

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

**FELLOWSHIP FILTERING
TECHNOLOGIES, LLC,**

Plaintiff,

v.

**IAC/INTERACTIVECORP
and
MATCH.COM, LLC**

Defendants.

Civil Action No. _____

JURY TRIAL DEMANDED

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Fellowship Filtering Technologies, LLC (“Fellowship Filtering” or “Plaintiff”), by and through its attorneys, brings this action and makes the following allegations of patent infringement relating to U.S. Patent No. 5,884,282 (“the ‘282 patent”). Defendants IAC/InterActiveCorp (“IAC”) and Match.com, LLC (“Match.com”) (collectively, “Match” or “Defendant”) infringe Fellowship Filtering’s ‘282 patent in violation of the patent laws of the United States of America, 35 U.S.C. § 1 *et seq.*

INTRODUCTION

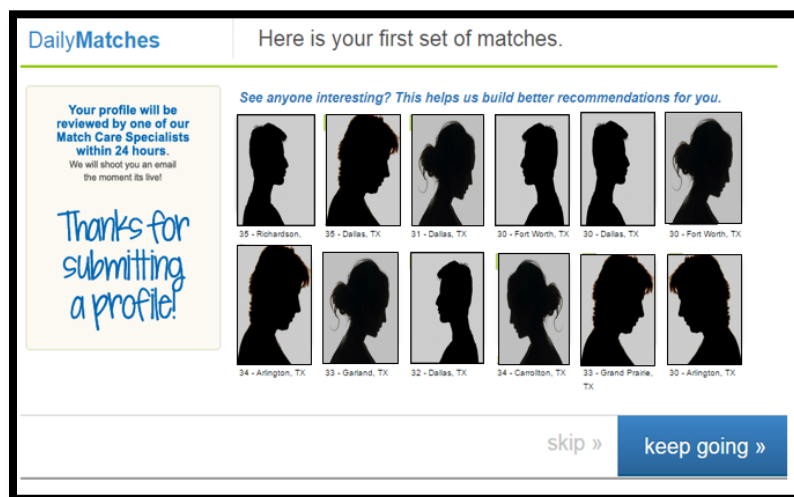
1. In a relentless effort to expand its membership base and profit from the sale of subscriptions to its online dating service, Match copies the computer based recommendation technologies and inventions of Gary Robinson, the inventor of the ‘282 patent and a co-owner of Fellowship Filtering.

2. Mr. Robinson is a mathematician and inventor of computer-based recommendation engine technologies that enable the recommending of content (*e.g.*, user profiles) based on novel algorithms that calculate the preferences based on the similarity and dissimilarity of users of a website.

3. Mr. Robinson studied mathematics at Bard College and New York University's Courant Institute of Mathematical Sciences. He is the recipient of the National Science Foundation – SBIR award.

4. Mr. Robinson is a named inventor of over 20 United States Patents. Google, Inc. (“Google”),¹ Amazon.com, Inc. (“Amazon”),² International Business Machines Corporation (“IBM”),³ and Intel Corporation (“Intel”) have acquired Mr. Robinson’s patents.

5. The ‘282 patent describes a novel way for providing product and content recommendations based on data that is collected on a website by calculating similarity values. Match.com uses these same technologies in providing recommendations for its online personals service. When a new user joins Match.com they are prompted to rate existing members on the Match.com service based on a photo array. The following screen capture shows the interface where Match.com receives ratings information that is subsequently used to generate recommended user profiles.



Match.com WowMatches Webpage, MATCH.COM WEBSITE, May 19, 2015 (showing the initial set of matches generated by profile information and requesting users rate other members).

¹ U.S. Patent Nos. 7,966,632; 8,290,964; and 8,762,394.

² U.S. Patent Nos. 6,266,649; 7,113,917; 7,433,832; 7,478,054; 7,664,669; 7,778,890; 7,908,183; 7,921,042; 7,945,475; 8,001,003; 8,024,222; 8,108,255; 8,140,391; and 8,180,689.

³ U.S. Patent Nos. 6,356,879; 6,931,397; 7,006,990; 7,080,064; 7,099,859; 7,389,285; 7,885,962; 8,700,448; and 8,825,681.

6. Match.com uses rating information provided by members to make further recommendations (“matches”) based at least in part on measuring similarities between a first and second user based on common ratings. Match.com describes this functionality as triangulation. A 2011 presentation by Match.com’s then Vice President of Strategy & Analytics, Amarnath Thombre, described the process of identifying similarities as looking for commonality in ratings between new and existing users.



Amarnath Thombre, *Intelligent Matching at Match.com 6*, PREDICTIVE ANALYTICS WORLD 2011 CONFERENCE, October 20, 2011 (The image is excerpted from a presentation delivered at the Predictive Analytics World conference).

7. Match calculates recommendations at least in part based on a similarity value calculated from data about membership ratings data aggregated from Match.com or a subset of similar Match.com members. Match refers to this process as a “likely to initiate” or “interaction” score. A New Yorker Magazine article on Match.com’s recommendation system described the creation of infringing similarity scores:

These are compared with the variables of others, creating a series of so-called ‘interactions.’ Each interaction has a score: a numerical expression of shared trait-tolerance. The closest analogy, Thombre told me, is to Netflix, which uses a similar process to suggest movies you might like—‘except that the movie doesn’t have to like you back.’”⁴

⁴ Paumgarten, Nick, *Looking for Someone: True Romance Dept*, THE NEW YORKER (July 4, 2011).

Column Showing
 "Likely To
 Initiate" Scores

Likely to Initiate	Intercept	-1.75721048
distance	-0.00021911	The farther away the man is, the less likely the woman is to initiate an email to him.
Age_OtherMinusUser	-0.03449914	The greater the number of years older the man is, the less likely the woman is to initiate an email to him. The male being younger has a positive effect.
	0.00009222	When the man is taller, the woman is more likely to initiate. When his is shorter, she is less likely to.
	0.0512127	Atheist shows positive propensity to email an 'other' religion.
	0.1169895	
	0.200890319	Catholic women are especially unlikely to email a hindu, atheist, or 'other' male.
Relig_UserCath_OthOth	-0.53965010	
Relig_UserJew_OthJew	0.81000404	Jewish women are more likely to email Jewish men.
Relig_UserLew_OthProt	-0.63570489	Jewish women show negative likelihood to email a protestant male.
Relig_UserOth_OthJew	0.84479887	Women of 'other' religion show positive propensity to email a Jewish man.
Relig_UserProt_OthAgn	-0.48103102	Protestant women are less likely to email an agnostic man and more likely to email another protestant.
Relig_UserProt_OthProt	0.29669456	
Relig_UserSpir_OthSpr	0.18197298	Spiritual but not religious women are more likely to email a man of the same.
Smoke_UserNoWay_OthNoWay	0.19498313	Non-smoking females have a higher propensity to email a non-smoking male. They're less likely to email a man who smokes daily, but slightly more likely to email a man who's trying to quit.
Smoke_UserNoWay_OthDaily	-0.31135475	
Smoke_UserDaily_OthNoWay	-0.68566588	A woman who smokes daily is less likely to email a man who doesn't smoke.
Smoke_UserTryQuit_OthTryQuit	0.64380089	If a woman's trying to quit, she's more likely to email a man who's also trying to quit.
Drink_UserNo_OthNo	0.38049243	Women who don't drink are more likely to initiate to a man who doesn't drink.
Drink_UserSocial_OthSocial	0.05128385	Women who are social drinkers are more likely to initiate to a man who's also a social drinker.
Edu_UserBach_OthHS	-0.48605598	Women with bachelor degrees are less likely to initiate to a man with high school only.
Edu_UserBach_OthSomeColl	-0.18661038	followed closely by an associate's degree and then 'some college'. She is more likely to email a man with a PhD. All other levels of education he might have would be representative of the 'average experience' (and therefore not a differentiating factor).
Edu_UserBach_OthPhD	-0.42051120	
Edu_UserGrad_OthHS	-0.89689892	Women with graduate degrees are least likely to initiate an email to a man with high school only, followed closely by associate's degree and 'some college'. She is more likely to email a man who also has a graduate degree and even more likely to email a man with a PhD.
Edu_UserGrad_OthSomeColl	-0.39342548	
Edu_UserGrad_OthAss	-0.54503707	
Edu_UserGrad_OthGrad	0.23150076	
Edu_UserGrad_OthPhD	0.28904189	
Edu_UserPhD_OthAss	-0.74704078	A woman with a PhD is far less likely to initiate an email to a man with an associate's degree. She's likely to initiate to a man with a graduate degree and even more so to a man with a PhD.
Edu_UserPhD_OthGrad	0.26741489	
Edu_UserPhD_OthPhD	0.81614368	

Amarnath Thombre, *Intelligent Matching at Match.com 7*, PREDICTIVE ANALYTICS WORLD 2011 CONFERENCE, October 20, 2011 (Match.com controls ratings based on the distribution of ratings in the general populace and further controls the generation of similarity values based on data about the members as a whole.).

8. Mr. Robinson has never received compensation or consented to Match's use of the inventions disclosed in the '282 patent. Yet, Match has made its infringing recommendation system essential to Match.com's success - providing accurate profile recommendations to users. Executives at IAC and Match.com such as Barry Diller (Chairman and Senior Executive of IAC) and Chris Haltiner (Director of Development at Match.com) have extolled the value of providing accurate recommendations to users of Match.com.

The idea of going into online dating came out of a meeting in which [Barry] Diller and Pleasants were talking about what was wrong with Citysearch - a static information repository, not enough people going to it, *no way for them to connect bingo!* Such discussions can be chancy. Just ask the TV exec who had a section of his wall framed after Diller hurled a videotape into it.⁵

Proposed, designed, and performed initial implementation of highly successful collaborative filtering algorithm that was 2.5 times more likely to produce a matching candidate profile. Free members engaged by the collaborative filtering match were 154% more likely to upgrade to a paid subscription.⁶

⁵ Frank Rose, *Barry Diller Has No Vision for the Future of the Internet: That's why the nonsense honcho of Home Shopping Network, Match.com, and Universal is poised to rule the interactive world*, WIRE MAGAZINE Vol. 11.04 (April 2003) (emphasis added).

