IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

PERSONALIZED USER MODEL, L.L.P., Plaintiff, v. GOOGLE INC., Defendant.	)	C.A. No. 09-525-LPS **JURY TRIAL DEMANDED**
GOOGLE, INC. Counterclaimant, v. PERSONALIZED USER MODEL, LLP and YOCHAI KONIG Counterdefendants.	)	

REPLY BRIEF IN SUPPORT OF GOOGLE'S MOTION FOR SUMMARY JUDGMENT OF INVALIDITY

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NOTE ON CITATIONS

"Jordan Dep.", "Carbonell Dep.", and "Pazzani Dep." refer to excerpts from the deposition transcripts of Dr. Michael Jordan, Dr. Jaime Carbonell, and Dr. Michael Pazzani. These excerpts are attached as Exhibits A, B, and C to the Declaration of Joshua L. Sohn, filed concurrently herewith.

Google's Memorandum in Support of Its Motion for Summary Judgment on of Invalidity is referenced as "Br." followed by the page cite. Thus a citation to (Br. 6) refers to page 6 of Google's Memorandum in Support of Its Motion for Summary Judgment of Invalidity.

PUM's Answering Brief In Opposition to Google's Motion for Summary Judgment of Invalidity is referenced as "Opp." followed by the page cite. Thus a citation to (Opp. 4) refers to page 4 of PUM's Answering Brief In Opposition to Google's Motion for Summary Judgment of Invalidity.

Citations to the asserted patents are referenced as "column number : line numbers." For example, a citation to ('040 Patent, 6:23-26) refers to column 6 of the '040 Patent, lines 23-26.

"Refuah," "Wasfi," Mladenic," and "Montebello" refer to the four prior art references attached as Exhibits A, B, C, and D to D.I. 419, the Declaration of Joshua L. Sohn in Support of Google's Motion for Summary Judgment of Invalidity

I. REFUAH ANTICIPATES ALL ASSERTED CLAIMS

Ignoring the PTO's repeated findings that Refuah anticipates the asserted claims, and ignoring Refuah's actual disclosures, PUM contends that numerous claim elements are not met by Refuah. None of PUM's attempts to distinguish Refuah have merit.

A. Refuah Provides [Automatic], Personalized Information Services to a User

PUM argues that Refuah personalizes the user interface instead of personalizing which information a user is presented with. (Opp., 1-2). But Refuah can personalize a user's interface and personalize which information a user receives, by guiding the user to sites that best match the user's persona and mood. (Refuah, 13:64-14:8) (stating that persona and mood can "(a) preferentially guide client to certain sites" or "(e) affect the format and/or layout of a site on the client's terminal.")

B. Refuah Estimates Parameters of a Learning Machine

PUM does not even address the evidence provided in Google's Opening Brief demonstrating that Refuah's persona and mood is a "learning machine" under the Court's construction. (*Compare* Br., 4 *with* Opp., 3-4). Instead, PUM argues that Google's invalidity expert, Dr. Jordan, supposedly admitted that Refuah does not disclose a learning machine. (Opp., 3-4). But, all Dr. Jordan stated at his deposition is that Refuah does not disclose the specific algorithms or mathematical functions by which this persona and mood learns the user's preferences. (Jordan Dep., 303:21 (stating that Refuah "does not disclose a specific learning machine") (emphasis added); 306:11-13 ("Refuah does not explicitly teach the specific learning algorithm for doing this"). When Dr. Jordan answered "no" to PUM's quoted question "is any mathematical function or learning machine explicitly taught by Refuah" (Jordan Dep., 311:10-12), that answer simply echoed Dr. Jordan's position that Refuah does not explicitly disclose the specific mathematical functions by which its persona and mood will do its learning. But the asserted claims do not require any specific mathematical functions or formulas for their claimed "learning machine." And "there is no requirement that an anticipating reference must

provide specific examples." *Arthrocare Corp. v. Smith & Nephew, Inc.*, 406 F.3d 1365, 1371 (Fed. Cir. 2005).

C. Refuah Uses the Learning Machine to Estimate a Probability

Contrary to PUM's argument (Opp., 6), Refuah does not make a purely "binary" decision of whether a site matches a user's persona and mood. Instead, Refuah makes a "graded" assessment of how well a site matches a persona and mood. (Refuah, 7:67-8:3; 11:10-18.) And contrary to PUM's argument that "Refuah does not disclose estimating any number" (Opp., 5), Refuah's grade of site interestingness can be cast in numerical terms. (Refuah, 15:24-26).

