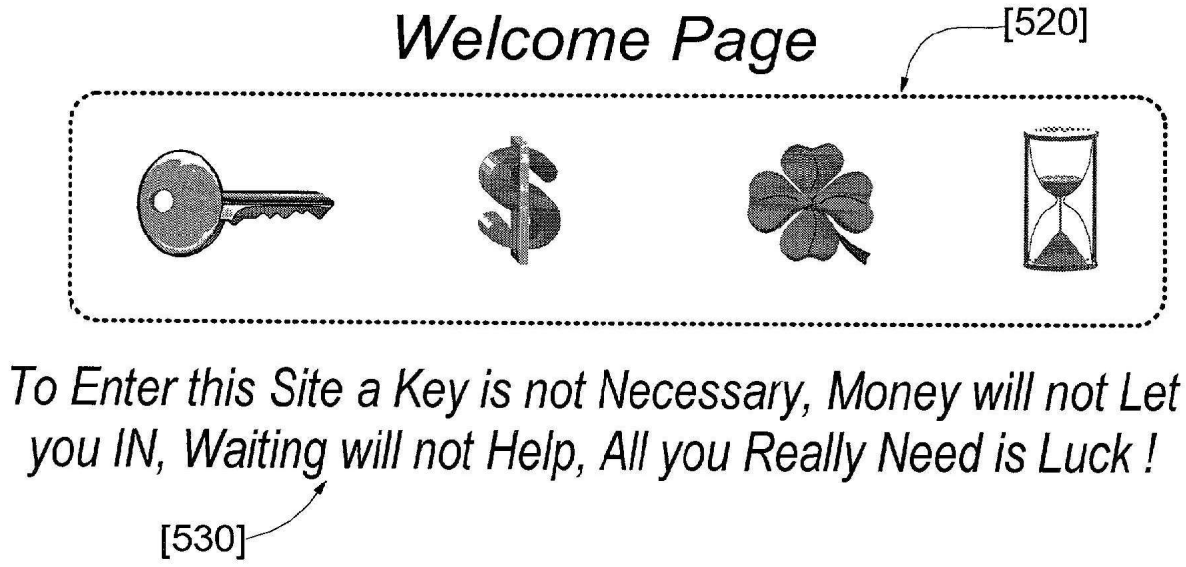


Figure 5-b

[FIG. 5-b]

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 4:45-48.

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2. Claims

45. The ’510 Patent has two independent claims and twenty-eight dependent claims. I understand that Petitioner has asserted that all claims of the ’510 Patent, i.e., claims 1-30, are invalid as obvious based on one of two grounds.

46. Independent claim 1 is produced below:

> 1. A method for preventing robots from browsing a Web site beyond a welcome page, said method in said Web site comprising the steps 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; and
>
> receiving a response from said undefined originator and checking said response to determine whether said challenge is fulfilled; and
>
> if said challenge is fulfilled:
>
> processing any further requests; and
>
> if said challenge is not fulfilled:
>
> stopping processing of any further requests, wherein said step of stopping processing of said further requests includes the further step of:

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dropping or redirecting a TCP connection established with said undefined originator

logging a source IP address of said undefined originator and starting a timer,

further including steps upon receiving a new request of:

checking whether a source IP address of said new request matches said logged source IP address; and

if said source IP address matches said logged source IP address:

checking whether said timer has expired and, if said timer is expired, resetting said logged IP address; and

proceeding normally with said new request; and

if said timer is not expired, dropping or redirecting said TCP connection;

if said source IP address does not match said logged source IP address, proceeding normally with said new request and executing all the above steps with each newly received request.

Ex. 1001, Claim 1.

47. Independent claim 20 is structured similarly to claim 1, but is drawn to a computer process comprising computer-executable steps.

48. The dependent claims add permutations of six additional limitations:

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49. "prompting said undefined originator to perform a specific action": claims 2, and 21

50. prompting is different "at each [subsequent] access of said web site": claims 3, 9, and 23

51. response includes making a "choice among a plurality of prompted response options": claims 4, 10, 13, 22, 24, 25, 26, and 29

52. "response includes an answer to a quiz": claims 5, 6, 7, 11, 12, 14, 17, 27, and 30

53. "response is suggested by textual meaning": claims 8, 15, 16, 18, and 19

54. "response based upon the knowledge content of said prompt": claim 28

3. Prosecution History

55. The named inventors on the '510 Patent 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 '510 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.

56. The U.S. patent application leading to the ’510 Patent, No. 09/901,442 (“the ’442 application”), was filed on July 9, 2001. It claims priority from an earlier-filed European application, #00480085.0 2201, which was filed on September 12, 2000. The ’442 application included two independent claims, claims 1 and 27, and fifty-three dependent claims. 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. Claim 1 referenced Figures 1 and 3, where Figure 1 depicted an exemplary welcome page with a challenge prompting the undefined originator to perform a specific action; and Figure 3 depicted the steps of receiving an initial request from an undefined originator and responding to the request with a challenge that prompts a response from the undefined originator, and upon receiving the response, checking the response to determine whether the challenge was fulfilled.

57. On November 8, 2004, over three years after the ’442 application was filed, the Examiner issued a first Office Action, rejecting claims 1 and 27 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,949,876 (“Ginter”), and objecting to claims 2-26 and 28-55 as being dependent on a rejected base claim but

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allowable if rewritten in independent form. The Examiner also cited U.S. Patent No. 5,867,495 ("Elliott") as prior art of record not relied upon but considered pertinent.

58. On February 8, 2005, Applicant responded to the November 8, 2004 Office Action by amending the application as follows: by cancelling rejected independent claims 1 and 27; rewriting claims 2, 3, 28, and 29 as independent claims, and adding "dropping or redirecting a TCP connection" to claims 2 and 28, and "logging a source IP address" to claims 3 and 29; amending claims 7, 8, 14, and 22 to no longer depend on rejected claim 1; further amending claim 22 to avoid a multiple-dependent claim depending on a multiple-dependent claim; and amending claims 35 and 36 to correct spelling errors.

59. The Examiner provided a response on August 16, 2007, rejecting claims 2-4, 7, 14-22, 26, 28-30, 33, and 36-47 as anticipated by U.S. Patent No. 6,195,698 ("Lillibridge") under 35 U.S.C § 102(e), and objecting to 5, 6, 8-13, 23-25, 31, 32, 34, 35, and 48-55 as dependent claims based on rejected base claims, but indicating that they would be allowable if rewritten in independent form.

60. According to the Examiner, Lillibridge disclosed the following: for claims 2, 28, and 29 of the '442 application, Lillibridge disclosed a method and computer process for preventing robots from browsing a website beyond a welcome page, comprising steps of receiving an initial request from an undefined originator and responding to the request with a challenge that prompts a response from the

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undefined originator, and once the response is received, checking the response to determine whether the challenge is fulfilled, and if unfulfilled, stopping processing of any further requests, but if fulfilled, processing further requests. For claims 7, 33, and 36-39, the Examiner contended that Lillibridge (6:50-57) disclosed the challenge as one that included prompting the undefined originator to perform a specific action. As for claims 14-21 and 40-47, the Examiner contended that Lillibridge (6:18-26) disclosed a method where the response includes an answer to a quiz. Finally, the Examiner contended that the features in claims 22 and 26 appeared in Lillibridge (7:29-45), which disclosed a response that is suggested by a textual meaning.

61. The Examiner stated that claims 3, 4, and 30 as applied to claims 2 and 28 of the '442 application were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lillibridge—not necessarily because Lillibridge specifically disclosed logging a source IP address of the undefined originator and starting a timer, but, rather, in view of the Examiner taking official notice that these elements were well known in the art of security systems at the relevant time. The Examiner contended that it would have been obvious to anyone having ordinary skill in the art to have combined these well-known features with Lillibridge since, according to the Examiner, they comprised well-known elements necessary for the entire security system to function.

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62. On November 16, 2007, Applicant responded to the August 16, 2007 Office Action by amending its application. First, Applicant cancelled claims 2-5 and 28-31, which the Examiner had rejected under 35 U.S.C. §§ 102(e), 103(a), or because they were based on a rejected base claim. Next, Applicant rewrote claims 6 and 32 in independent form to include dropping or redirecting a TCP connection, logging a source IP address, IP address matching, and starting a timer, all in the independent claims. Last, Applicant based dependent claims 7-27 and 33-55 on independent claims 6 and 32, respectively, further describing the challenge and potential responses to it.

63. A Notice of Allowance and Fee(s) Due came from the USPTO on January 9, 2008. On the same date, the USPTO issued a Determination of Patent Term Adjustment ("PTA") under 35 U.S.C. § 154(b), adding 1172 days to the term of the patent.

64. The patent issued on May 13, 2008. Due to the PTA, the '510 Patent had an adjusted expiration date of September 23, 2024.

C. CITED REFERENCES

1. Lim

65. 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 '510 Patent.

66. 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.

67. 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 '510 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.

68. 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.* 9:53-67 ("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. To avoid abuses of the present system, quizzes may be introduced at various levels to thwart such automated processes and allow access only by live, human users.").

69. 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.