⁶ *LinkedIn Profile Of Chris Haltiner*, LINKEDIN WEBSITE, May 20, 2015, <https://www.linkedin.com/in/haltiner>.

9. The creator of Match.com, Gary Kremen, in his initial conception of what would later become Match.com anticipated like Mr. Robinson, that the internet presented unique problems that an automated filtering and search system could solve.

ECI plans to develop a business marketing personal classified ads with vivid color pictures, high fidelity audio and video. ECI's approach overcomes limitations of dating services, printed ads and 900 numbers. Electronic personal ads will be delivered through existing computer networks to personal computers, enabling better privacy, much higher information content and lower cost.⁷

10. Mr. Kremen's business plan for Match.com enabled the searching of personals through the internet but failed to provide a framework for providing users with accurate recommendations of personal content. However, Mr. Kremen's business plan, contemporaneous to the '282 patent provides a view into technology contemporaneous to Mr. Robinson's development of the now extensively cited '282 patent. Mr. Kremen and Mr. Robinson saw the internet created electronic recommendation challenges that are unique to the internet. At the time Match.com's predecessor was conceived "[t]he Internet ha[d] 20 million active users."⁸ A system for searching personal advertisements using the internet was into itself revolutionary at the time the '282 patent was conceived. Electronic personals were described by Mr. Kremen as overcoming prior limitations in the art such as:

- **Eliminates Embarrassment and Lack of Privacy.** Customers use the service at the location of choice.⁹
- **Enhances Security.** Anonymous electronic mail address protects real identity and location of customers.¹⁰
- **Extensive Information Content.** Nearly unlimited information storage and multimedia capability will provide great value to possible matches.¹¹

⁷ GARY KREMEN, ELECTRONIC CLASSIFIEDS, INC. CONFIDENTIAL BUSINESS PLAN 1 (1994) (Prior to the launch of Match.com in 1995, Gary Kremen developed a business plan for Electronic Classifieds, Inc. ("EIC") that laid out the functionality and structure of what would later become Match.com. Mr. Kremen's concept was for an online classifieds service geared toward singles. The functionality of EIC included the ability to search profiles, vary recommendations based on making changes to "what you seek," locate recommended profiles based on location and scope.).

⁸ *Id.* 4.

⁹ *Id.* 3.

¹⁰ *Id.*

¹¹ *Id.*

- **Accurate Portrayal of Physical Attractiveness.** A visual image or multiple images can show physical attractiveness. A customer could choose to show himself in various favorite activities and clothing to give the viewing customer a stronger sense of personality and physical character.¹²
- **Real Search Capability.** Customers could design many different search strategies from simple browsing within a geographic area to ranked or scored preference screens.¹³
- **Short Cycle Time.** Initial response times will be reduced to seconds for Mosaic users on the Internet or minutes for electronic mail users.¹⁴

11. In 1995, Match.com launched. Yet, Match.com lacked automated recommendation functionality and was a website primarily for posting and searching content (*e.g.*, personal ads).¹⁵ In March 1996, Mr. Kremen was forced out of Match.com based in part on Mr. Kremen's brave stance that the company serve the LGBT market. Over Mr. Kremen's objections, Match.com was sold to Cendant Corporation ("Cendent") for \$7 million in 1998 and sold by Cendant to Ticketmaster a year and a half later for \$50 million.

12. Later, Match.com was sold to IAC and adopted Mr. Robinson's patented technologies for providing accurate recommendation technologies. Journalists, Match executives and academics have concluded the adoption of these accurate recommendation systems has been essential to Match.com's success:

Pressure from new competitors has made Ginsberg and Thombre's work [at Match.com] all the more critical for their company's success. 'Match's fundamental offering is more vulnerable today than at any previous point,' says Frances Haugen, a software engineer at Google who studied Match while at Harvard Business School. 'With the advent of improved recommendation algorithms and the implicit compatibility information encoded in social networks, Match must act now or put itself at risk for disruption in the next five years.'¹⁶

ROBINSON'S LANDMARK ELECTRONIC MAIL INVENTIONS

13. The Robinson Method, named after Gary Robinson, is a Bayesian statistical approach that uses a text-classifier, rule-based method for determining the relevancy of an email

¹² *Id.* 4.

¹³ *Id.*

¹⁴ *Id.*

¹⁵ Todd Krieger, *Love and Money*, WIRED MAGAZINE Vol. 3.09 (September 1995) ("Cyberlove and chat room couplings are as much a part of online lore as hacker friends and wild viruses.").

¹⁶ David Gelles, *Inside Match.com: It's All About The Algorithm*, SLATE MAGAZINE, July 30, 2011, http://www.slate.com/articles/life/ft/2011/07/inside_matchcom.single.html.

message. Numerous leading SPAM filtering technologies utilize the Robinson Method.¹⁷

14. Mr. Robinson’s contributions to the field of electronic mail filtering are recognized as landmark technologies.

Robinson Fisher Method: With the Robinson Fisher method, Gary Robinson developed a more sophisticated way to ensure sensitivity for both recommendations and rejections. Consequently, the Robinson Fisher approach replaced the Geometric Means proposal. To formulate two null hypotheses one must assume ideal conditions, i.e. that token frequencies are pairwise independent, not uniformly distributed, and that the description consists of a random set of tokens. We then calculate a score

GÜNTHER HÖLBLING, *PERSONALIZED MEANS OF INTERACTING WITH MULTIMEDIA CONTENT* 119 (2011).

15. Mr. Robinson has published academic articles on statistical approaches to identifying content. A 2003 article in Linux Journal described these mathematical approaches for identifying unsolicited bulk email. Mr. Robinson’s approach is notable because it assigned scores to both “spam” and “ham” and used an algorithm to guess intelligently whether an incoming email was spam. This approach was incorporated in products such as SpamAssassin, which used a Bayesian statistical approach using a text-classifier rule to distinguish “spam” and “ham” messages.¹⁸

¹⁷ Ricardo Villamarín-Salomón & José Carlos Brustoloni, *Bayesian Bot Detection Based on DNS Traffic Similarity*, in SAC’09: ACM SYMPOSIUM ON APPLIED COMPUTING 2040—41 (2009); Masahiro Uemura & Toshihiro Tabata, *Design and Evaluation of a Bayesian-filter-based Image Spam Filtering Method*, in PROCEEDINGS OF THE 2008 INTERNATIONAL CONFERENCE ON INFORMATION SECURITY AND ASSURANCE 46-51 (2008) (“the Robinson Method”); MARCO ANTONIO BARRENO, Technical Report No. UCB/EECS-2008-63, *EVALUATING THE SECURITY OF MACHINE LEARNING ALGORITHMS* 45 (2008); Manabu Iwanaga et al., *Evaluation of Anti-Spam Methods Combining Bayesian Filtering and Strong Challenge and Response*, in PROCEEDINGS OF CNIS’03 (COMMUNICATION, NETWORK, AND INFORMATION SECURITY) 214—19 (2003); BLAINE NELSON, Technical Report No. UCB-EECS-2010-140, *BEHAVIOR OF MACHINE LEARNING ALGORITHMS IN ADVERSARIAL ENVIRONMENTS* 62-67 (2010); Gordon V. Cormack & Mona Mojdeh, *Autonomous Personal Filtering Improves Global Spam Filter Performance*, in PROCEEDINGS OF THE 6TH CONFERENCE ON EMAIL AND ANTI-SPAM 2 (2009).

¹⁸ Gary Robinson, *A Statistical Approach to the Spam Problem*, LINUX JOURNAL 107 (2003).

16. Mr. Robinson's inventions relating to filtering technologies have been widely adopted by spam filters including Spam Assassin¹⁹ (PC Magazine's Editor's Choice for spam filtering), SpamSieve²⁰ (MacWorld's Software of the Year), and SpamBayes²¹ (PC Worlds Editor's Choice for spam filtering).

ROBINSON'S DEVELOPMENT OF RECOMMENDATION SYSTEMS

17. Prior to developing groundbreaking electronic mail filtering technologies, Mr. Robinson used his insights to develop the automated content filtering technologies that are used today by Match and many of the world's largest corporations without attribution or compensation.

18. Match's system for recommending user profiles to members of Match.com is a system that uses automated content filtering technologies.

19. In the late 1980's, Mr. Robinson developed a system for collecting preference information and providing recommendations. His company, 212-ROMANCE, was an automated, voice-based dating service that used a passive data collection process to determine likely romantic matches. Mr. Robinson's contributions to the field of content filtering were pioneering.

¹⁹ *SpamAssassin Pro*, in PC MAGAZINE February 25, 2003 at 82 (awarding SpamAssassin Pro its editors' choice award); *The SpamAssassin Project: Train SpamAssassin's Bayesian Classifier*, <http://spamassassin.apache.org/full/3.2.x/doc/sa-learn.html> ("Gary Robinson's f(x) and combining algorithms, as used in SpamAssassin"); *Credits - The Perl Programming Language - Algorithms*, <http://cpansearch.perl.org/src/JMASON/Mail-SpamAssassin-3.2.5/CREDITS> ("The Bayesian-style text classifier used by SpamAssassin's BAYES rules is based on an approach outlined by Gary Robinson. Thanks, Gary!").

²⁰ David Progue, *From the Deck of David Progue: The Follow-Up Edition*, N.Y. TIMES, April 5, 2006, <http://www.nytimes.com/2006/04/05/technology/06POGUE-EMAIL.html> ("Spam Sieve is just incredibly, amazingly accurate; my in box is clean, baby, clean!").

²¹ Tom Spring, *Spam Slayer: 2003 Spam Awards*, PCWORLD MAGAZINE, December 15, 2003, at 36 ("What makes the program unique is that SpamBayes doesn't use predetermined spam definitions. Rather, it constantly evolves by scanning your in-box to build custom definitions."); MARCO ANTONIO BARRENO, Technical Report No. UCB/EECS-2008-63, EVALUATING THE SECURITY OF MACHINE LEARNING ALGORITHMS 45 (2008) ("SpamBayes classifies using token scores based on a simple model of spam status proposed by Robinson . . . SpamBayes Tokenizes the header and body of each email before constructing token spam scores. Robinson's method assumes that each token's presence or absence in an email affects that email's spam status independently from other tokens.").