D. Refuah Analyzes Documents

PUM argues that Refuah analyzes websites (which allegedly are not documents) rather than webpages (which indisputably are documents). (Opp., 6). But a claim element of analyzing "a" document can be met by analyzing "one or more" documents. *Baldwin Graphics Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1342 (Fed. Cir. 2008) ("a" means "one or more" in patent law). Because PUM does not dispute that a website comprises one or more documents (*i.e.*, one or more webpages), Refuah analyzes "a" document when it analyzes a website.

E. Refuah Discloses the Claimed "Query" Limitations

PUM argues that "nowhere does Refuah disclose receiving a search query from a user." (Opp., 8). But as shown in Google's Opening Brief, Refuah recites "personality and mood are designed to affect the results of substantially any query." (Br., 6 (quoting Refuah, 17:29-30)). Refuah also explains how persona and mood can interpret the search query to retrieve documents responsive to both the query and the persona/mood. (Refuah, 12:20-26; 17:32-33).

F. Refuah Discloses the Other Dependent Claim Limitations

For **'040 claim 32**, PUM argues that "Refuah does not disclose a 'central computer.'" (Opp., 7). But Refuah states that its personas can be stored on a server. (Refuah, 16:33-40). There is no

dispute that a server is a "central computer." (D.I. 348, 3). For **'040 claim 34**, PUM argues that Refuah does not analyze documents of multiple media types because "Refuah only discloses analyzing 'text.'" (Opp., 8). However, Refuah analyzes both text and images. (Refuah, 21:21-29).

For **'276 claim 5**, PUM argues that Refuah does not estimate parameters based on documents not of interest to the user because Refuah supposedly requires users to explicitly say which sites displease them, rather than inferring this information from the user's actions. (Opp., 8-9). Yet PUM cites nothing to support its position. In actuality, Refuah analyzes sites based partially on monitoring the time that users spend at them (Refuah, 20:31-34; 22:8-9), and can thus infer whether a user likes or dislikes a site based on how long the user spent at that site.

For **'276 claim 22**, Refuah discloses identifying several of the document properties listed in that claim, such as the features of books from a bookseller's website. (Br., 10-11; Refuah, 3:64-4:1). PUM's only argument against this disclosure is to say that "Refuah [] does not disclose product features extracted from the document because describing user preferences does not teach how to identify such properties from a document." (Opp., 9). But claim 22 does not require any specific way to identify product features from documents, and thus PUM cannot argue that Refuah is lacking merely because it does not specify how product features are identified either. Again, an anticipating reference need not provide specific examples. *Arthrocare,* 406 F.3d at 1371.

II. PLAINTIFF FAILS TO REBUT GOOGLE'S SHOWING OF OBVIOUSNESS.

Google's Opening Brief and PUM's Opposition show a consistent pattern – Google relies on the text of the prior art references, while PUM ignores the text and relies instead on Dr. Carbonell's opinions. And while Google details why the asserted claims present nothing more than obvious combinations of prior art methods used in a predictable manner and overcoming no technical barriers (as the PTO found in the pending reexaminations), PUM points to nothing innovative at all in its patents. Indeed, PUM does not even try to explain what it is that was invented.

Instead, PUM just repeatedly cites Dr. Carbonell's conclusions that ignore the plain disclosures of the applicable references and the elements that indisputably existed in the art. Yet PUM cannot ward off summary judgment on the legal issue of obviousness merely by proffering expert testimony that contradicts what the references plainly say. *See Adv. Tech. Mat., Inc. v. Praxair, Inc.*, 228 Fed. Appx. 983, 985 (Fed. Cir. 2007) ("where a prior art reference plainly discloses a claim limitation, the court may recognize and apply that teaching on summary judgment."); *PharmaStem Therapeutics, Inc. v. ViaCell, Inc.*, 491 F.3d 1342, 1361 (Fed. Cir. 2007) (directing JMOL of obviousness, despite expert testimony to the contrary, where the expert testimony "cannot be reconciled . . . with the prior art references themselves.")