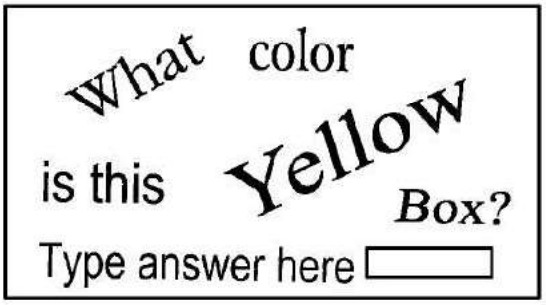


FIG. 4A

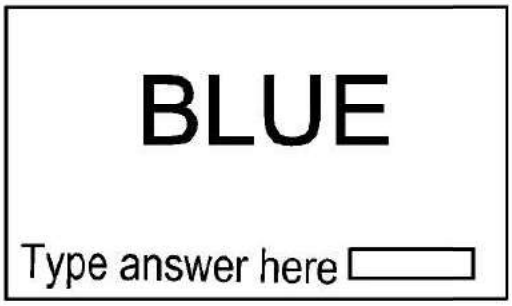


FIG. 4D



FIG. 4B

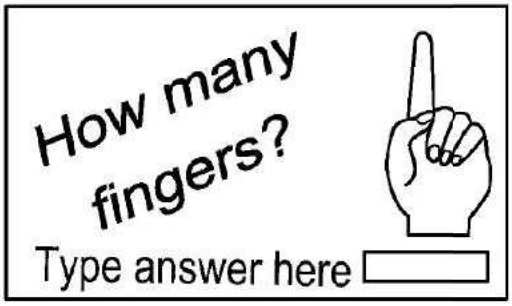


FIG. 4E

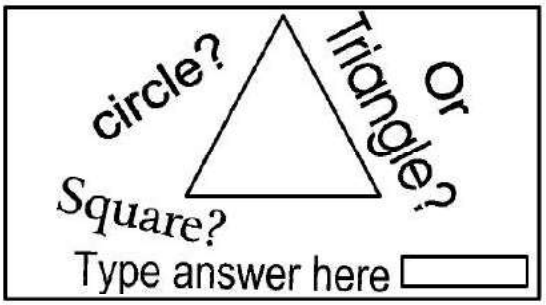


FIG. 4C

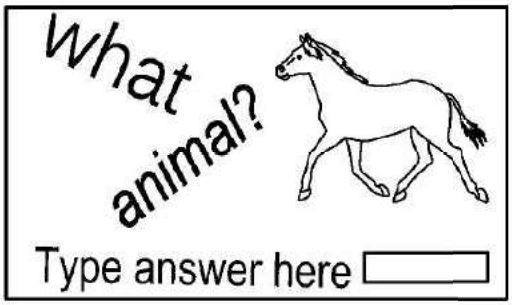


FIG. 4F

[Figs. 4a-4f]

70. 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

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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.

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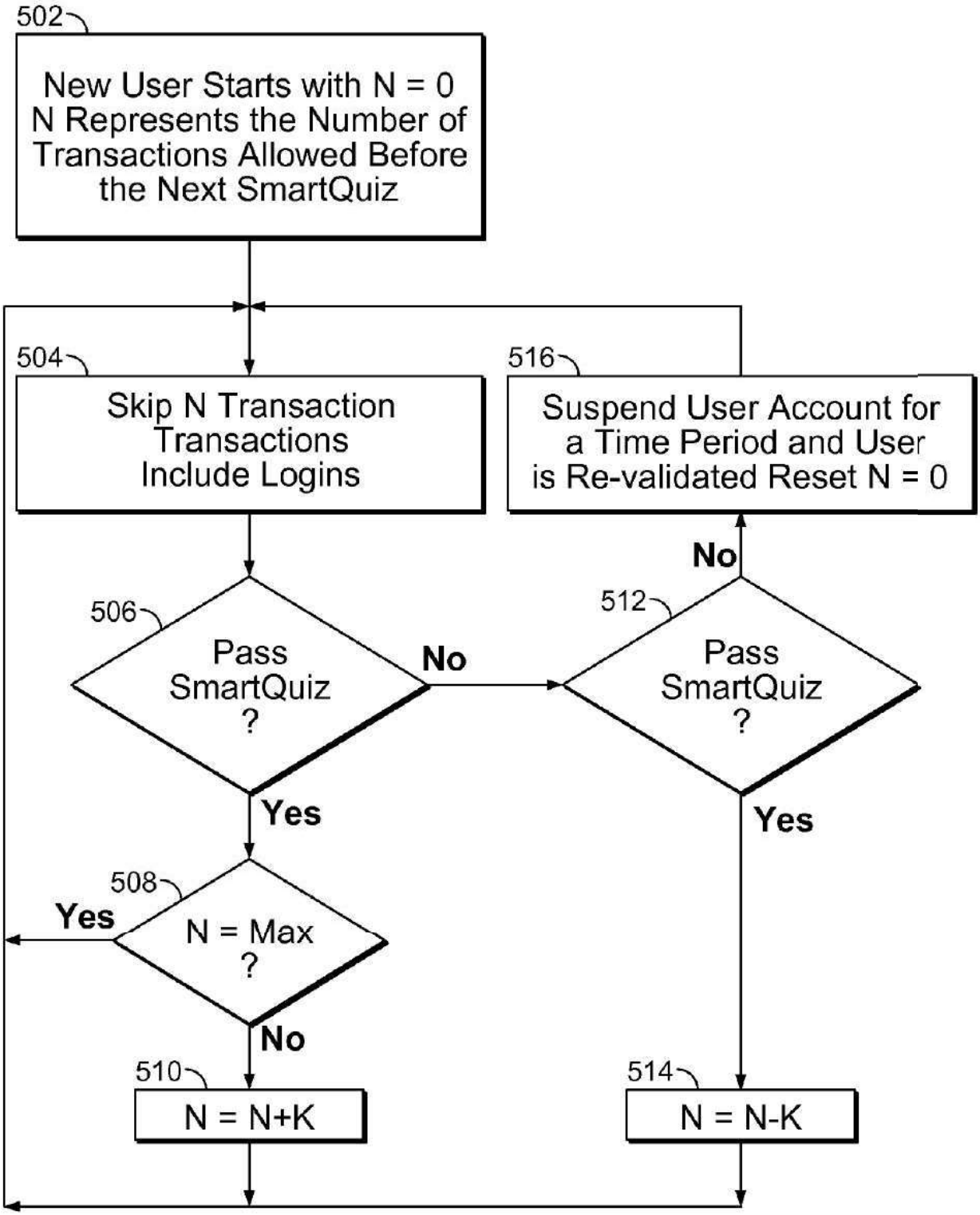


FIG. 5

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71. 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.

72. 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).

73. 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 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.

74. 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

75. 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 '510 Patent, which includes graphical challenges. As explained above, the Patent Examiner addressed Lillibridge in the '510 Patent's prosecution history, and the Applicant overcame rejections based on Lillibridge.

76. 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.

77. 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:

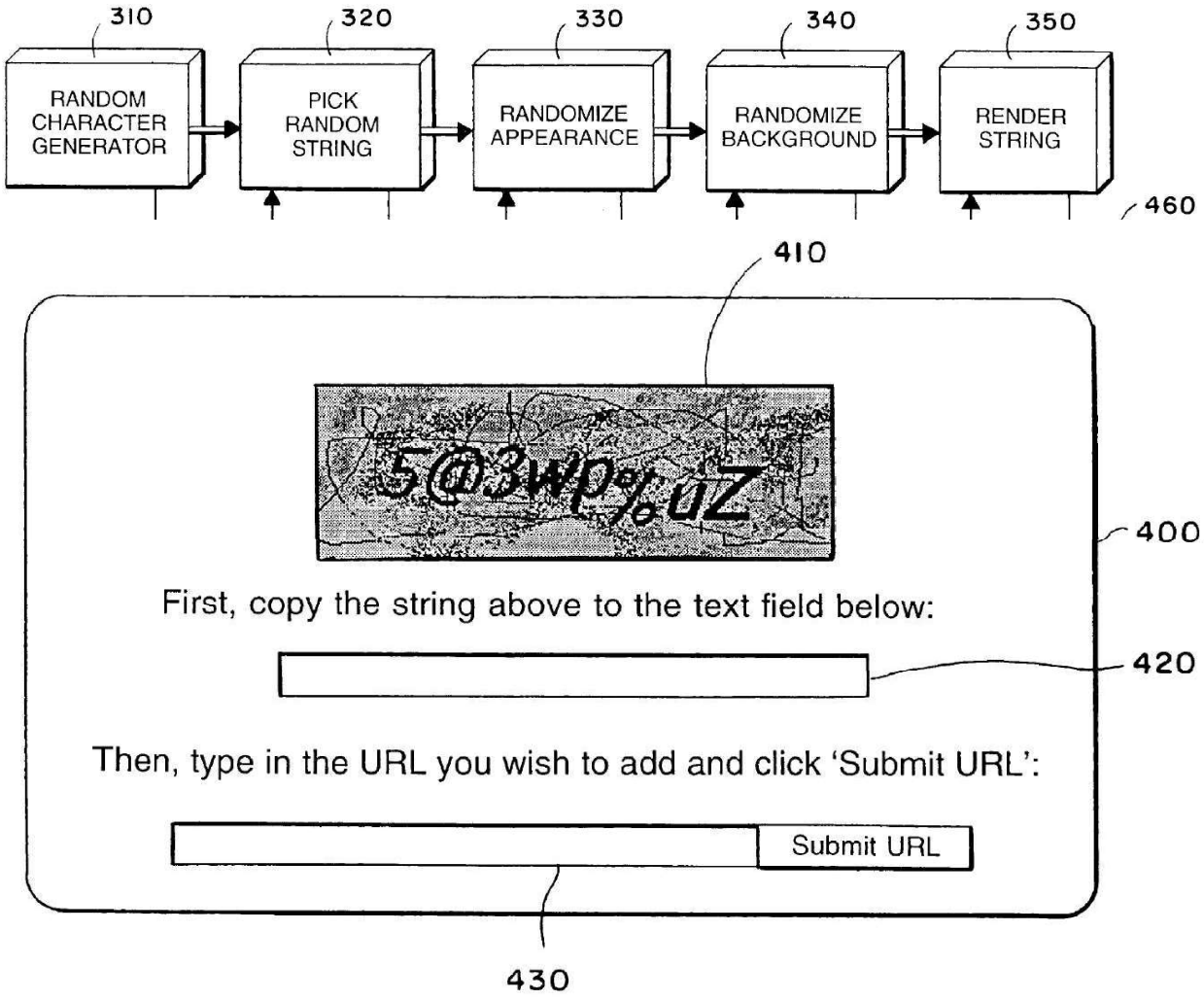


FIG. 4

78. 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.