Boston Business Journal

Few people in the technology industry can say they once ran a successful dating service. Even fewer can say that the dating service led to the creation of a technology used by everyone from the digital music industry to the largest corporations in the world.

But Gary Robinson, chief executive of Bangor-based Transpose LLC, can say that.

Matthew French, *Romantic Beginnings Have Worldwide Effect*, BOSTON BUS. J., May 20, 2002.

20. In the mid-1990s, Mr. Robinson recognized that the growing adoption of the internet and increased computational power enabled collection and processing of data relating to customer and user preferences that, with proper data analytics processes, could provide accurate recommendations of products and content.

21. Mr. Robinson further recognized that the growth of the internet led to unique problems involving information overload that filtering techniques using specific new collaborative filtering technologies could solve.

22. At the time, existing recommendation technologies, discussed in the '282 patent, failed to teach a robust and accurate process for providing recommendations. A key insight of Mr. Robinson was that the input of buying habits and/or ratings information from multiple users over the internet allowed similarity values among users to be calculated based on identifying subgroups of similar users.

23. Mr. Robinson invented an automated collaborative filtering ("ACF") system that received and stored data based on internet users' purchasing history, preferences, and/or buying history. When a new user accessed the ACF system through a website (in one embodiment), the ACF system recommended further content (*e.g.*, products) based on the similarity values for the first user as compared with other users that previously provided preference data to the ACF system.

24. Mr. Robinson worked to develop novel systems and processes designed to provide accurate content and product recommendations using data stored, collected, and computed on

specific computer-based systems. Mr. Robinson's insights led to the patent application resulting in the '282 patent.

25. The patent-in-suit - the '282 patent - is a pioneering patent in the field of data analytics. The '282 patent uses novel algorithmic approaches to provide accurate recommendations of products and content using data analysis specific to a computer system.

good. The creative license for statistical filtering really belongs to hackers like Paul Graham, Gary Robinson, and Bill Yerazunis and the rest of the community that has invented many of these approaches. Some companies have claimed the technology as their own, which gives people the idea that any other solutions are nonstandard, when it's really borrowed technology.

JONATHAN A. ZDZIARSKI, ENDING SPAM: BAYESIAN CONTENT FILTERING AND THE ART OF STATISTICAL LANGUAGE CLASSIFICATION 269 (2005).

26. The '282 patent has been cited by over 262 United States patents as prior art before the United States Patent and Trademark Office. Companies whose patents cite the '282 patent include:

- Open Text S.A.
- Accenture Global Services GMBH
- YellowPages.com LLC
- Nielsen Holdings N.V.
- International Business Machines Corporation
- Koninklijke Philips N.V.
- Google, Inc.
- Amazon.com, Inc.
- Microsoft Technology Licensing LLC
- Arbor Networks, Inc.
- Johnson & Johnson Consumer Companies
- S.C. Johnson & Son Inc.
- Sony Electronics, Inc.
- Infosys Ltd.
- Parasoft Corporation
- AT&T Intellectual Property LLP
- Dish Network LLC
- eBay, Inc.
- Rovi Corporation
- CBS Interactive, Inc.
- American Express Company

- Hewlett-Packard Company
- Xerox Corp.
- Capital One Financial Corporation
- JDA Software Group, Inc.
- State University of New York
- Robert Bosch Healthcare System, Inc.
- Netflix, Inc.
- Intel Corporation
- Tribune Media Company
- Ingenio, LLC
- Recommend, Inc.
- Dassault Systemes S.A.
- Pandora Media, Inc.
- Pace plc
- Regents of the University of California
- Facebook, Inc.
- Numera, Inc.

27. The claims in the '282 patent are directed at solving a problem that did not arise in prior art systems, *i.e.* generating preference data from large data sets. In prior art systems, the sample size of users was typically very small, and thus the need for a process that takes into account unusual similarities was not at issue. There is no question pre-electronic recommendation systems are significantly different from computer and/or internet-based recommendation systems. The speed, quantity, and variety of rating information markedly differ from the objectives and data available to recommendation systems existing before modern, computer and/or internet-based systems. Differences between the analog versions of preference systems and the invention disclosed in the '282 patent diverge significantly.

28. The use of ratings data and probability values to make recommendations over a computer network was not a longstanding or fundamental economic practice at the time of the invention disclosed in the '282 patent. Nor at the time was the use of ratings data and probability values to make recommendations a fundamental principle in ubiquitous use on the internet or computers in general.

29. The '282 patent discloses how interactions with the internet are manipulated to yield a desired result—a result that overrides the routine and conventional sequence of events ordinarily triggered by requesting content or a product that is relevant to a user of a website.

30. And the use of probability values in collaborative filtering (as in the '282 patent) to control for generally popular content and/or products is important and offers something more than a collaborative filtering system that fails to control for the general popularity of content and/or products. Data scientists at Hulu, LLC (operator of a streaming video website) described the importance of accounting for general popularity of a given item:

Just because a recommendation system can accurately predict user behavior does not mean it produces a show that you want to recommend to an active user. For example, “Family Guy” is a very popular show on Hulu, and thus most users have watched at least some episodes from this show. These users do not need us to recommend this show to them — the show is popular enough that users will decide whether or not to watch it by themselves. Thus, ***novelty is also an important metric to evaluate recommendations.***²²

31. Ten years after Gary Robinson conceived of the inventions in the '282 patent, a 2005 White Paper from Oracle, entitled “The Art of Personalization,” described the use of collaborative filtering to provide recommendations as “new technology” and a “breakthrough:”

Collaborative filtering is relatively ***new technology that can deliver better results.*** Just go to the leading Web sites that offer “recommendations” and you notice the value. After purchasing a book on *Learning to Golf*, you later return to the Web site and find other books on *Greatest Golf Courses* and *Golf Tips from the Pros*. These recommendations seem relevant, timely, and yet sometimes simplistic. Often you’ll see other *Learn to...* books and videos, like *Learn to Ski*, *Learn to Play Tennis*, and *Learn to Sew*. Compared to past manual attempts at personalization and “e-expectations,” this is a ***breakthrough.***²³

PARTIES

²² Liang Xiang, Hua Zheng & Hang Li, *Hulu’s Recommendation Engine*, HULU TECH BLOG, Sept. 19, 2011, <http://tech.hulu.com/blog/2011/09/19/recommendation-system/> (emphasis added).

²³ CHARLES BERGER, ORACLE WHITE PAPER: THE ART OF PERSONALIZATION 4 (August 2005) (emphasis added).

32. Plaintiff Fellowship Filtering is a McKinney, Texas based company committed to advancing the current state of technology in the field of predictive analytics systems. In addition to the ongoing efforts of Mr. Robinson, Fellowship Filtering employs a McKinney, Texas resident as a Technology Analyst. Fellowship Filtering is a Texas limited liability company with its principal place of business at 6851 Virginia Parkway, Suite 214, McKinney, Texas.



33. Fellowship Filtering is a small, Texas-based company. Fellowship Filtering depends on patent protection to effectively license its innovative technologies and build its business.

34. On information and belief, Defendant IAC is a corporation organized and existing under the laws the State of Delaware, with its principal place of business located at 555 West 18th Street, New York, NY 10011. IAC may be served via its registered agent for service of process: National Registered Agents, Inc., 160 Greentree Dr. Ste. 101, Dover, DE 19904.

35. Defendant Match.com is a subsidiary of IAC and a limited liability company organized and existing under the laws of the State of Delaware, with its principal place of business located at 8300 Douglas Ave., Ste. 800, Dallas, TX 75225. Match.com may be served via its registered agent for service of process: National Registered Agents, Inc., 160 Greentree Dr. Ste. 101, Dover, DE 19904.

36. According to Match’s website, Match offers infringing products for sale throughout the United States and Canada, including in the Eastern District of Texas, through various channels. “Sleepless and single in Texas? Search through hundreds of thousands of Texas Match.com photos and personals on Match.com. It’s free! It’s easy! View hundreds of thousands of Texas personals on Match.com’s online personals site.”²⁴

37. Match’s infringing products use the same technology that is disclosed in the ‘282 patent. Match offers its infringing products through its website, which includes numerous members in Texas. Further, Match advertises its infringing products throughout Texas including live events. These events have included a 2011 Diane von Furstenberg event at her store in Dallas, Texas.²⁵

JURISDICTION AND VENUE

38. This action arises under the patent laws of the United States, Title 35 of the United States Code. Accordingly, this Court has exclusive subject matter jurisdiction over this action under 28 U.S.C. §§ 1331 and 1338(a).

39. Upon information and belief, this Court has personal jurisdiction over Defendants IAC and Match.com in this action because IAC and Match.com have committed acts within the Eastern District of Texas giving rise to this action and has established minimum contacts with this forum such that the exercise of jurisdiction over IAC and Match.com would not offend traditional notions of fair play and substantial justice. Defendants IAC and Match.com, directly and through subsidiaries or intermediaries (including subsidiaries, and affiliates), have committed and continue

²⁴ *Texas Dating, Singles and Personals*, MATCH.COM WEBSITE, May 2015, <http://www.match.com/online-dating/texas/singles.html>; *see also McKinney Dating, TX Singles & Personals*, MATCH.COM WEBSITE, May 2015, <http://www.match.com/online-dating/texas/mckinney/singles.html> (“It’s not easy being single in Mckinney - but it’s a cinch meeting single men and single women on Match.com.”); *Singles in Garland, TX | Garland, Texas Dating | Match.com*, MATCH.COM WEBSITE, May 2015, <http://www.match.com/online-dating/texas/garland/singles.html> (“Browse the profiles of other singles in Garland and meet new people today!”).

²⁵ *Match.com & Diane von Furstenberg Present: The Perfect First Date Style*, UPTODATE THE OFFICIAL BLOG OF MATCH.COM, November 1, 2011, <http://blog.match.com/2011/11/01/match-com-diane-von-furstenberg-present-perfect-first-date-style/>.

to commit acts of infringement in this District by, among other things, offering to sell and selling products and/or services that infringe the asserted patents. Moreover, both IAC and Match.com are registered to do business in the state of Texas. This Court also has personal jurisdiction over Defendant Match.com as it has its principal place of business in Texas.