As the Federal Circuit recently reaffirmed, obviousness is question of law. *Soverain Software LLC v. Newegg Inc.*, -- F.3d --, No. 2011-1009, 2013 WL 216406 (Fed. Cir. Jan. 22, 2013) (ruling as a matter of law that claims were obvious). Here, summary judgment of obviousness should be granted because the asserted claims are just a collection of well-known machine learning techniques previously used in the prior art and applied in a conventional way in PUM's patents.

A. PUM Raises No Genuine Issue of Fact as to Whether All Claimed Elements Existed In the Prior Art.

PUM does not even address the evidence from Google's Opening Brief about how all the claimed elements were known in the overall prior art. (Br., 12-16). And PUM gives the back of its hand to its other expert's (Dr. Pazzani's) position that that the machine learning aspects of the asserted claims were all "commonly known and used" machine learning techniques found in the "toolbox" of any machine learning practitioner. (D.I. 453, Ex. A ¶ 575; D.I. 452, 12).[1] Instead, PUM focuses only on aspects of three exemplary obviousness references from Google's Motion –

[1] Specifically, when resisting Google's ownership motion, PUM and Dr. Pazzani argued that the patents-in-suit did not result from named inventor Yochai Konig's work at SRI because the patents rely on these well-known machine learning techniques.

Wasfi, Mladenic, and Montebello. But the obviousness of the asserted claims is judged by whether they are an obvious improvement over the prior art as a whole, not whether they can be created by a rigid combination of Wasfi, Mladenic, and/or Montebello. *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 419 (2007). PUM cannot limit the obviousness inquiry to these three references and then argue that the claims are non-obvious because these references are separately lacking in one aspect or another. That would defeat the whole point of an obviousness (as opposed to anticipation) inquiry. PUM's arguments fail in any event, as they run contrary to the plain teachings of the references.[2]

1. Transparent Monitoring During Normal Use of a Computer/Browser

PUM does not actually dispute that transparent monitoring of user actions existed in the art. Nor does PUM claim that there was anything innovative in combining it with the other elements of the claims, or that the transparent monitoring of the patents produced any unpredictable results. Even PUM's argument that the exemplary references do not disclose transparent monitoring is easily discarded. For example, even though Wasfi and Mladenic monitor users during web navigation (Mladenic, 3; Wasfi, 61), PUM argues that they do not disclose the "normal" use of a computer or browser because they modify the user interface. (Opp., 11). This cannot be a basis of distinction, given that the patents-in-suit describe modifying the user's display – *e.g.*, modifying color, link size, and crispness of display – in providing the claimed personalization. ('040 Patent, 29:41-58).

2. Estimating Parameters of a [User-Specific] Learning Machine

While PUM somehow contests that this element was in the art, Dr. Carbonell admitted that "[e]stimating parameters of a learning machine is part of the process of machine learning and has been since the '80's." (Carbonell Dep. 57:11-13). Dr. Pazzani likewise testified that "estimating parameters" was a technique found in the "toolbox" of any machine learning practitioner. (D.I. 453,

[2] Of note, these references also cite each other, and thus could be readily combined by one of skill in the art. (*See* Montebello at 6 (citing Mladenic, which Plaintiff does not dispute)).

Ex. A ¶ 575). PUM points to nothing innovative or unpredictable about applying these well-known techniques to provide personalization, or any technical challenges in doing so. Nor could it, as both of PUM's experts conceded that such techniques had previously been used in many different areas, including Internet search and creating user models. (Carbonell Dep. 12:5-13; 13:2-7; D.I. 453, Ex. A ¶ 574-575; Pazzani Dep. 11:18-12:4).

Here too, PUM's arguments as to the specific obviousness references also fail. Regarding Montebello, PUM argues that Montebello does not employ machine learning at all. (Opp., 11-12). But Montebello states its profile generator uses existing "machine learning techniques." (Montebello at 3). Regarding Mladenic, even PUM's expert agreed that at least one of Mladenic's disclosed machine learning algorithms – Naïve Bayesian – had parameters. (Carbonell Dep. 164:17-165:12). And Wasfi recites that a "learning module handles the task of mapping user interests to the profile and maintaining the correlation between the two." (Wasfi at 61).