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3. Guthrie

79. 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 are much weaker than the system described in the '510 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 '510 Patent.

80. 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.

81. 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.

82. As discussed in Section VIII.C, 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.

83. 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:

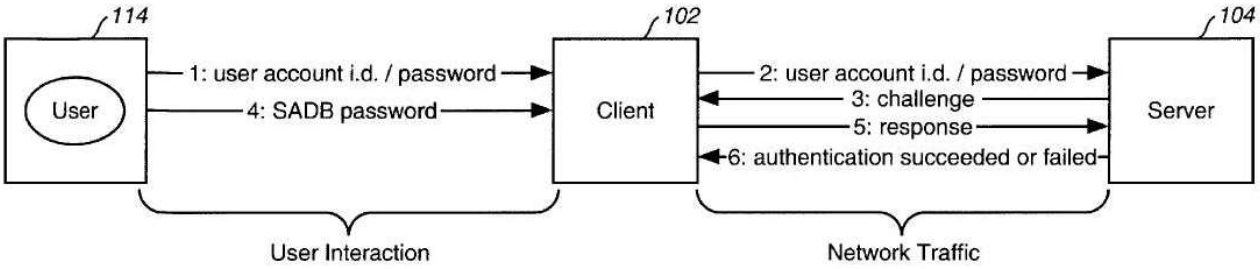


FIG. 4

84. 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.

85. 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

86. 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.

87. 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.

88. 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).

89. 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 experience 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.

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

VII. LEGAL UNDERSTANDING

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

A. Claim Interpretation

92. 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.

93. 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.

94. 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

95. 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

[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

is not properly classified as prior art under one of the subsections of §102 of the Patent Act, then it may not form the basis of an obviousness determination.

96. 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 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.

97. 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 '510 Patent's priority date.

C. Obviousness

98. 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

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informed and am aware that there is no material difference between pre-AIA and post-AIA law.

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.

99. 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.

100. 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

101. I understand that the Petitioner has not proposed constructions for any terms in the Challenged Claims of the '510 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"

102. Petitioner has not proposed a construction for "undefined originator," as that term is used in the '510 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.

103. 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"), 2:43-45 ("On receiving an initial request from an undefined originator, the Web site responds to the request with a welcome page including a challenge."), and 3:59-62 ("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 . . . .").

104. 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."), 2:8-14 ("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."), 2:27-29 (". . . to proceed further by not imposing a registration at first

access and a log on procedure at each Subsequent access."), 2:53-56 ("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 3:34-36 (". . . 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.").

105. 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 Fulfillled"), 2:47-52 ("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."), 4:5-10 ("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 4:42-45 ("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"

106. Petitioner has not proposed a construction for "dropping … a TCP connection," as that term is used in the '510 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.

107. Intrinsically, the '510 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 9-11 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 24-35 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 (col. 3, lines 62-67), further supporting that "dropping" refers to the termination of an already-established connection.

108. Extrinsically, RFC 2616 (HTTP/1.1) provides additional context, which supports the conclusion that Patent Owner's proposed construction is how a POSITA would have understood the term. Ex. 2010. 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. More importantly, Section 8.1.2 states: "Once a close has been signaled, the client MUST NOT send any more requests on that connection." 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"

109. Petitioner has not proposed a construction for "redirecting a TCP connection," as that term is used in the '510 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.

110. Intrinsically, the '510 Patent specification describes redirection as a deliberate server-side action taken in response to a failed challenge. At column 4, lines 9-11, 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.

111. Extrinsically, RFC 2616 (HTTP/1.1) provides further support. Ex. 2010. 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" (RFC 2616, §10.3). 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 (RFC 2616, §10.3). Additionally, Section 8.1.2 of RFC 2616 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." 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"

112. Petitioner has not proposed a construction for "initial request," as that term is used in the '510 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.

113. Patent Owner's proposed construction is fully supported by multiple disclosures in the '510 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 2:41-42. 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 3:4-6. The specification further states that the invention "prevent[s] robots from browsing the site beyond the welcome page." *Id.* at 3:33-35.

114. 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.

115. 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

116. In my opinion, all Grounds of Invalidity presented by Petitioners fail to establish unpatentability of the Challenged Claims. The independent claims of the '510 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 establishment of a TCP connection, logging and matching an IP address, and starting and monitoring a timer, so that, upon receiving the completed

challenge, the website checks to see if the challenge is fulfilled, and if fulfilled, processing further requests, but if not fulfilled, stopping processing further requests. The claims teach that when a website determines that a challenge is unfulfilled and that an undefined originator is not a human, the website will drop or redirect the TCP connection, check whether new requests come from the same IP address, and analyze the timer to see if time has expired. The Grounds asserted by Petitioner do not disclose or fairly teach these features.

117. Ground 1 of the Petition alleges that Lim in combination with Guthrie renders obvious the '510 Patent's claims 1, 2, 7, 8, 13-15, 17-22, and 25-30.

118. Ground 2 of the Petition alleges that Lim, in combination with Guthrie, and in further view of Lillibridge, renders obvious the '510 Patent's claims 3-6, 9-12, 16, and 23-24. As I understand it, Petitioner relies on Lillibridge to support the limitation added in claims 3, 9 and 23; otherwise, the arguments in Ground 2 are identical to those presented in Ground 1, based on Lim and Guthrie.

A. Ground 1: Petitioner Fails to Show That Claims 1, 2, 7, 8, 13-15, 17-22, and 25-30 Are Obvious over Lim in Combination with Guthrie

1. Independent Claim 1

119. In its Challenged Claim Listing (Petition, pp. vii-viii), Petitioner parses claim 1 into the preamble plus four broad groupings of limitations. Petitioner's parsing is not consistent with the structure of claim 1 as published in the '510 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.

120. The proper parsing of claim 1 is as follows. Following the preamble, the first limitation (1-A') is receiving the initial request and providing a challenge. The second limitation (1-B') entails receiving a response to the challenge and checking whether the challenge is fulfilled. The third limitation (1-C') describes what occurs if the challenge is fulfilled. The fourth limitation (1-D') describes what occurs if the challenge is not fulfilled. And the fifth limitation (1-E') relates to receiving a new request after the initial request is not fulfilled.

Petitioner Limitation No.	Patent Owner Limitation No.	Limitation
1-PRE	1-PRE	1. A method for preventing robots from browsing a Web site beyond a welcome page, said method in said Web site comprising the steps of:
1-A	1-A’	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; and
	1-B’	receiving a response from said undefined originator
1-B		and checking said response to determine whether said challenge is fulfilled; and
	1-C’	if said challenge is fulfilled: processing any further requests; and
	1-D’	if said challenge is not fulfilled:
		stopping processing of any further requests,
1-C		wherein said step of stopping processing of said further requests includes the further step of:
		dropping or redirecting a TCP connection established with said undefined originator
1-D		logging a source IP address of said undefined originator and starting a timer,
	1-E’	further including steps upon receiving a new request of:
		checking whether a source IP address of said new request matches said logged source IP address; and
		if said source IP address matches said logged source IP address:
		checking whether said timer has expired and, if said timer is expired, resetting said logged IP address; and

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Petitioner Limitation No.	Patent Owner Limitation No.	Limitation
		proceeding normally with said new request; and
		if said timer is not expired, dropping or redirecting said TCP connection;
		if said source IP address does not match said logged source IP address, proceeding normally with said new request and executing all the above steps with each newly received request.

121. The errors in Petitioner's parsing of the claim are particularly consequential in relation to what occurs if the (first) challenge is not fulfilled. According to Petitioner, if the challenge is not fulfilled, the system stops processing any further requests (Petitioner Limitation No. 1-B), and then it is further specified that stopping processing further includes dropping or redirecting a TCP connection (Petitioner Limitation No. 1-C). After that, and apparently without regard to whether or not the challenge is fulfilled, on Petitioner's account, the source IP address is logged and a timer is started (Petitioner Limitation No. 1-D, first clause), and all of the clauses relating to the new request are performed (Petitioner Limitation No. 1-D, remaining clauses).

122. However, according to both the structure of the claim as published, as well as Figure 3 of the '510 Patent, Ex. 1001, the source IP address is only logged (element 361), and the timer only started (element 362), if the response to the

challenge is unsuccessful. *See also* Ex. 1001 col. 3:59-4:15. Figure 3 is shown below, annotated with Patent Owner's limitation numbering indicated in red.