40. Venue is proper in this district under 28 U.S.C. §§ 1391(b), 1391(c) and 1400(b). Each of Defendants IAC and Match.com are registered to do business in Texas, and upon information and belief, has transacted business in the Eastern District of Texas and has committed acts of direct and indirect infringement in the Eastern District of Texas. In addition, Match.com has a principal place of business in Texas. Further, venue is proper as Match.com has directed its activities to this district by conducting infringing matching technology for over five thousand residents of this District.²⁶

HISTORY OF AUTOMATED FILTERING TECHNOLOGY

41. Advances in computational power and the explosive growth of the internet have led to the development of data analytics systems for accurately recommending content (*e.g.*, user profiles on a dating website) to internet users. The '282 patent teaches specific automated collaborative filtering ("Automated CF" or "ACF") technologies for recommending content to users of the internet.

42. The internet and its vast amount of data lead to unique challenges in providing recommendation technology that was distinctively suited to computer based solutions. Barry Diller the Chairperson of Match.com's parent IAC recognized the challenges of providing recommendations were unique to computer systems and could not be done by the human mind.

Now, the Internet was evolutionary to the extent that first you needed the World Wide Web to sit on top of just the Internet backbone. But as a full blown communications media, the Internet was I believe a radical revolution

²⁶ Searches of profiles on Match.com for members in McKinney, Garland and Tyler, Texas found in excess of 2000 active profiles. *See* <http://www.match.com/SearchReskin>.

in those terms. It's a radical revolution in everything we see and know. The reason I've been so fascinated by interactivity, the reason I still refer to the box [the personal computer] as magic, is because *it does things that still defy your imagining them.*²⁷

43. Although content and/or romantic recommendations on websites are commonplace today, at the time the inventions disclosed in the '282 patent were conceived, an advanced system for recommending content automatically utilizing variables (*e.g.*, multiple users, profile ratings, and/or actions of website users) was novel at the time the '282 patent was conceived.

44. The claims in the '282 patent describe a solution that is unquestionably rooted in computer technology to overcome a problem specific to and characteristic of computer networks.

Today increasing numbers of people are turning to computational *recommender systems*. *Emerging in response to the technological possibilities and human needs created by the World Wide Web*, these systems aim to mediate, support, or automate the everyday process of sharing recommendations.²⁸

45. The Tapestry system, developed in 1992, introduced the idea (and terminology) of collaborative filtering.²⁹ Tapestry was developed at Xerox's Palo Alto Research Center for electronic mail filtering and was based on the idea of exploiting explicit feedback (ratings and annotations) of other users. Tapestry stored the contents of messages, along with metadata about authors, readers, and responders. It allowed any user to store annotations about messages, such as "useful survey" or "Gary should see this!" Tapestry users could form queries that combined basic textual information (*e.g.*, contains the phrase "recommender systems") with semantic metadata

²⁷ Julia Angwin, *Barry Diller Sees a Big Future in Internet Shopping Services*, WALL ST. J., May 7, 2003, <http://www.wsj.com/articles/SB105235451030893900>.

²⁸ Loren Terveen & Will Hill, *Beyond Recommender Systems: Helping People Help Each Other*, in *HCI IN THE NEW MILLENNIUM 2* (Jack Carroll, ed., Addison-Wesley, 2001) (emphasis added).

²⁹ David Goldberg, David Nichols, Brian M. Oki, & Douglas Terry, *Using Collaborative Filtering to Weave an Information Tapestry*, COMMUNICATIONS OF THE ACM 35 No. 12, 61–70 (1992) (One of the first uses of the term "collaborative filtering" can be found in this paper.).

queries (*e.g.*, written by Gary OR replied to by Joe) and annotation queries (*e.g.*, marked as "excellent" by Chris).

46. The development of the first collaborative filtering system was directly motivated by the need to sort electronic content transmitted over the internet (*e.g.*, electronic messages posted to newsgroups). “The motivation for Tapestry comes from the increasing use of electronic mail, which is resulting in users being inundated by a huge stream of incoming documents.”³⁰

47. Although widely adopted today, in the 1990’s, collaborative filtering was a groundbreaking technology offering significant benefits over existing recommendation systems that were content based (“content-based filtering”). Content-based filtering made recommendations based on the content of a document. The creators of Tapestry described this break from prior systems:

Collaborative filtering is *novel because it involves the relationship between two or more documents*, namely a message and its reply, or a document and its annotations. Unlike current filtering systems, Tapestry filters cannot be computed by simply examining a document when it arrives, but rather require (potentially) repeatedly issuing queries over the entire database of previously received documents. This is because sometime after a document arrives, a human (say Smith) may read that document and decide it is interesting. At the time he replies to it (or annotates it), you want your filter to trigger and send you the original document.³¹

48. Tapestry illustrates the limitations present in systems contemporaneous to the ‘282 patent. Tapestry lacked the ability to recommend content automatically based on similarities between users. Instead, the Tapestry system worked by recommending content based on predefined filters set by a second user.³² For example, if a user wanted to prioritize messages

³⁰ *Id.*

³¹ *Id.* at 61 (emphasis added).

³² The Tapestry system was similar in many ways to Mr. Robinson’s earlier 1980’s matching system utilized in the Relationship Matching Service.

relating to “Bakersfield, California” the system would return all messages that had previously been “tagged” by prior users as relating to “Bakersfield, California.”

49. The below images show the Tapestry system prioritized content based on users requesting content previously tagged by another user of the Tapestry system.

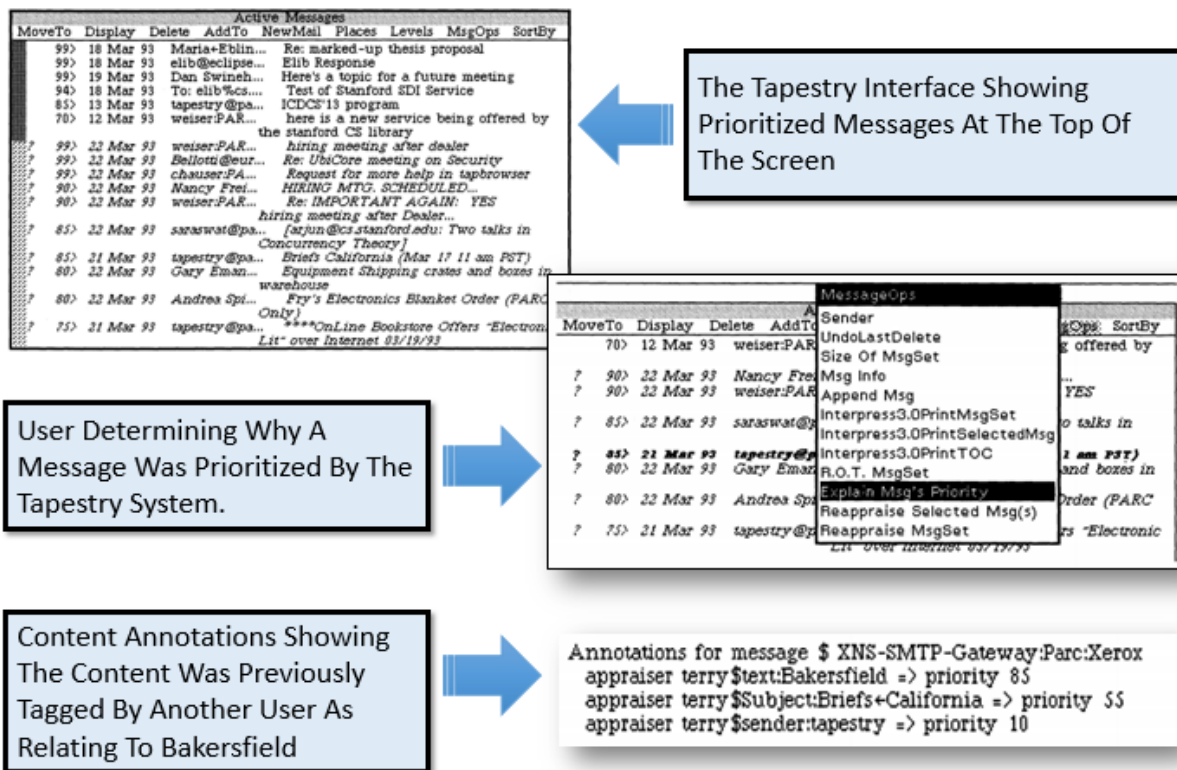


Fig. 1 (images of the Tapestry System (explanation added in blue)).³³

50. GroupLens was another early collaborative filtering system contemporaneous to the ‘282 patent was GroupLens. Started in 1994 by researchers at the Massachusetts Institute of Technology and later the University of Minnesota, the GroupLens system implemented a collaborative filtering system for rating Usenet newsgroup articles.³⁴ To make personalized predictions identifying the most useful Usenet articles to a user, the GroupLens system asked each

³³ Douglas B. Terry, *A Tour Through Tapestry*, in PROCEEDINGS OF THE CONFERENCE ON ORGANIZATIONAL COMPUTING SYSTEMS 21-30 (Simon Kaplan ed. 2003).

³⁴ Paul Resnick et al., *GroupLens: An Open Architecture for Collaborative Filtering of Netnews*, in PROCEEDINGS OF ACM 1994 CONFERENCE ON COMPUTER SUPPORTED COOPERATIVE WORK 175—86 (1994).

user to enter a 1 to 5 rating after reading an article. GroupLens collected the ratings data in a database and compared these ratings to find users who shared similar tastes. Users of GroupLens were then provided a predictive rating for unread Usenet articles. The predictive rating was based on other users who shared similar taste with the user.