3. Estimating a Probability of User Interest in Documents

Again, PUM does not assert that its patents invented estimating a probability of user interest in documents. Nor could it, given its experts' admissions that machine learning had been used for search before the patents (Carbonell Dep. 13:2-7) and that "calculating probabilities" is part of any machine learning practitioner's toolbox. (D.I. 453, Ex. A ¶ 575). The patents-in-suit admit that the Bayesian statistics they employ existed in the prior art ('040 Patent, 22:61-63), and there is no dispute that Bayesian statistics output probabilities. (Carbonell Dep. 18:18-21).

PUM argues that Mladenic's use of Bayesian algorithms does not disclose a probability because Mladenic slots items into one of two categories, positive or negative. (Opp., 12). But the patents-in-suit also use probabilities to put documents into one of two discrete categories – namely, documents that are presented to the user and those that are not. ('276 Patent, claim 1[g] ("using the estimated probabilities . . . to present at least a portion of the retrieved documents to the user."))

PUM also admits that Wasfi "calculates a similarity score" of how well a document matches a user profile (Opp., 12), but PUM fails to explain why this similarity score is not a "probability" under the Court's construction. Nor does PUM refute that its own infringement position is that any numerical score can be a probability. (Br., 5).

4. The Dependent Limitations

At pages 17-18 of its Opening Brief, Google explains how Wasfi, Mladenic, and Montebello disclose the dependent claim limitations. Most of these points go unaddressed by PUM. PUM's arguments as to the limitations that it does address are not credible. For example, regarding the "search query" limitations, PUM argues that "Montebello [] did not receive any search queries from a user," but PUM admits in the same sentence that "the Montebello system worked on top of search engines." (Opp., 13). PUM also disputes whether Mladenic meets the "documents not of interest" limitation, but does not even address Mladenic's explicit teaching that links not clicked on by the user are deemed to represent documents not of interest. (Mladenic at 8).

B. There Are No Differences Between the Claims and the Prior Art

The various elements of the claims – transparent monitoring, learning a model of user interests, applying this model to estimate the probability of document interestingness, etc. – were used throughout the prior art in the same way that they are used in PUM's patents. Even viewed individually, Wasfi, Mladenic, and Montebello have few, if any, differences from the asserted claims. Viewed collectively, the prior art has no differences at all.

C. Level of Ordinary Skill

PUM argues that one of ordinary skill in the art would not be able to come up with the claimed invention because it would take a polymath expert to integrate all the claim elements into a working system. (Opp., 14). But as PUM has stated (in the ownership context), the claims use "common machine learning techniques" that would be "found in any machine learning

professional's toolkit." (D.I. 452 at 12). PUM's position that it would take a polymath expert to apply these "common machine learning techniques" is also inconsistent with PUM's position that one of ordinary skill in art would possess a B.S. in computer science and 2-3 years experience in information science. (D.I. 457, ¶ 487). PUM further argues that no one in 1999 could create the claimed invention through the prior art "because there was insufficient data being recorded about users to be able to learn parameters of a [user-specific] learning machine." (Opp., 14). This makes no sense. By PUM's logic, if no one could have practiced the claimed invention in 1999, the invention would be invalid as having no utility and not being enabled. 35 U.S.C. §§ 101, 112(a).

D. Secondary Considerations Do Not Rebut Prima Facie Case of Obviousness

PUM cites Dr. Carbonell's report to argue that Google's commercial success (and the expense Google incurred in developing personalization) are secondary considerations of non-obviousness. (Opp., 15). But PUM ignores the undisputed fact that Dr. Carbonell has not analyzed what at Google is being accused. (Br., 20). Thus, Dr. Carbonell has no basis to opine on what portion of Google's commercial success and personalization efforts were related to the subject-matter claimed by the patents-in-suit, nor to opine as to any supposed nexus to the patented invention, as required for secondary considerations of non-obviousness. *Ormco Corp. v. Align Tech., Inc.*, 463 F.3d 1299, 1311-12 (Fed. Cir. 2006) ("Evidence of commercial success, or other secondary considerations, is only significant if there is a nexus between the claimed invention and the commercial success.")

Conclusion

For the foregoing reasons, Google respectfully requests that the Court enter summary judgment that all asserted claims are invalid for anticipation and obviousness.

Respectfully submitted,

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CERTIFICATE OF SERVICE

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