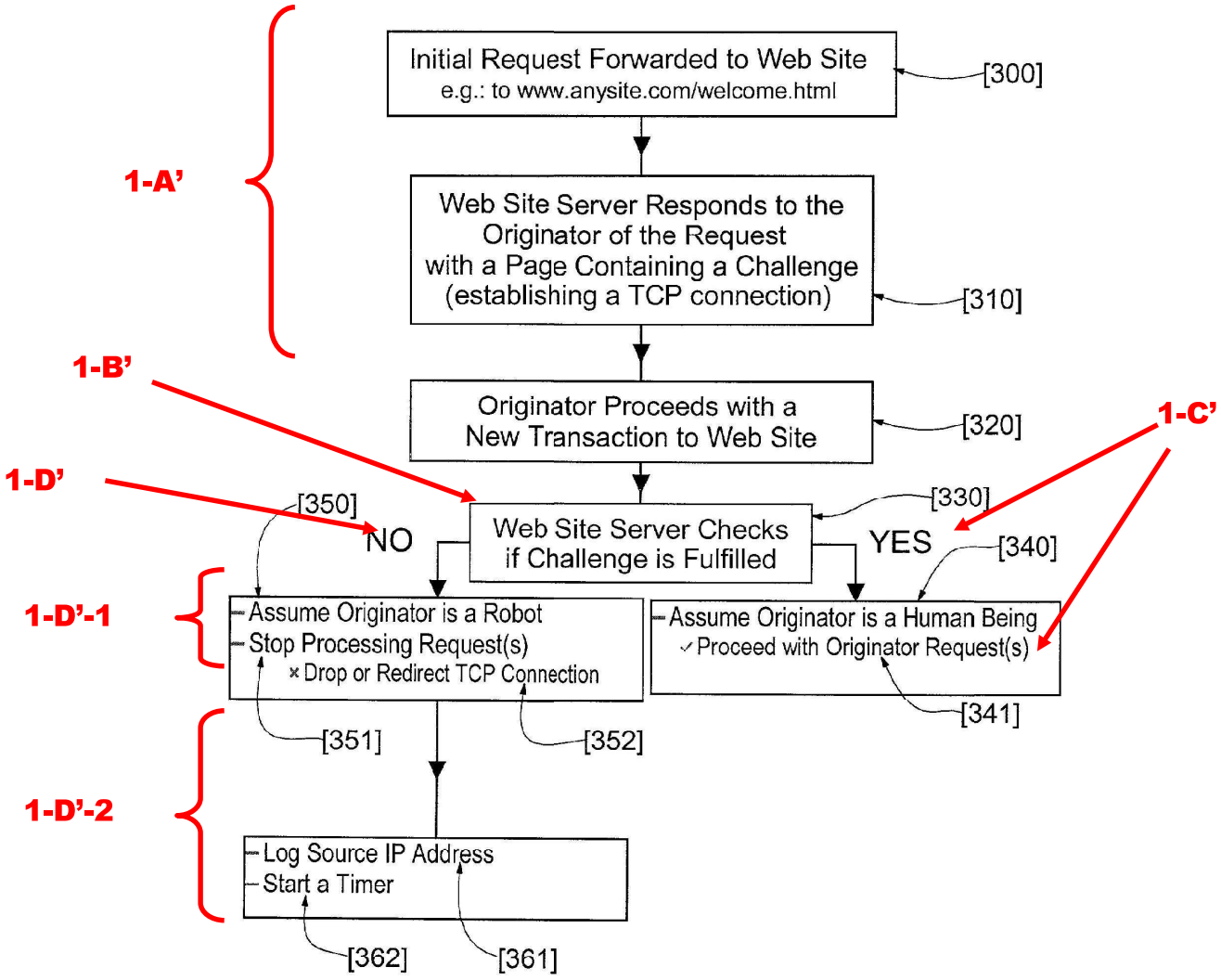


Figure 3

123. Only then can the remaining steps of Petitioner Limitation 1-D, collectively labeled as Patent Owner Limitation 1-E' (and subparts) be carried out.

See Ex. 1001, col. 4:12-15 ("Also, the 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 explained in FIG.** 4.") (emphasis added.) The logic of Patent Owner Limitation 1-E' is explained in Fig. 4 and the corresponding portion of the specification, Ex. 1001, col. 4:16-34. Matching of IP addresses, and running of a timer, are only invoked if there has been a previous failed challenge. Ex. 1001, col. 3:59-4:15. The steps of Patent Owner Limitation 1-E' thus do not apply if there was a previous *successful* challenge. Figure 4 is shown below, annotated with Patent Owner's limitation numbering indicated in red.

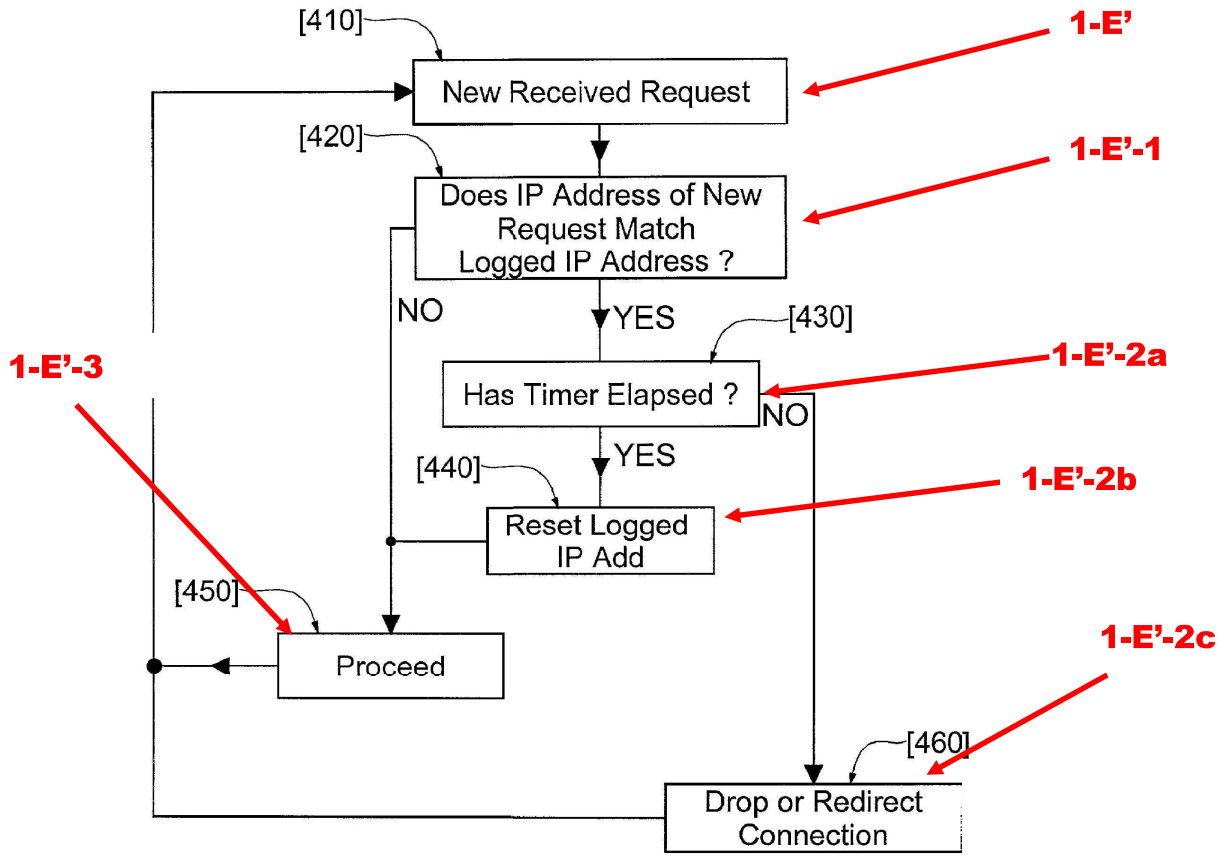


Figure 4

124. Irrespective of how the limitations are labeled, Lim in combination with Guthrie fails to render claim 1 obvious for the reasons stated.

a. 1-Pre ("A method for preventing robots from browsing a Web site beyond a welcome page, said method in said Web site comprising the steps of:")

125. 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.

126. 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.

127. Petitioner contends that Lim alone teaches or suggests this limitation. Petition § VIII.A.1.a, Ex. 1003 ¶¶ 107-110. Petitioner cites several passages from Lim (Ex. 1004, Abstract, 2:33-39, 8:25-30, 9:45-67, 13:15-28, Fig. 1).

128. 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.").

129. 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.

130. 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 from an undefined originator and responding to said initial request with a challenge that prompts a response from said undefined originator")**

131. Petitioner contends that Lim alone teaches or suggests this limitation. Petition § VIII.A.1.b, Ex. 1003 ¶¶ 111-115.

132. 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."

133. 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.

134. In contrast, the '510 Patent discloses a method and computer process 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 '510 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 col. 9:53-57 to equate to the "initial request" as claimed in the '510 Patent.

135. 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 '510 Patent.

136. The ’510 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.

137. 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”).

138. As discussed more thoroughly below, registered users cannot qualify as “undefined originators” under the ’510 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.

139. 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 '510 Patent is specifically designed to address this anonymous browsing scenario, without requiring user registration. *See* Ex. 1001, 2:53-56.

140. 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 '510 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.

141. Second, the cited passages of Lim do not relate to an "undefined originator" as that term is used in the '510 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* § VII.A.

142. 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 that 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.

143. 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.

144. Registered users as described in Lim do not qualify as "undefined originators" as recited in claim 1 of the '510 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,* § VII.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 '510 Patent has yet to define the requester of access and does not maintain a list of registered users; in fact, the goal of the '510 Patent is to avoid the need of maintaining lists of users. Ex. 1001, 3:32-37. 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."

145. 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 ’510 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.

146. 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.

147. 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 '510 Patent.

148. 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* 15:15-22.

149. Lim permits both 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 logged-in 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").

150. Similarly, Lim's system allows "guests" and non-logged-in users to perform searches without authentication, usernames, passwords, or cookies. Ex. 1004, 15:15-21.

151. Additionally, Lim does not teach or suggest responding to an "initial request" with a challenge, as claimed. The '510 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. The challenge is issued in response to an attempt to browse the site, not in response to a request to register for an account.

152. 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").

153. For the reasons discussed above, it is my opinion that registered users cannot be "undefined originators" as defined by the '510 Patent. Under Lim, a request to register for an account, and the provision of a 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.