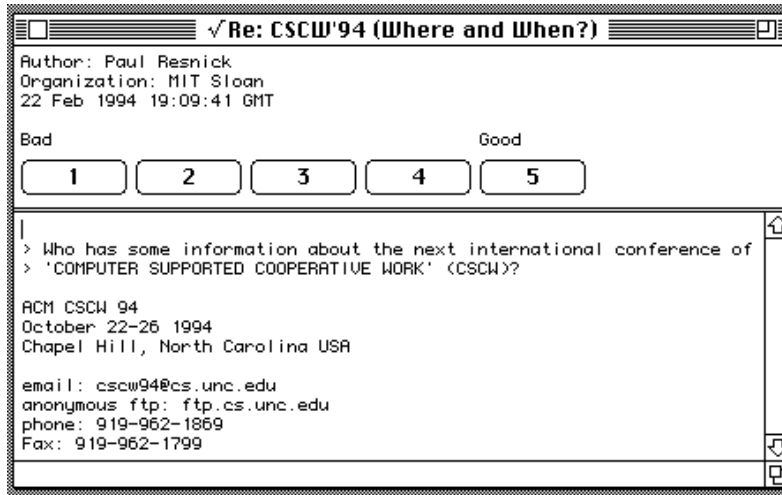


Fig. 2 (showing the user interface for GroupLens and the ability to rate articles 1-5).³⁵

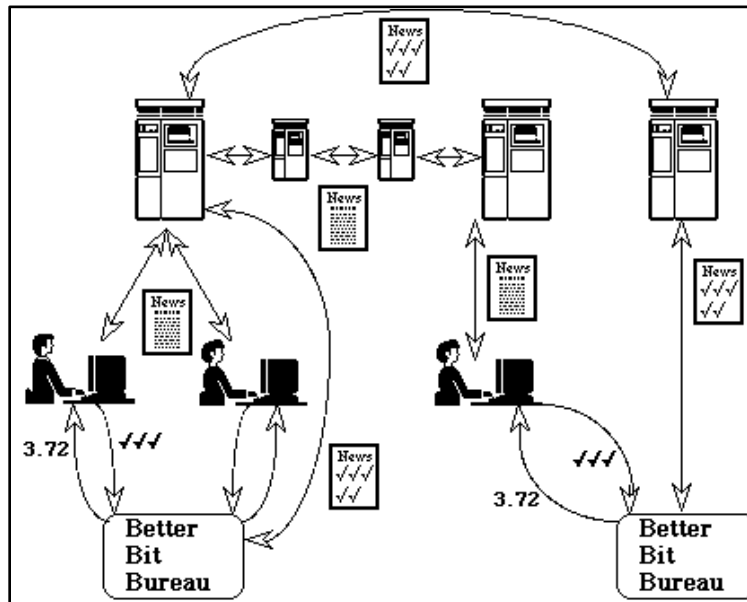


Fig. 3 (showing the architecture of the GroupLens system).³⁶

³⁵ *Id.* at Fig. 3.

³⁶ *Id.* at Fig. 2.

51. GroupLens illustrates limitations in automated filtering systems contemporaneous to the '282 patent. The GroupLens system used the Pearson correlation to calculate similarities between users and use the similarities to generate predictive ratings. The Pearson correlation coefficient is calculated by comparing ratings for all items rated by both the target user and the neighbor (*e.g.*, correlated items). The equation below gives the formula for the Pearson correlation between user "u" and neighbor "n," where CR_{u,n} denotes the set of correlated items between u and n.

$$userSim(u, n) = \frac{\sum_{i \in CR_{u,n}} (r_{ui} - \bar{r}_u)(r_{ni} - \bar{r}_n)}{\sqrt{\sum_{i \in CR_{u,n}} (r_{ui} - \bar{r}_u)^2} \sqrt{\sum_{i \in CR_{u,n}} (r_{ni} - \bar{r}_n)^2}}$$

52. The Pearson correlation and contemporaneous systems to the '282 patent failed to incorporate agreement about content in the population as a whole. For instance, the system failed to account for the fact that two users' agreement about a universally loved movie was less important than agreement on a controversial or unpopular movie. The Pearson correlation failed to capture distinctions relating to an item's general popularity. Thus, GroupLens made predictions based on data that showed similarities (arising from a piece of content being generally popular) but GroupLens' recommendations were not statistically significant.

53. John Hey's patents (U.S. Pat. Nos. 4,996,642 and 4,870,579), which are cited on the face of the '282 patent, describe a system for recommending items based on ratings of the items. Like GroupLens and other systems contemporaneous to the '282 patent, Hey's system for recommending products based on user ratings failed to account for statistically significant similarities between certain users; the recommendations were merely the product of an item or piece of content being generally popular. This prevented the Hey system from offering accurate predictions and recommendations of items and content. The teachings in the Hey patents were later incorporated into a software product called LikeMinds.

54. Similarly, the Ringo music recommendation system, discussed by Upendra Shardanand and Pattie Maes, and cited on the face of the '282 patent, used Pearson's correlation measure to provide content and product recommendations. Like other systems contemporaneous to the '282 patent, Shardanand and Maes's system failed to take into account the statistically significant similarities between certain users.³⁷ Information showing unusual similarity in preferences for particular users was unutilized. Furthermore, these prior art systems did not provide recommendations with statistically meaningful confidence levels as the number of items that both the user and a respective recommending user provided ratings for increased.

55. Collaborative filtering arose to solve problems faced by digital content providers in the internet era as described by Adobe's Global Alliance Manager, Jamie Brighton:

The catalyst for the evolution of personalization has been competition through, a product of the Internet's explosive growth. This growth provided consumers with so many options for e-commerce that it created a market in desperate need of a process by which consumers could develop a personal connection with a brand or digital storefront in a sea of rapidly evolving competitors.³⁸

56. Match.com was conceived contemporaneous to Mr. Robinson's conception of the inventions disclosed in the '282 patent.

The internet and use of computers allowed unique and superior advantages to allowing individuals to locate relevant user profiles (romantic matches). The business plan that predated Match.com which was developed by June 1994 described the problem of located relevant content as unique to the internet and a problem unique to the internet – the collection and organization of extensive amounts of data.

³⁷ Upendra Shardanand & Pattie Maes, *Social Information Filtering: Algorithms for Automating Word of Mouth*, in PROCEEDINGS OF CHI '95 CONFERENCE ON HUMAN FACTORS IN COMPUTING SYSTEMS 210—17 (1995).

³⁸ Jamie Brighton, *Changes in Personalization and What's Coming Next*, ADOBE DIGITAL MARKETING BLOG, October 21, 2014, <http://blogs.adobe.com/digitalmarketing/personalization/personalization-past-present-future/>.

ECI can provide superior services to the relationships and companionship market by using e-mail or the Internet to communicate. ECI will collect and organize data through extensive questionnaires and personalized options including using multimedia. Listing yourself will be free. Customers can then search and manipulate the database of candidates according to personal preferences. Over time, ECI expects to amass a very large and diverse database to satisfy many different customer preferences.³⁹

The use of the internet for locating potential romantic recommendations was an unmet need that could uniquely be filled through the use of the internet and computational power.

Despite recent growth in personals advertising, many potential customers stay away. Current users of newspapers personals, dating services and similar content providers also desire new approaches and features that meet their needs effectively. Unmet needs include privacy, desire for information, good matches, cost and responsiveness.

Further, at the time the '282 patent was conceived the use of computers and the internet was noticeably different than today.

The installed base of on-line users is past a critical phase as enough people have access, including women who are not reached well by existing relationship services. About 100 million personal computers are installed in the U.S.. 29% of homes currently have computers, increasingly with modems, and 30% of homes will have fax machines by 1995.⁴³

The ability to make accurate and “good” matches of user profiles files to take into account a variety of factors including the the ratings distribution that other users have provided The database and matching algorithm was described in the ECI Business Plan as including:

Return all queries as ordered searching using ordering data. Allow for responses to questions such as “like,” probably” and “never,” while at the same time using sophisticated matching algorithms. This will minimize the “feast or famine” problem. Customers will receive a set number of potentials matches, that represent the best, in rank order, matches that exist in the database given their criteria. For example, ECI can perform agent-like

³⁹ Gary Kremen,

operations: ECI can automatically send the customer the best matches every week as new appropriate matches appear.

57. At the time the inventions disclosed in the '282 patent were conceived, the internet and the state of technology generally was vastly different from 2015, or even the state of the internet 10 years ago. For example, Facebook.com, YouTube.com, Wikipedia.com, and LinkedIn.com were years from being launched.⁴⁰

⁴⁰ Rob Waugh, *Before They Ruled The Internet: 'Ancient' Home Pages for Amazon, Google and 'The Facebook' Show Much Web Giants Have Changed*, DAILY MAIL, January 19, 2012, <http://www.dailymail.co.uk/sciencetech/article-2088445>; TONY SEBA, WINNERS TAKE ALL – THE 9 FUNDAMENTAL RULES OF HIGH TECH STRATEGY 137 (2006); GEORGE A BARNETT, ENCYCLOPEDIA OF SOCIAL NETWORKS 947 (2011).



The above images show major internet properties contemporaneous (and later) to the inventions conceived in the '282 patent, including: Google.com (September 1998), Yahoo.com (March 1995), Amazon.com (1995), Myspace.com (August 2003).⁴¹

58. When Match.com was launched in 1994 it was a bulletin board system a

59. Academics such as Daniela M. Witten of the University of Washington describe the development of collaborative filtering systems as directed to solving problems arising out of so called Big Data (a term for modern networked computers that capture considerable volumes of data).

Collaborative filtering is one example of a statistical method that has been newly-developed in the context of Big Data, in order to answer a question that didn't arise with Small Data. Collaborative filtering systems are used by companies like Amazon to suggest to a customer items that he or she might

⁴¹ *Id.*

want to purchase, based on his or her past purchase history as well as purchases made by other customers.⁴²

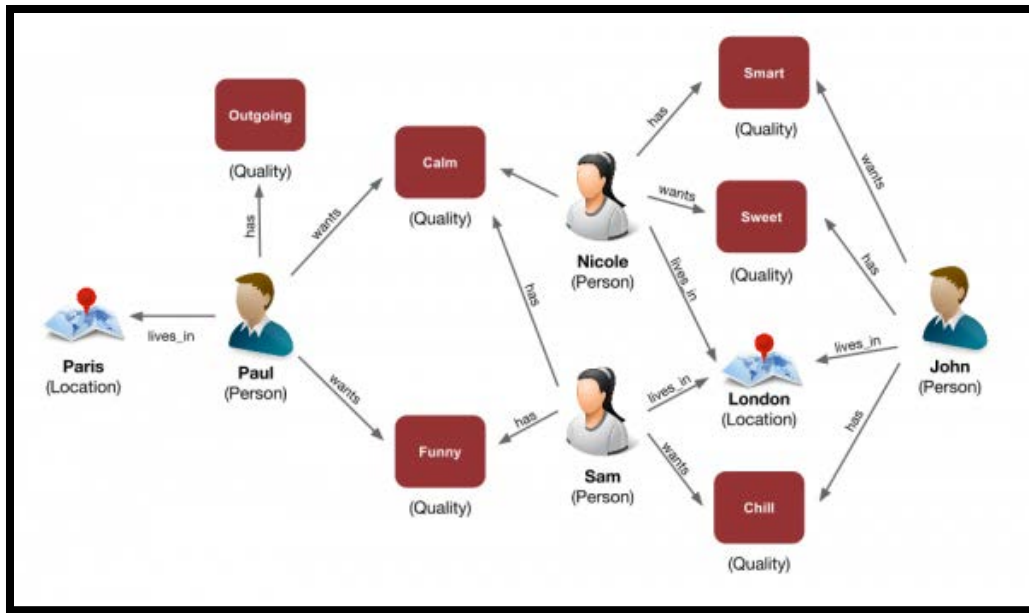
60. Collaborative filtering systems, such as the system taught in the '282 patent were directed to solving a problem unique to the internet using uniquely computer based technologies.