154. 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, 15:15-22. The '510 Patent is specifically designed to address this anonymous browsing scenario without requiring user registration. *See* Ex. 1001, 2:53-56.

155. 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 a request to browse beyond a welcome page of a website.

c. **1-B' ("receiving a response from said undefined originator and checking said response to determine whether said challenge is fulfilled")**

156. As discussed above, Lim does not teach or suggest "undefined originators." Accordingly, Lim does not teach or suggest or render obvious this limitation.

157. Lim does not teach or suggest "receiving a response from said 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, Lim also cannot teach or suggest "checking said response."

d. **1-C' ("if said challenge is fulfilled: processing any further requests")**

158. Petitioner asserts that Lim teaches or suggests 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 at 36. This is not correct. Lim teaches or suggests no access or restrictions based on correct or incorrect responses to quizzes. Instead, quizzes are used to validate user accounts as human, in order to allow the registered and logged-in user to be paid or credited for viewing ads on

websites. *See, e.g.,* Ex. 1004, 2:49-3:3; 7:62-8:17. Guest access and browsing is generally permitted, regardless of whether quizzes have been passed, failed, provided or not provided. *See, e.g., id.*, 15:13-16 (". . . guests may still be permitted to use the system without logging in . . . .").

159. Accordingly, Petitioner is incorrect in asserting that further requests for access to web pages are processed "because" the requester has been determined to be human.

e. **1-D' ("if said challenge is not fulfilled:")**

i. **1-D'-1 ("stopping processing of any further requests, wherein said step of stopping processing of said further requests includes the further step of: dropping or redirecting a TCP connection established with said undefined originator")**

160. Petitioner splits this limitation into two separate parts for no reason that I can discern. First, Petitioner argues that Lim teaches or suggests "stopping processing of any further requests." Petition §VIII.A.1.c. Second, Petitioner argues that Lim in view of Guthrie teaches or suggests "dropping or redirecting a TCP connection established with said undefined originator." Petition §VIII.A.1.d.

161. Logically, this cannot be the case. If the step of "stopping processing any further requests" includes "the further step of: dropping or redirecting a TCP connection," and if Guthrie provides the basis for Petitioner's argument concerning

the TCP connection, then Lim alone cannot disclose "stopping processing any further requests."

162. Further, 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 37-38. 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.

163. Petitioner erroneously relies on FIG. 5 of Lim and its corresponding description at 14:67-15:2 (Petition at 36) to support its position on "stopping processing of any further requests." But 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:

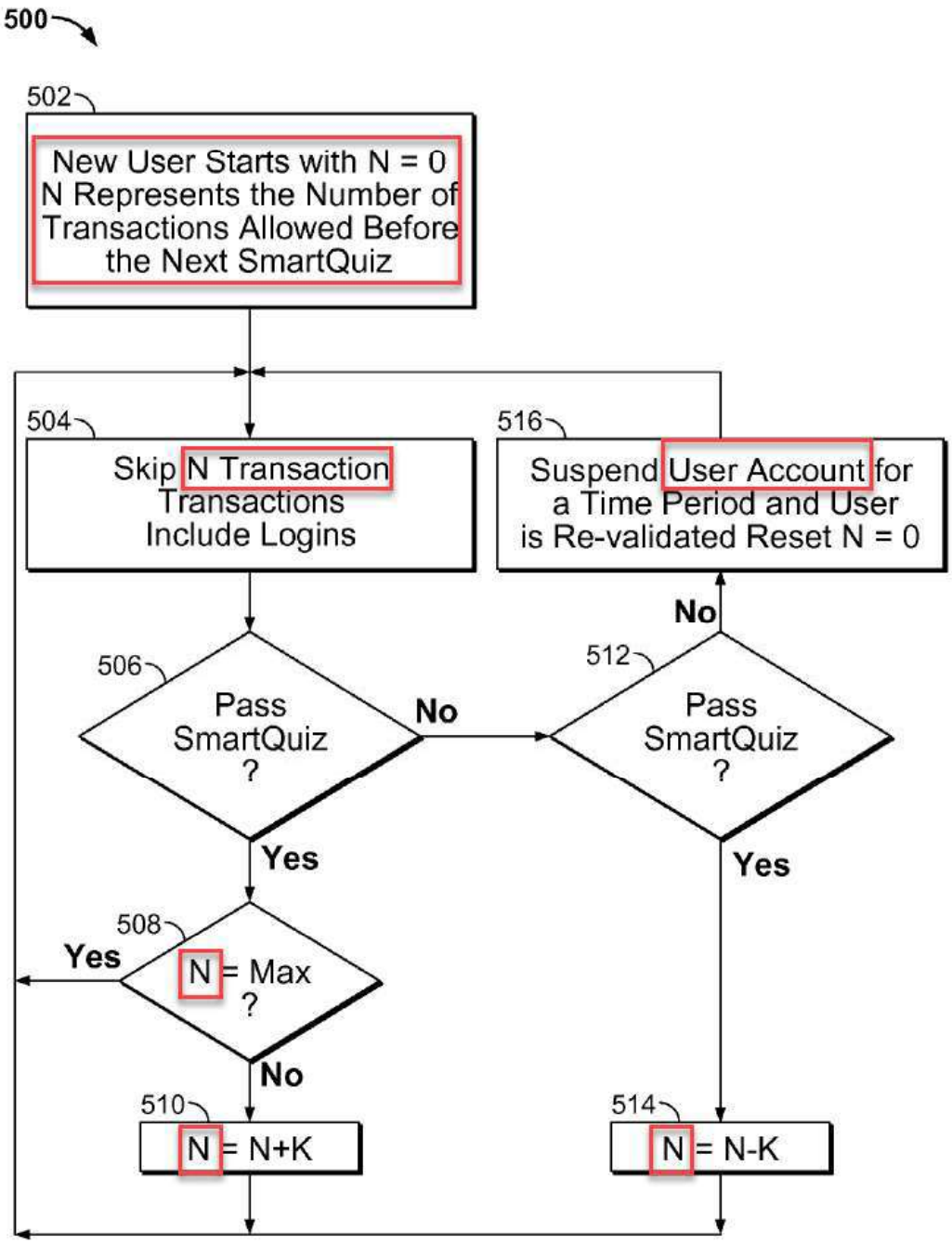


FIG. 5

[Ex. 1004, Fig. 5 (Annotated).]

164. 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." Consequently, FIG. 5's focus on registered users is irrelevant to the claimed limitation of "stopping processing of any further requests."

165. 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.

166. 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, 15:15-22. 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 '510 Patent.

167. 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, 9:45-59, and 9:59-61 of Ex. 1004 (Petition at 36), each of which discusses a quiz process for verifying an Internet operation is being performed by a human or an automated process. However, these sections 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 '510 Patent.

168. Petitioner also cites 8:19-30 of Ex. 1004, which is irrelevant as it merely explains that users **100a-c** in FIG. 1 can access content sources **108a-c**, which has nothing to do with the dropping or redirecting of a TCP connection.

169. Petitioner argues further that the limitation in Lim claim 1 of "otherwise, not granting the human operator access to the computer-based resource" (Ex. 1004, claim 1) teaches or suggests "stopping processing of any further requests," as recited in claim 1 of the '510 Patent. Petition at 36. But read in the context of Lim as a whole, it is clear that the "computer-based resource" is the provision of rewards to registered users who are logged in and then provide a correct answer to a quiz. 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."

170. Moreover, as previously discussed above, 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, 15:15-22.

171. Claim element 1-D'-1 further requires that "said step of stopping processing of said further requests includes the further step of: dropping or redirecting a TCP connection established with said undefined originator." Ex. 1001, claims 1, 20. Petitioner asserts that this limitation is made obvious by Lim or alternatively by Guthrie. I disagree.

172. 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 39. As an initial matter, this argument mischaracterizes Lim's system as "suspending the user." *Id*. 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).

173. Furthermore, and contrary to Petitioner's position (Petition at 39), 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).

174. 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

which 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.

175. 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 '510 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.

176. 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 1 of the '510 Patent (Ex. 1001, 12:10-15), 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. To briefly contextualize Lim, with a priority date of July 20, 1999, it operates under HTTP/1.1, introduced in January 1997 (RFC 2068, 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 2616, Ex. 2010 Sections 8.1, 8.1.2, 10.3, 14.10; RFC 2068, Ex. 2009 Section 8.1). Lim teaches or suggests 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).

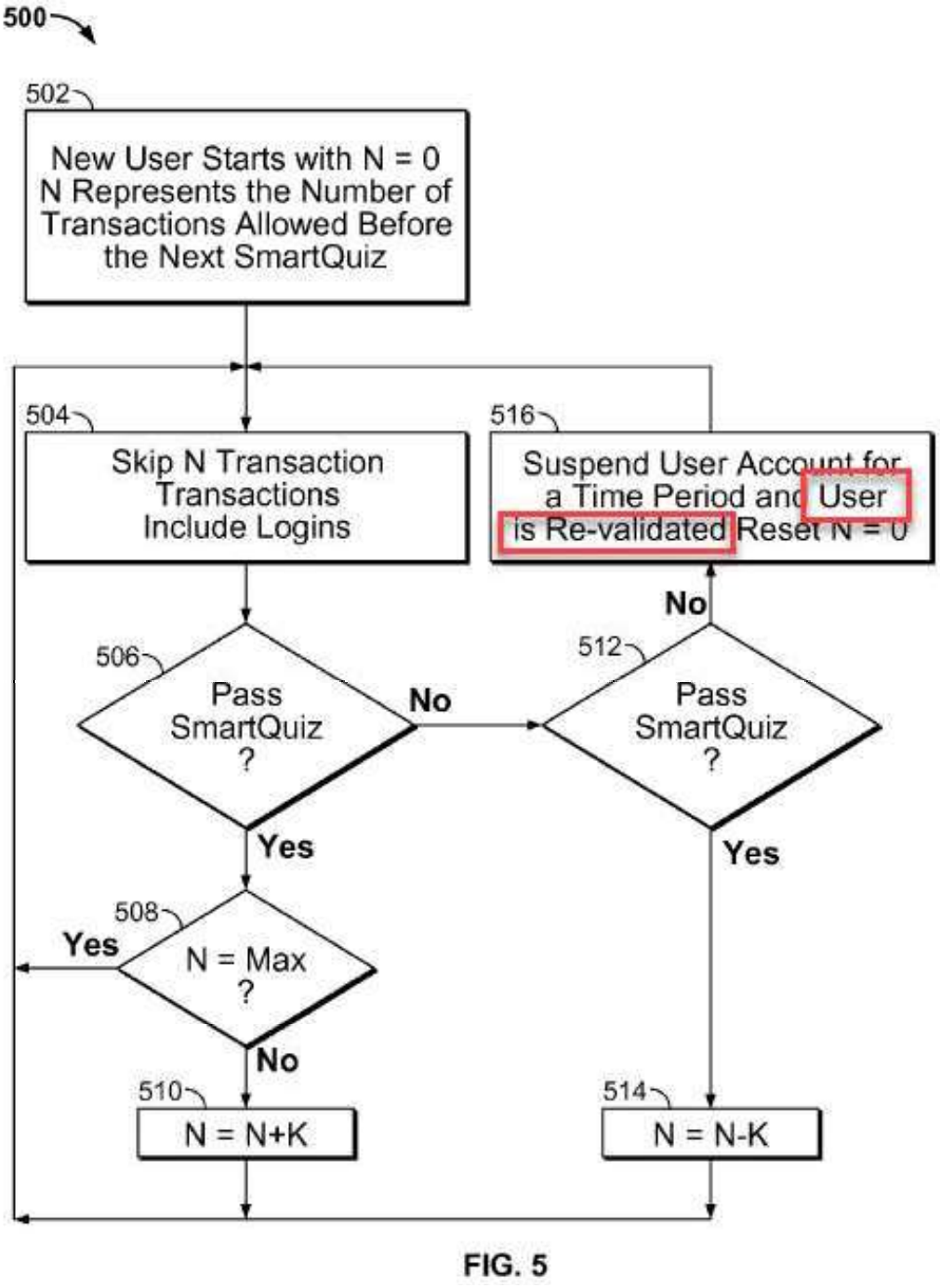


FIG. 5

[Ex. 1004, Fig. 5 (Annotated).]

177. Nor does Guthrie disclose "dropping or redirecting a TCP connection established with said undefined originator." *See* Petition at 40.

178. Petitioner incorrectly asserts that Guthrie teaches "redirecting a TCP connection," as required by claim 1 of the '510 Patent, 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, Ex. 2010 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. Accordingly, and contrary to the Petitioner's assertion, a POSITA would not interpret Guthrie's failure message as teaching redirection of a TCP connection.

179. 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.

180. 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.

181. Finally, Petitioner contends that dropping or redirecting a TCP connection is the most obvious way to suspend a user's account. Petition at 41. A POSITA would recognize, however, that (1) 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, (2) a POSITA would not be motivated to combine Guthrie's failure message with Lim's teaching, even assuming, for the sake of argument, 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.

ii. 1-D'-2 ("logging a source IP address of said undefined originator and starting a timer")

182. 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 or suggests 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 42. Petitioner also argues that Lim teaches or suggests using IP addresses to uniquely identify and restrict users. *Id.*

183. I disagree with Petitioner's contentions. Neither Lim nor Guthrie, alone or in combination, teaches or suggests this limitation.

184. 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 42. 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").

185. 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, 15:15-23. In this way, Lim and Guthrie fail to teach the invention disclosed by the '510 Patent.

186. Petitioner further claims that Lim's suspension "would most obviously be tracked by starting a timer," citing FIG. 5's step 516. Petition at 43. 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 '510 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.

187. 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 "expressly discloses using IP addresses to uniquely identify and restrict users," (Petition at 42)

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 quotation that omits key phrases.

188. Specifically, Petitioner bases its argument on a revision of Lim to exclude the **bolded, underlined** 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 42. This results in a mischaracterization of Lim, as it omits several passages, including the phrase, "based upon a certain number of cookies or Java applets installed on the user's computer or terminal."

189. 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."

190. 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's or unregistered user's device.

191. 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).

192. Third, the passage (Ex. 1004, 13:514) 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.

193. 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 1.

194. Furthermore, Petitioner incorrectly asserts:

> [T]o enforce the suspension time period, Lim's system would need to check the IP address of the new request to see if they matched any of the logged IP addresses currently subject to a suspension timer. [] If Lim did not do so, there would be no way to distinguish suspended IP addresses from those that are free to use the system.

Petition at 44.

195. This argument fundamentally mischaracterizes Lim's disclosure. Step 516 of FIG. 5 does not suspend IP addresses—it explicitly suspends *user accounts* (Ex. 1004, 15:1 ("(step 516) suspends the user's account")). The suspension mechanism in Lim is *account-based*, not IP address-based. Therefore, 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* 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.

196. Alternatively, Petitioner contends that Guthrie teaches or suggests this limitation. Petition at 44.

197. I disagree. 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, 8:29-30), which clearly limits the lock-out timer's function to login failures.

198. 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.

199. 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:

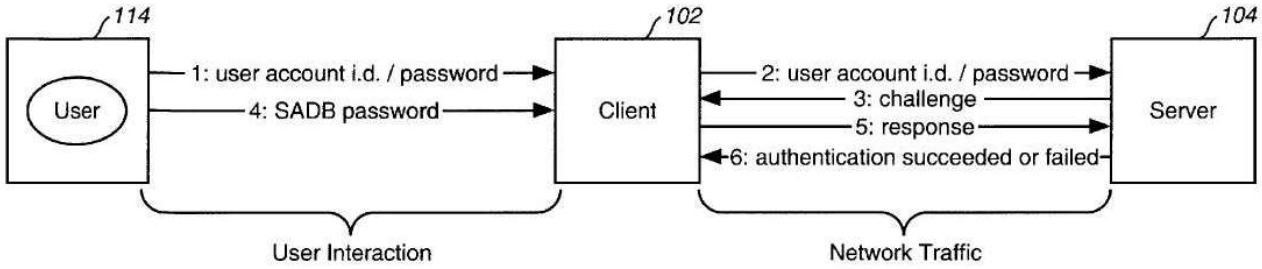


FIG. 4

[Ex. 1009, Fig. 4.]

200. 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 '510 Patent.

201. 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.

202. Even if Guthrie's features 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 claim 1 of the '510 Patent's limitation of "if said challenge is not fulfilled, ... logging a source IP address of said undefined originator and starting a timer."

203. 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 claim 1's undefined originator requirement.

f. **1-E' ("further including steps upon receiving a new request of:")**

i. **1-E'-1 ("checking whether a source IP address of said new request matches said logged source IP address")**

204. 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 1 of the '510 Patent.

Petition at 46. This is not the case. In making this assertion, the Petitioner repeats several mischaracterizations of Lim.

205. First, Petitioner incorrectly contends that "Lim discloses tracking users by IP address and suspending them for a time period." Petition at 46. As previously discussed with respect to limitation 1-D'-2, 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 that are logged into Lim's system do not qualify as "undefined originators."

206. Second, Petitioner also incorrectly asserts:

> To enforce its suspension, a POSITA would understand that Lim's system requires checking the IP addresses of new requests and enforcing controls if the IP address of the new request matches a logged IP address. … If Lim did not check the IP addresses of new requests, it would have no way to determine whether the new requestor is subject to a lockout timer.

Petition at 46.

207. 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 in respect to limitation 1-D'-2, 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.

208. Last, Petitioner asserts, incorrectly, that "A POSITA's understanding of how to handle this first conditional branch would be informed by Guthrie," regarding its capability to log IP addresses. 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 model for "guest" access, which lacks any login or account-based interaction.

ii. 1-E'-2 ("if said source IP address matches said logged source IP address: checking whether said timer has expired and, if said timer is expired, resetting said logged IP address; and proceeding normally with said new request; and if said timer is not expired, dropping or redirecting said TCP connection")

209. Petitioner argues that Lim and Guthrie, alone or in combination, disclose "checking whether said timer has expired," as required by claim 1 of the '510 Patent. Petition at 48. In my opinion, they do not.

210. Specifically, Lim does not teach or suggest logging the IP address of "guests" or unregistered users. See my opinions above regarding limitation 1-D'-2. Nor does Lim disclose starting a timer in response to a "guest" or unregistered user failing to correctly answer a quiz. See my opinions above regarding limitation 1-D'-2. Furthermore, a POSITA would not be motivated to combine Guthrie's lock-out timer with Lim's handling of "guests" and unregistered users (see my opinions above regarding limitation 1-D'-2.), nor to combine Guthrie's IP logging with Lim's "guests" or unregistered users (see my opinions above regarding limitation1-E'-1).

211. Petitioner further argues that Lim and Guthrie, whether alone or in combination, disclose "if said timer is expired, resetting said logged IP address; and proceeding normally with said new request," as required by claim 1. Petition 49.

212. This is simply not the case. Petitioner cites FIG. 5 of Lim and argues that "because N = 0 is the same condition as for a completely new user (compare, step 502), the logging will be reset." This is a misleading argument for several reasons. First, FIG. 5 is irrelevant to claim 1 because it pertains solely to registered users, which do not qualify as undefined originators (*see* my opinions regarding limitation 1-A'). Second, "N" refers to the number of "transactions" (see "N Transactions" in step 504) that occur before Lim's system presents a quiz. The "N" in FIG. 5 does not correspond to a user device's IP address. Last, neither FIG. 5 nor any other portion of Lim suggests that the system logs an IP address for a "guest" or unregistered user—let alone that it resets the logged IP address if the timer is expired, as required by claim 1.