Computers and the web allow us to advance beyond simple word-of-mouth. Instead of limiting ourselves to tens or hundreds of individuals the Internet allows us to consider the opinions of thousands. The speed of computers allows us to process these opinions in real time and determine not only what a much larger community thinks of an item, but also develop a truly personalized view of that item using the opinions most appropriate for a given user or group of users.

J. Ben Schafer, Dan Frankowski, Jon Herlocker & Shilad Sen, *Collaborative Filtering Recommender Systems*, in *THE ADAPTIVE WEB: METHODS AND STRATEGIES OF WEB PERSONALIZATION* 292 (Peter Brusilovsky *et al.* eds., 2007).

61. On information and belief, matching systems look for common ratings between users.

⁴² Nicholas Bashour, *The Big Data Blog, Part II: Daniela Witten*, AAAS NEWS, March 17, 2014, <http://www.aaas.org/news/big-data-blog-part-ii-daniela-witten>.



Looking for a Perfect-Match-Why-Not-Try-Big-Data-Analysis-This-Time, DEZYRE BLOG, April 15, 2015, <http://www.dezyre.com/article/looking-for-a-perfect-match-why-not-try-big-data-analysis-this-time/95>.

62. On information, belief, contemporaneous to, and following Mr. Robinson's conception of the inventions disclosed in the '282 patent, academics, and businesses headquartered in Texas actively entered the field of collaborative filtering. Computer researchers at the University of Texas at Austin founded the Intelligent Data Exploration and Analysis Laboratory and the Machine Learning Research Group. The University of Texas at Dallas founded the Institute of Data Analytics, a center for research on data analysis, which collaborates with private industry. Baylor University in Waco, Texas is the home of the Electronic Commerce Center, which focuses on integrating technology and electronic data with e-commerce.

63. Texas based companies incorporated collaborative filtering technologies into numerous products and many of these same companies cited the '282 patent in their own patents. Texas based businesses that developed products incorporating collaborative filtering included: VideosDotCom, Inc. of McKinney, Texas; i2 Technologies US, Inc. ("i2") of Dallas, Texas; Vignette Corporation of Austin, Texas; Texas Shopper Network, Inc. of Houston, Texas; Arrowsmith Technologies, Inc. of Austin, Texas; and HP Enterprise Services, LLC of Plano, Texas. The '282 patent is cited by at least 60 patents that were either initially assigned to or are

currently assigned to entities headquartered in Texas. Companies citing the '282 patent in their patents include i2 Technologies, Vignette Corporation, AT&T, Hewlett-Packard Development Company, and Blockbuster LLC.

64. Developers of Match's infringing algorithm were drawn from Texas based i2:

After becoming executive vice-president and general manager of Match's North American operations in 2008, Ginsberg initially looked to her old employer, i2, for assistance. "I brought over a bunch of people who I thought could help solve one of the most difficult problems out there, which is how to model human attraction," she says. "You may see people in your daily matches that are a little bit outside of your profile preferences. But our experience in matching people tells us there might be something you like about them."⁴³

MR. ROBINSON'S INVENTION

65. Executives at leading technology companies have described the value of accurate product and content recommendations as critical, lasting, and prominent. Jamie Brighton, Global Alliance Manager at Adobe, stated accurate recommendation techniques were "a light switch for innovators and marketers alike, as well as a warning. A warning that personalization was rapidly becoming the ultimate avenue for creating lasting partnerships with a digital consumer base, and that ignoring this technology simply wouldn't be an option forever."⁴⁴

66. Match.com's financial statements further, evidence the value of providing accurate recommendations to its members.

The key is that once people have embraced the idea of meeting online, they become increasingly willing to pay for value differentiation. Through features like events and games, Match.com is becoming the clear gold standard of online dating. Those people who want the most features and functionalities, and who want to be in the higher income bracket and more serious community, are therefore, looking to Match. Accordingly, as the base of the

⁴³ <http://www.match.com/dailymatches/?lid=1067#/Today>.

⁴⁴ Jamie Brighton, *Changes in Personalization and What's Coming Next*, ADOBE DIGITAL MARKETING BLOG, October 21, 2014, <http://blogs.adobe.com/digitalmarketing/personalization/personalization-past-present-future/>.

category pyramid broadens, there are more and more people migrating up to the top, a space increasingly occupied by Match.com.⁴⁵

67. Match.com uses its data on matching to promote its service by incorporating the Pearson correlation coefficient and adding to that coefficient other infringing values.

Interpreting Romance

The results from the survey were crunched into a Pearson's r test. This is a statistical algorithm which shows a result's significance as a score between minus one and one. The nearer the result to one, the more 'true' it is, the nearer to minus one, the more 'false'.

So below we see that the 'truest' statement is "I believe falling in love means being with someone who helps make me a better person", while the 'least true' is "It's important to me that someone I form a long term relationship with is intelligent".

All the results from the survey are shown here, with their 'r' score. This report will refer back to them regularly.

MONICA WHITTY, TOM BUCHANAN & ANGUS WATSON, THE LOVEGEIST REPORT 9 (2009) (This is a report from Match.com).

68. Personalized product and content recommendations that utilize the capabilities of the internet and advances in processing power are of significant value to corporations ranging from Baynote to IBM.

Personalized product recommendations work for a simple reason—a majority of people like them. Study after study has confirmed the value of personalized product recommendations, as well as personalized email, in increasing sales and average order value. Given the proven payback, many online merchants have recommendations technology prominently on their radar screens.⁴⁶

Highly relevant product recommendations lead to increased revenue. Providing relevant product recommendations not only offers a valued service, but also enables the discovery of products visitors might not know are offered.⁴⁷

⁴⁵<http://seekingalpha.com/article/1162931-iac-interactive-ceo-discusses-q4-2012-results-earnings-call-transcript>

⁴⁶ *IBM Software Thought Leadership White Paper: Building Lift and Loyalty with Personalized Product Recommendations* 4 (2012), available at <http://www-01.ibm.com/common/ssi/cgi-bin/ssialias?infotype=SA&subtype=WH&htmlfid=ZZW03062USEN>.

⁴⁷ *IBM Software Data Sheet, IBM Product Recommendations* 1 (2012), available at <http://public.dhe.ibm.com/common/ssi/ecm/zz/en/zzd03046usen/ZZD03046USEN.PDF>.

69. Numerous companies have confirmed the value of providing accurate recommendations. “By showing the visitor the content they are looking for, you increase conversion rates and reduce bounce rates.”⁴⁸ Companies such as HP, RichRelevance, and Adobe confirm the importance of collaborative filtering technologies to generating accurate recommendations.

With these concerns in mind, RichRelevance based the enRICH platform on multiple recommendation strategies, ranging from simple categorical top sellers, to collaborative filtering algorithms After deploying the enRICH platform, retail customers report improvements across a range of KPIs, including increased conversion, revenue, and repeat visits.⁴⁹

In its simplest form, collaborative filtering really works when data from multiple sources comes together and is sorted into categories. *It is a must these days* for any e-commerce site striving to deliver a basic level of website personalization.⁵⁰

Personalized services are becoming increasingly indispensable on the Web, ranging from providing search results to product recommendation. Examples of such systems include recommending products at Amazon.com, DVDs at Netflix, News by Google etc. The central technique used in these systems is collaborative filtering (CF) which aims at predicting the preference of items for a particular user based on the items previously rated by all users.⁵¹

The truth is indisputable—optimization increases conversion, so every digital property needs optimization. This singular truth is transforming the practice of marketing. Now, marketers must tap into the constant stream of web activity and customer data to gain insight into what visitors and customers want to see and experience. They must immediately act on that insight and

⁴⁸ *Cognitor: Content Guidance And Recommendations 2*, COGNITOR WEBSITE, April 15, 2015, <http://www.cognitor.com/brochures/enterprise.pdf>

⁴⁹ *Rich Relevance, Speak <geek> [sic] Technical Brief 6* (2009), available at http://www.richrelevance.com/wp-content/uploads/2011/01/Speak-Geek2_EnsembleLearning_RichRelevance.pdf.

⁵⁰ Dan Darnell, *Collaborative Filtering and Its Importance to Personalized Recommendations in eCommerce*, BAYNOTE BLOG, April 18, 2013, <http://www.baynote.com/2013/04/how-collaborative-filtering-impacts-product-recommendations/> (emphasis added).

⁵¹ Rong Pang et al., *One-Class Collaborative Filtering*, in IEEE INTERNATIONAL CONFERENCE ON DATA MINING (ICDM 2008) 502—11 (2008) (Mr. Pang at the time was employed by Hewlett-Packard.).

deliver highly relevant, personalized content throughout the customer life cycle.⁵²

Dynamic, relevant content is proven to increase engagement and conversions by as much as 6 times when compared to static content.⁵³

U.S. PATENT NO. 5,885,282

70. Fellowship Filtering is the owner by assignment of the '282 patent. The '282 patent is entitled "Automated Collaborative Filtering System." The '282 patent issued on March 16, 1999, based on a patent application filed on April 9, 1998, and claims priority to a provisional application filed on April 30, 1996. A true and correct copy of the '282 patent is attached as Exhibit A.