213. Petitioner further argues that Lim and Guthrie, alone or in combination, disclose "if said timer is not expired, dropping or redirecting said TCP connection," as required by claim 1. Petition at 50.

214. This is incorrect, as discussed above. *See* § IX.A.1.e.i.

215. Further, a POSITA would not be motivated to combine Guthrie's alleged feature of TCP redirection with Lim's handling of "guests" and unregistered

users, as doing so would undermine Lim's design choice to permit "guests" and unregistered, non-logged-in users (including potential robots) to perform searches. *See* §§ IX.A.1.e.i and IX.A.1.f.ii.(A).

iii. 1-E'-3 ("if said source IP address does not match said logged source IP address, proceeding normally with said new request and executing all the above steps with each newly received request")

216. Petitioner argues that Lim and Guthrie, alone or in combination, disclose "if said source timer IP address does not match said logged source IP address, proceeding normally with said new request and executing all the above steps with each newly received request," as required by claim 1. Petition at 52.

217. This is not the case; nor would a POSITA be motivated to combine Guthrie's alleged features with Lim's handling of "guests" and unregistered users based on the discussions above regarding limitations 1-D'-1, 1-E'-1, 1-E'-2.

2. Independent Claim 20

218. As to claim 20, Petitioner and its expert incorporate by reference their analysis concerning claim 1. *See* Petition § VIII.A.2, Ex. 1003 ¶¶154-156. Thus, for the same reasons that Lim fails to render obvious claim 1, as set forth in detail above, Lim fails to render obvious these portions of claim 1. I incorporate by reference my analysis and opinions above concerning claim 1. *See* § IX.A.1, above.

219. Claim 20 differs from claim 1 in that claim 20's preamble describes a computer process comprising computer-executable steps rather than a method comprising steps. *Compare* Ex. 1001, 4:50-5:16 *with* 5:58-6:24. Like the preamble to claim 1, the preamble to claim 20 is limiting.

220. This difference does not impact my analysis. In my opinion, the preamble to claim 20 is also limiting, and claim 20 is not obvious in view of Lim and Guthrie for the same reasons that claim 1 is not obvious.

3. Dependent Claims 2, 21 ("prompting said undefined originator to perform a specific action")

221. Claims 2 (which depends from claim 1) and 21 (which depends from claim 20) each add a limitation of "prompting said undefined originator to perform a specific action." Ex. 1001, 5:17-19; 6:25-28. Petitioner contends that Lim teaches or suggests this additional limitation. Petition § VIII.A.3, Ex. 1003 ¶¶ 157-161.

222. Because Lim does not teach or suggest an "undefined originator," as the term is used in the '510 Patent, Lim does not teach or suggest this limitation. *See supra,* § VII.A.

4. Dependent Claims 13, 22, 25-26, and 29 ("plurality of prompted response options")

223. Claims 13 (which depends from claim 1), 29 (which depends from claim 2), 25 and 26 (which depend from claim 20), and 22 (which depends from claim 21) each add a limitation requiring that the "response includes making a choice

among a plurality of prompted response options." Ex. 1001, 5:43-45; 6:29-33, 42-51, 60-62. Petitioner contends that Lim teaches or suggests this additional limitation. Petition § VIII.A.4, Ex. 1003 ¶¶162-167.

224. However, because Lim does not teach or suggest an "undefined originator" as this term is used in the base claims of the '510 Patent from which these claims depend, Lim does not teach or suggest this limitation. *See, supra,* § VIII.A.

225. Furthermore, claim 13 of the '510 Patent requires that the user make "a choice"—in the singular form—from among a plurality of prompted response options. Petitioner relies on Lim's disclosure of "multiple-choice questions" and image maps (Ex. 1004, 13:54-56), but this disclosure does not teach the specific limitation of claim 13. Specifically, Lim states "For multiple-choice questions, the answers might be selectable from the image itself, e.g., using an image map, and/or through an HTML form surrounding the picture." Ex. 1004, 13:54-56. This passage from Lim actually refers to "answers" in the plural form and does not specify that the user is required to make a *single* selection when a quiz that includes multiple choices is presented to the user. Nor does Lim describe any mechanism that permits the user to submit a response after selecting only *one* option. To the contrary, Lim's use of the plural term "answers" and its reference to multiple-choice questions suggest that Lim's system is designed to receive a response indicating that the user

made multiple selections. This stands in contrast to claim 13 of the '510 Patent, which requires a *single* choice from among multiple options.

226. Accordingly, Lim does not teach or suggest this limitation of claims 13, 22, 25-26, and 29 of the '510 Patent.

5. Dependent Claims 7, 14, 17, 27, and 30 ("an answer to a quiz")

227. Claims 7 (which depends from claim 2), 14 (which depends from claim 13), 17 (which depends from claim 1), 27 (which depends from claim 20), and 30 (which depends from claim 29) each add a limitation requiring that the response is, or includes, "an answer to a quiz." Ex. 1001, 5:29-30, 46-47, 52-53; 6:52-55, 63-64. Petitioner contends that Lim teaches or suggests this additional limitation. Petition § VIII.A.5, Ex. 1003 ¶¶168-173.

228. While Lim at col. 9:53-57 describes that users may need to answer question(s) in a quiz, none of the claims in Lim describe the response to a prompt "includes an answer to a quiz" as in the '510 Patent. Therefore, it is not clear to me whether the user answering a question in a quiz, as in Lim at 9:53-57, means the user's web browser is sending a response that includes "an answer to a quiz" or that the webpage on the user's browser would process the user's answer and send the response as "correct" or "incorrect."

229. Because Lim does not teach or suggest an "undefined originator" as that term is used in the base claims of the '510 Patent from which these claims depend, Lim does not teach or suggest this limitation. *See, supra,* § VIII.A.

6. Dependent Claims 8, 15, 18, and 19 ("response to suggested textual meaning")

230. Claims 8 (which depends from claim 2), 15 (which depends from claim 13), 18 (which depends from claim 17), and 19 (which depends from claim 1) each add a limitation specifying that "said response is suggested by textual meaning." Ex. 1001, 5:32-33, 48-49, 54-57. Petitioner contends that Lim teaches or suggests this additional limitation. Petition § VIII.A.6, Ex. 1003 ¶¶174-180.

231. However, because Lim does not teach or suggest an "undefined originator" as that term is used in the base claims of the '510 Patent from which these claims depend, Lim does not teach or suggest this limitation. *See supra,* § VIII.A..

7. Dependent Claim 28 ("knowledge content")

232. Claim 28 (which depends from claim 20) adds a limitation requiring that "prompting said undefined originator to make a response based upon the knowledge content of said prompt." Ex. 1001, 6:56-59. Petitioner contends that Lim teaches or suggests this additional limitation. Petition § VIII.A.7, Ex. 1003 ¶¶181-184.

233. Because Lim does not teach or suggest an "undefined originator" as that term is used in the base claims of the '510 Patent from which these claims depend, Lim does not teach or suggest this limitation. *See supra,* § VIII.A.

8. Lim and Guthrie are Not Combinable

234. There are several reasons why a POSITA would not combine Lim and Guthrie. The first is that 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. A POSITA would not be motivated to combine Guthrie's failure message with Lim's teaching because this would undermine Lim's design of permitting unregistered, non-logged-in users (including potential robots) to perform searches. Lim allows unregistered, non-logged-in users and "guests" (including potential robots) to search without verification, even after failing registration quizzes. Ex. 1004, 15:15-23. 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 to Lim a disruption of a network session or blocking system access, as taught in Guthrie, 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* 15:15-23 (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.

235. Second, 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.

236. 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. 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.

B. Ground 2: Claims 3-6, 9-12, 16, and 23-34 Are Not Obvious Over Lim in Combination with Guthrie in Further View of Lillibridge

237. The sole difference in Ground 2 is that the claims addressed in Ground 2 depend from claims 3, 9, or 23, which Petitioner contends is disclosed by Lim

and/or Lillibridge. All other claims included in Ground 2 depend from these three claims, but are the same as dependent claims included in Ground 1. Petitioner makes no new or additional arguments concerning the specific limitations added in these dependent claims.

1. Dependent Claims 3, 9, and 23 (different prompt "at each subsequent access of said website")

238. Claims 3 (which depends from claim 2) and 9 (which depends from claim 1) each add a limitation requiring that "said prompting is different at each subsequent access of said web site." Ex. 1001, 5:20-22, 33-35. Claim 23 (which depends from claim 20) adds a limitation requiring "changing said prompting at each access of said website." *Id.* at 6:34-36. Petitioner contends that Lim alone, or Lim in view of Lillibridge, teaches or suggests this additional limitation. Petition § VIII.B.1, Ex. 1003 ¶¶187-207.

239. Lim and Lillibridge, alone or in combination, do not disclose "said prompting is different at each subsequent access of said web site." Specifically, Petitioner asserts that Lim provides subsequent quiz challenges in the form of a "second prompt" or "next prompt" after a set time interval, citing claim 1, FIG. 5, and 14:58-15:2 of Lim. Petition at 59. However, as previously discussed, FIG. 5 and its corresponding disclosure pertain only to logged-in, registered users, who do not qualify as "undefined originators," as required by claim 1.