71. The claims in the '282 patent are directed at a unique computing solution that addresses a problem particular to computer networks – the recommendation of items or content based on prior user actions.

72. Matching user profiles using a recommendation engine is something that is unique to a computer and has no analog in a mental process. As described by Emily Gould in her article about Match.com in the MIT Technological Review:

The trick behind successfully matching people and products—or people and other people, or people and other people who've packaged themselves into something like products by means of 'profiles'—is math. ***'You and I don't imagine four-dimensional spaces, but mathematics and computers can.'*** says David Jacobs, a vice president at the blogging-platform company SixApart, who's worked with similar technology in designing social-media sites. "Each additional attribute considered creates an extra dimension in the 'space' with which Match.com is looking for matches. The algorithm creates a virtual graph which approximates hundreds or thousands of axes."⁵⁴

⁵² *Adobe Target Premium Overview 1* (2014), available at <http://www.adobe.com/content/dam/Adobe/en/solutions/testing-targeting/pdfs/target-premium-overview-ue.pdf>.

⁵³ *BaynoteOne Product Recommendations 1* (2014), available at <http://www.baynote.com/wp-content/uploads/2012/04/BaynoteONE-Solution-Brief-Personalized-Product-Recommendations.pdf>.

⁵⁴ Emily Gould, *True Match*, MIT Technological Review, December 21, 2009 (emphasis added).

73. Recommending content (*e.g.*, user profiles) over a computer network presented new and extraordinary issues over the techniques and systems known in the art at the time. Prior art recommendation systems had a number of drawbacks. Such systems “fail to take into account the probability that a random user will provide a given rating. Thus, information showing unusual similarity in preferences for particular users is not utilized.” ‘282 patent, cols. 1:67-2:4.

74. The recommendation technologies claimed in the ‘282 patent were aimed at solving problems specific to the internet. “The catalyst for the evolution of personalization has been competition though, a product of the Internet’s explosive growth. This growth provided consumers with so many options for e-commerce that it created a market in desperate need of a process by which consumers could develop a personal connection with a brand or digital storefront in a sea of rapidly evolving competitors.”⁵⁵

75. The technology “[c]ollaborative filtering is a relatively young algorithmic approach” and thus was not a convention business practice.⁵⁶

76. One or more claims in the ‘282 patent recite a “similarity calculation.” This element of the ‘282 patent is one of the “inventive concepts” of the ‘282 patent. The use of a similarity calculation is an “inventive concept” allowing computer servers configured to operate websites to more efficiently and accurately recommend content and products to website users.

77. The ‘282 patent does not preempt every way of “providing recommendations using a computer system,” as systems for doing so existed before this invention, and systems exist now that allow website operators to provide recommendations without infringing the claims of the ‘282 patent.

78. The ‘282 patent claims do not preempt the field or preclude the use of other effective recommendation technologies. The ‘282 patent claims include inventive elements such

⁵⁵ Jamie Brighton, *Changes in Personalization and What’s Coming Next*, ADOBE DIGITAL MARKETING BLOG, October 21, 2014, <http://blogs.adobe.com/digitalmarketing/personalization/personalization-past-present-future/>.

⁵⁶ Yehuda Koren, *Tutorial on Recent Progress in Collaborative Filtering*, in PROCEEDINGS OF THE 2008 ACM CONFERENCE ON RECOMMENDER SYSTEMS (RECSYS '08) 333-334 (2008).

as the use of probability calculations, randomized transformed ratings data, and/or similarity values to generate preference data over a computer network. The elements in the '282 claims greatly limit the breadth of the '282 patent's claims. These limitations are not necessary or obvious tools for achieving the generation of user preference data and/or recommendations, and they ensure that the claims do not preempt the field of recommendation systems and/or collaborative filtering.

79. Other techniques for collaborative filtering that are not included within the scope of the '282 patent's claims include, but are not limited to, the prior art discussed in the '282 patent:

- U.S. Patent No. 4,870,579 to Hey teaches providing recommendations to a user based on a user selected from a group of users, the reactions of the selected user to items sampled by one or more users in the group but not sampled by the selected user.
- U.S. Patent No. 4,996,642 to Hey teaches providing recommendations to a user based on other items previously sampled by that user and on the availability of the item. Further, the recommendations were represented by a scalar rating for each item.
- U.S. Patent No. 5,452,410 to Magidson teaches apparatus and methods for achieving statistical analysis of categorical and continuous outcomes and for displaying the results of such analyses.
- Upendra Shardanand, "Social Information Filtering for Music Recommendation" Sep. 1994, pp. 1-93, Massachusetts Institute of Technology, Thesis. This system attempted to provide recommendations to a user based on ratings for items provided by the user as compared with other users.

80. The '282 patent claims do not preempt the field of recommendation systems. Technologies falling outside the scope of the '282 patent may include, but are not limited to, the following: (1) filtering relying solely on content-based techniques, (2) collaborative filtering using only a standard *Pearson r* correlation coefficient, (3) collaborative filtering relying on the Mean Squared Difference, and (4) community-based recommendation systems.

81. In contrast to the '282 patent, the patents at issue in *I/P Engine Inc. v. AOL Inc.*, claimed all instances of recommendation systems where content and collaborative filtering was

used. Judge Mayer, in his Federal Circuit concurring opinion wrote “the scope of the claimed invention is staggering, potentially covering a significant portion of all online advertising.” *I/P Engine, Inc. v. AOL Inc.*, 576 F. App’x 982, 995 (Fed. Cir. 2014). Further, despite the asserted patents (U.S. Patent Nos. 6,314,420 and 6,775,664 (“I/P Engine Patents”)) claiming a priority date of 1998 (*Id.* at 997) and a specification 50% shorter than that of the ‘282 patent, the I/P Engine Patents’ broad claims were upheld by the Patent and Trademark Office in two reexamination proceedings, by a jury following a 12 day trial, and by United States District Judge Raymond Alvin Jackson following significant post-trial briefing. In contrast, the provisional application to which the ‘282 patent claims priority precedes the I/P Engine Patents’ priority date by two years and contains significantly narrower claims.

82. The ‘282 claims are not directed to any “method of organizing human activity,” “fundamental economic practice long prevalent in our system of commerce,” nor “a building block of the modern economy.” Instead, the ‘282 patent’s claims are limited to the realm of systems utilized in “calculating similarity values” and “recommending products and content” over a “computer network.”

83. The ‘282 patent’s claims are not directed at the broad concept or idea of “recommending items.” Instead, the claims are directed to particular, narrow methods and systems for “providing recommendations by transforming user data,” using technologies unique to the internet age. The inventive concept in the ‘282 claims is a technological one rather than an entrepreneurial one – the development of systems and methods used to calculate content and/or product recommendations that are statistically significant, thus improving the accuracy of the content and/or product recommendations.

84. The ‘282 patent does not take a well-known or established business method or process and “apply it to a general purpose computer.” Instead, the specific system and processes described in the ‘282 patent have no direct corollary to a business process that predates the advent of the internet.

85. The '282 patent's claims are directed toward a solution rooted in computer technology and uses technology unique to computers and networks to overcome a problem specifically arising in the realm of making product and content recommendations over a computer network. For example, the '282 patent's claims are directed toward generating recommendations using data collected in a database from users over the internet — a result that overrides the routine and conventional sequence for providing recommendations known in the art at the time the inventions disclosed in the '282 patent were conceived.

86. The '282 patent's claims are not directed at a mere mathematical relationship or formula as the '282 patent's claims teach specific systems and methods for providing recommendations of content and products over a computer network using both data from prior users of a website as well as information created by the systems and methods described in the '282 patent's claims.

87. The '282 patent's claims cannot be performed by a human, in mind, or by pen and paper. The claims as a whole are directed to generating user preference data using a connection to the internet to gather data from users, a database to store user data, and a computer processor to conduct complex statistical calculations. These limitations establish that the '282 patent's claims are not an abstract idea, because they cannot be performed by a human, in the human mind, or by pen and paper.

88. Further, the '282 patent disclosure requires a computer to generate content and/or product recommendations. For example, in block 90, the method disclosed in the '282 patent computes whether the similarity value is sufficient to generate preference data. The result of the steps described in the '282 patent is a computer server using processing power to conduct complex calculations over large data sets and creating new data used by the system to improve the quality of recommendations.

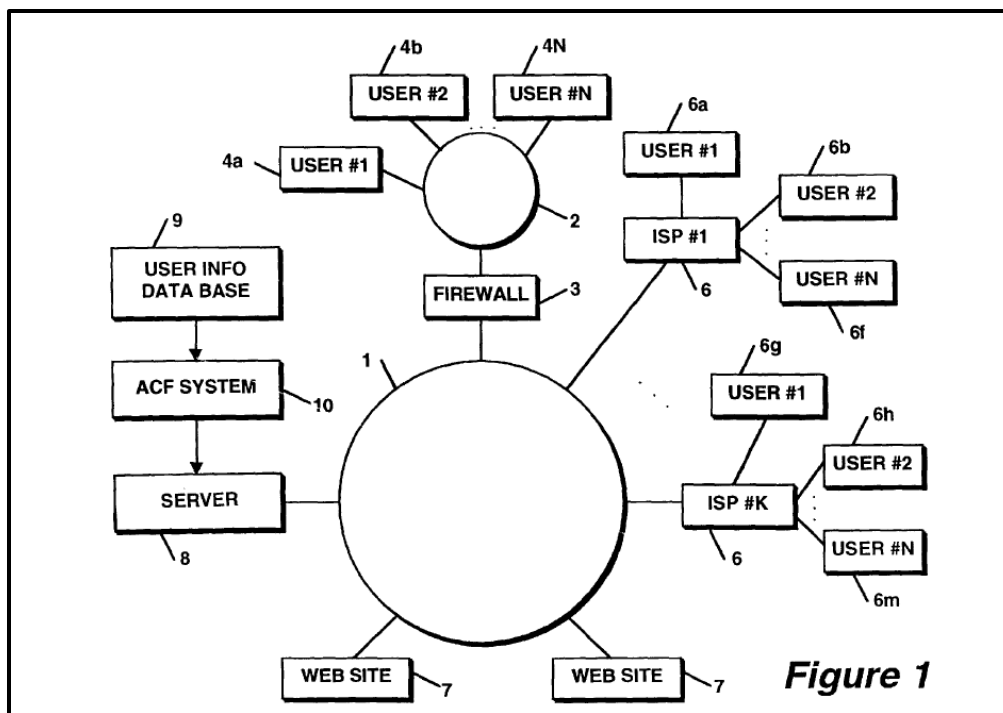


Fig. 4 (showing the implementation of the '282 patent system arose from receiving user data over the internet including through a website).⁵⁷

89. The use of probability calculations to generate user preference data is not a conventional, routine activity in which humans engage.