240. Notably, 14:58-15:2 of Lim also references "Personal Questions" that are "based on the user's profile." Yet, Lim only creates and maintains user profiles for registered users. There is no disclosure of any mechanism in Lim for associating user profiles with anonymous "guests" or non-logged-in, unregistered users. As such, any functionality relying on a user profile—including personalized or adaptive quiz content—is inherently limited to logged-in, registered users. It is, thus, not relevant.

241. Similarly, the cited portions of Lim claim 1 rely on mechanisms that require persistent user identification and behavioral tracking. For example, quiz prompts are delivered at intervals based on prior performance (Ex. 1004, 14:58-15:2), which presumes the system can recognize and associate responses with a specific user—something only possible for logged-in, registered users for all the reasons previously discussed.

242. Petitioner also argues that Lim's quizzes are intended to "prevent against advertising fraud" by ensuring that only human users can view advertisements, and that this purpose would be undermined if the same challenge were presented repeatedly. Petition at 61. However, this argument fails because Lim's advertising-related functionality is solely tied to registered user accounts, which are necessary to track ad views and allocate credit. Ex. 1004, Abstract (noting that reward credits from advertisers and content providers are posted to user

accounts); *see also* 12:4 (noting that only registered users have accounts). There is no indication in Lim that anonymous or non-logged-in users receive credit for viewing advertisements, nor that the system would allow such users to generate advertising revenue. As such, a bot accessing the site anonymously—as a "guest" or non-logged-in, unregistered user—is incapable of "driving up false advertising revenue," as Petitioner suggests, because Lim's system does not associate ad views with such users.

243. Thus, not only has Petitioner failed to cite any portion of Lim that supports the proposition that Lim discloses "said prompting is different at each subsequent access of said web site" for anonymous or non-logged-in users, but Lim also makes clear that its system lacks the capability to cause the prompting to differ at each subsequent access by such users.

244. Petitioner also argues that "a POSITA would have been motivated to combine Lillibridge's riddle modification teachings with Lim's quizzes in order for Lim to accomplish Lim's security goals more effectively." Petition at 65. However, this reasoning is flawed.

245. For one, Lim's system is focused exclusively on protecting *registered* user accounts because they can potentially be abused by bots for financial gain. Ex. 1004, 13:18-21. Lim's system simply does not have any specific security goals for "guests" or unregistered users because they do not have access to any accounts. For

example, Lim's system tracks *registered* users via cookies (Ex. 1004, 10:1-5; 11:24-29), sends quizzes to them as they perform transactions (Ex. 1004, FIG. 5), and suspends accounts of those who fail to answer quizzes correctly (Ex. 1004, step 516 in FIG. 5). But Lim's system cannot track "guests" or unregistered users because it does not place cookies on them, allows them to use the system freely and anonymously to perform searches (Ex. 1004, 15:18-22), and does not send quizzes to them unless they attempt to register for an account (Ex. 1004, 9:53-56).

246. Because Lim's system does not exhibit security concerns regarding "guests" or unregistered users accessing its platform, a POSITA would not have been motivated to combine Lillibridge's riddle-based authentication techniques with Lim's quiz mechanism. Implementing security mechanisms that would limit or restrict "guests" or unregistered users from freely and anonymously using the system to perform searches would contradict Lim's objective of maintaining 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).

247. Furthermore, Lillibridge's system relies on tracking the IP address of *each* client device to determine whether multiple requests originate from the same source. (Ex. 1008, 8:44-46). Lim's system does not teach this; it does not track

"guests" or unregistered users by IP address, nor does it log or associate IP addresses with user behavior prior to registration. *See* IX.A.2.e.ii, above. Instead, Lim's tracking mechanisms are cookie-based and only apply post-registration. Ex. 1004, 11:26-27. Thus, even if a POSITA attempted to combine Lillibridge's riddle-based access control with Lim's system, the combination would be inoperative. Lillibridge's method depends on identifying repeat access attempts from the same device or IP address, which Lim's system is structurally incapable of doing for "guests" or unregistered users. As such, there is no reasonable expectation of success in combining these teachings to cover what is disclosed in the '510 Patent.

2. Dependent Claims 4, 10, and 24 ("plurality of prompted response options")

248. Claims 4 (which depends from claim 3), 10 (which depends from claim 9), and 24 (which depends from claim 23) each adds the limitation relating to a "plurality of prompted response options." Ex. 1001, 5:23-24, 36-37; 6:37-41. This is the same limitation discussed above with regard to claims 13, 22, 25-26, and 29 in Section § IX.A.3, above.

249. Petitioner likewise argues that the limitation in these claims is disclosed by Lim, incorporating its earlier arguments. Petition §VIII.B.2 (citing to § VIII.A.4); Ex. 1003 ¶¶208-211.

250. In my opinion, just as this limitation is not disclosed for claims 13, 22, 25-26 and 29, it is not disclosed for claims 4, 10, and 24. *See* § IX.A.3, above.

251. Additionally, Petitioner makes reference to incorporating an alternative argument that the limitation is disclosed by Lim "in combination with Guthrie." Petition § VIII.B.2; Ex. 1003 ¶211. However, Petitioner and Dr. Lopresti do not elsewhere argue that Guthrie teaches or suggests this limitation. Therefore, no response as to Guthrie is required.

3. Dependent 5, 6, 11, and 12 ("said response includes an answer to quiz")

252. Claims 5 (which depends from claim 4), 6 (which depends from claim 3), 11 (which depends from claim 10) and 12 (which depends from claim 9) each adds the limitation, "wherein said response includes an answer to a quiz." Ex. 1001, 5:26-27, 28-29, 39-40, 41-42. This is the same limitation discussed above with regard to claims 7, 14, 17, 27, and 30 in Section § IX.A.6, above.

253. Petitioner likewise argues that the limitation in these claims is disclosed by Lim, incorporating its earlier arguments. Petition §VIII.B.3 (citing to § VIII.A.5); Ex. 1003 ¶¶212-215.

254. In my opinion, just as this limitation is not disclosed for claims 7, 14, 17, 27, and 30, it is not disclosed for claims 5, 6, 11, and 12. *See* § IX.A.5.

255. Additionally, Petitioner makes reference to incorporating an alternative argument that the limitation is disclosed by Lim "in combination with Guthrie." Petition § VIII.B.3; Ex. 1003 ¶215. However, Petitioner and Dr. Lopresti do not

elsewhere argue that Guthrie teaches or suggests this limitation. Therefore, no response as to Guthrie is required.

4. Dependent Claim 16 ("response is suggested by textual meaning")

256. Claim 16 (which depends from claim 9) adds the limitation "wherein said response is suggested by textual meaning." Ex. 1001, 5:50-51. This is the same limitation discussed above with regard to claims 8, 15, 18, and 19 in Section § IX.A.7, above.

257. Petitioner similarly argues that the limitation in these claims is disclosed by Lim, incorporating its earlier arguments. Petition §VIII.B.4 (citing to § VIII.A.6); Ex. 1003 ¶¶216-217.

258. In my opinion, just as this limitation is not disclosed for claims 8, 15, 18, and 19, it is not disclosed for claim 16. *See* § IX.A.7, above.

5. Lim, Guthrie, and Lillibridge are Not Combinable

259. A POSITA would not combine Lim, Guthrie, and Lillibridge. First, as I explained above in Section IX.A.8, which I incorporate by reference here, in my opinion, a POSITA would not find it obvious to combine Lim and Guthrie because their goals and methods to achieve those goals are very different: Guthrie is focused on protecting against brute force attacks while Lim if focused on account management. Second, Lim's system exclusively focuses on protecting *registered* user accounts because they can potentially be abused by bots for financial gain. Ex.

1004, 13:18-21. Lim's system does not have specific security goals for "guests" or unregistered users because they do not have access to any accounts. For example, Lim's system tracks *registered* users via cookies (Ex. 1004, 10:1-5; 11:24-29), sends quizzes to them as they perform transactions (Ex. 1004, FIG. 5), and suspends accounts of those who fail to answer quizzes correctly (Ex. 1004, step 516 in FIG. 5). But Lim's system does not track "guests" or unregistered users because it does not place cookies on them, allows them to use the system freely and anonymously to perform searches (Ex. 1004, 15:15-22), and does not send quizzes to them unless they attempt to register for an account (Ex. 1004, 9:53-56).

260. Because Lim's system does not exhibit security concerns regarding "guests" or unregistered users accessing its platform, a POSITA would not have been motivated to combine Lillibridge's riddle-based authentication techniques with Lim's quiz mechanism. Implementing security mechanisms that would limit or restrict "guests" or unregistered users from freely and anonymously using the system to perform searches would contradict Lim's objective of maintaining 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* 15:15-22.

261. Furthermore, Lillibridge's system relies on tracking the IP address of *each* client device to determine whether multiple requests originate from the same

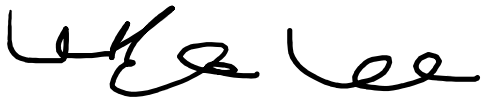
source. (Ex. 1008, 8:44-46). Lim's system does not teach this; it does not track "guests" or unregistered users by IP address, nor does it log or associate IP addresses with user behavior prior to registration. Instead, Lim's tracking mechanisms are based on user accounts (e.g., authentication via login credentials or cookies) and only apply post-registration. Ex. 1004, 11:26-27. Thus, even if a POSITA attempted to combine Lillibridge's riddle-based access control with Lim's system, the combination would be inoperable. Lillibridge's method depends on identifying repeat access attempts from the same device or IP address, which Lim's system is structurally incapable of doing for "guests" or unregistered users, which may access the system from different devices and different IP addresses. As such, there is no reasonable expectation of success in combining these teachings to cover what is disclosed in the '510 Patent.

X. REVISION OR SUPPLEMENTATION

262. In this report, I have presented my opinions regarding the invalidity of the claims of the '510 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



Wenke M. Lee

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