90. The prior art cited on the face of the '282 patent further shows the invention claimed in the '282 patent is not a patent ineligible abstract idea. The invention described in the '282 patent's claims is narrower than much of the cited prior art, and therefore, is not an abstract idea. For example, U.S. Pat. Nos. 4,996,642 to Hey describes systems and methods that attempted to provide recommendations to a user based on ratings for items provided by the user as compared with other users. The '282 patent's claims require additional limitations and thus the '282 patent's claims are directed toward significantly more than an abstract idea and the '282 patent's claims do not preempt the field of recommendation engines or even collaborative filtering.

91. The claimed invention in the '282 patent's claims is rooted in computer technology and overcame a problem specifically arising in the realm of computer networks. The '282 patent's

⁵⁷ '282 patent, fig. 1.

claims require the use of a computer system.

92. The use of a computer system plays a significant part in performing the claims of the '282 patent. For example, the use of a computer processor to generate user preference data utilizing data stored in a computer database is integral to the success of the system, and can only be performed using a computer system. The use of a computer system to process user data stored in a database does far more than improve the efficiency of the process; the computer system is integral to accomplishing the generating of recommendation data.

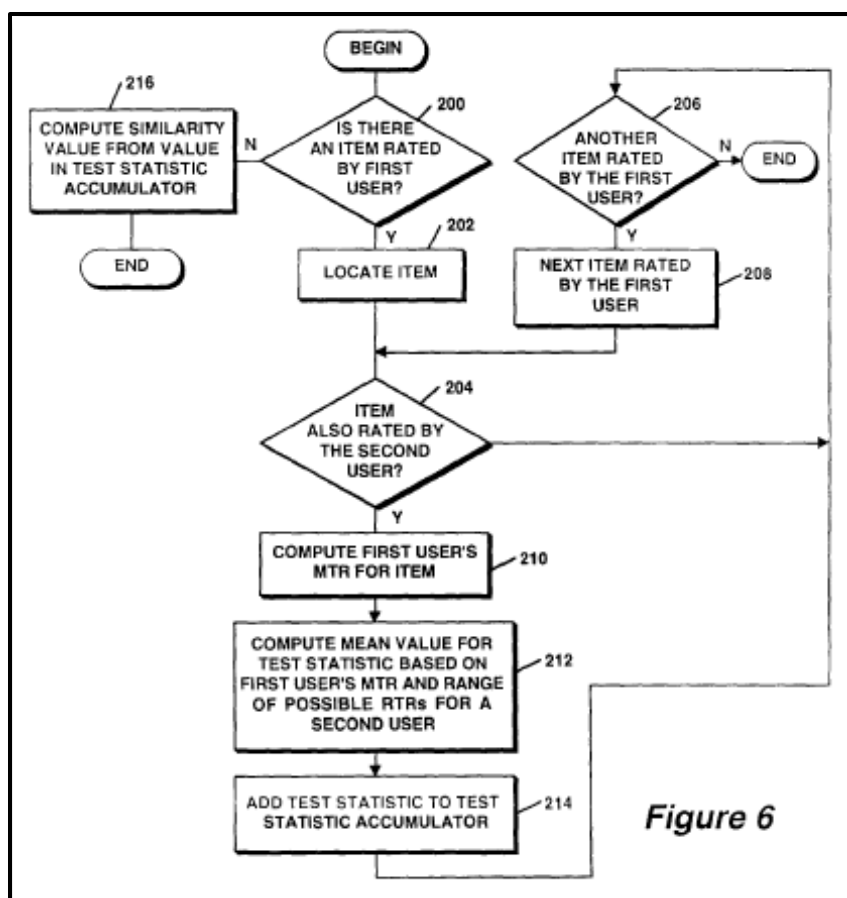


Fig. 5 (showing the generation of recommendation data).⁵⁸

93. The rising volume of content and data made possible by the internet drives the need to identify relevant products and content using filtering technologies such as that disclosed in the '282 patent.

⁵⁸ '282 patent, fig. 6.

With the development and popularity of WWW, billions of web pages are retrievable via search engines like Google. Despite it is not a perfect method to find what we want, most search engines still use keywords in documents and queries to calculate the relevance. As the only interface for users accessing tremendous web pages, queries are one of the most important factors that affects the performance of search engines. However, web pages returned from search engines are not always relevant to user search intentions. An independent survey of 40,000 web users found that after a failed search, 76% of them will try to rephrase their queries on the same search engine instead of resorting to a different one.⁵⁹

94. Dan Darnell, a Senior Director of Product Marketing at Baynote, similarly described collaborative filtering as directed to solving problems specific the internet.

In its simplest form, collaborative filtering really works when data from multiple sources comes together and is sorted into categories. It is a must these days for any e-commerce site striving to deliver a basic level of website personalization.⁶⁰

95. Academics have recognized that the development of collaborative filtering recommendation systems is directly tied to and an outgrowth of information overload problems created by and unique to the internet.

The challenge of finding the needed information from the web has led to the development of a number of recommender systems, which typically watch the user navigation behavior as a sequence of pages and suggest another set of web pages, products and other information besides the actual information. With the exponential growth of the web, the study of modeling and predicting a user's access on the web has become crucial to the researchers and portal developers.⁶¹

To overcome this so called "information overload" problem, in the mid-1990s researchers started to investigate recommender systems. A recommender system (RS) uses knowledge about your preferences (and those of others) to recommend items you are likely to enjoy. Users can offer feedback on items they are familiar with for example, and the recommender system uses the

⁵⁹ Zhiyuan Liu & Maosong Sun, *Asymmetrical Query Recommendation Method Based on Bipartite Network Resource Allocation*, in PROC. OF WWW'08 1049 (2008).

⁶⁰ Dan Darnell, *Collaborative Filtering and Its Importance to Personalized Recommendations in eCommerce*, INTELLIGENCE COLLECTED: THE BAYNOTE BLOG, April 18, 2013, <http://www.baynote.com/2013/04/how-collaborative-filtering-impacts-product-recommendations/> (Dan Darnell is a Senior Director of product marketing at Baynote).

⁶¹ Gopinath Ganapathy & P.K. Arunesh, *Feature Analysis of Recommender Techniques Employed in the Recommendation Engines*, J. COMPUT. SCI. 6(7): 748—55 (2010).

information to predict their preference for yet unseen items and subsequently recommends items with the highest predicted relevance.⁶²

96. A 2009 paper supported by the Samsung Research Fund, ties collaborative filtering technologies to solving problems unique to the internet – the generation of information using a common communications infrastructure.

The amount of information on the Web is increasing according to the growth of information and communication infrastructure. As a result, recommender systems (RSs) for personalization are required. An RS provides contents or items considering the tastes of individual users. Among the various RSs, collaborative filtering (CF) is the process of filtering for information or patterns using collaborative techniques involving multiple users.⁶³

97. Years after the Ringo system was developed (the Ringo system is referenced on the face of the ‘282 patent), the use of collaborative filtering techniques was described as “innovative” by data scientists.

Ringo also provides an innovative solution that inverts the basic CF approach; music albums are treated as ‘participants’ that can recommend users to other music album participants.⁶⁴

98. One or more of the ‘282 patent’s claims relate to a computer-implemented method to transform website user data in a particular manner – by inserting information into user data and using the code to recommend content and/or products. This insertion enables the computer system to recommend content and/or products and generate similarity values.

99. One or more of the claims in ‘282 patent go beyond manipulating, reorganizing, or collecting data by actually adding information associated with a user and using that information to generate a recommendation of a product or content over a computer network, thereby fundamentally altering ratings data associated with a user.

⁶² Joost de de Wit, *Evaluating Recommender Systems -- An Evaluation Framework to Predict User Satisfaction for Recommender Systems in an Electronic Program Guide Context* 9 (May 2008), Master's thesis, University of Twente, <http://essay.utwente.nl/59711/>.

⁶³ Hyeon-Joon Kwon et al., *Improved Memory-based Collaborative Filtering Using Entropy-based Similarity Measures*, in SYMPOSIA AND WORKSHOPS ON UBIQUITOUS, AUTOMATIC AND TRUSTED COMPUTING (WISA’09) (May 2009) (this work was supported by Samsung).

⁶⁴ Sonny Han Seng Chee et al., *Rectree: An Efficient Collaborative Filtering Method*, in 3RD INT. CONF. ON DATA WAREHOUSING AND KNOWLEDGE DISCOVERY (DAWAK 2001) 141 (2001).

100. One or more of the claims in the ‘282 patent require ‘transforming’ data to generate “randomized ratings data” by “adding a uniformly distributed random number to the ratings data provided by the plurality of users.” Therefore, the claims in the ‘282 patent alter data associated with a user and go beyond the mere collection, organization, manipulation, or reorganization of data. The claimed invention goes beyond manipulating, reorganizing, or collecting data by actually adding a new subset of numbers or characters to the data, thereby fundamentally altering the original information.

101. One or more of the claims in the ‘282 patent requires ‘transforming’ one thing (‘ratings data’) ‘to create’ something else (‘randomized ratings data’) and further recites a particular manner of transforming (‘by adding a uniformly distributed random number to the ratings data provided by the plurality of users’). Therefore, claimed features in the ‘282 patent “fundamentally alter” data or “transform” the data.

102. Nor does collaborative filtering merely “support an existing activity.” Professor Loren G. Terveen of the University of Minnesota⁶⁵ and Will Hill of AT&T Labs described collaborative filtering as improving the functioning of computer-based recommendation systems by updating a computer database and transforming data.

Collaborative filtering does not simply support an existing activity. Instead, it requires users to engage in a somewhat novel computationally mediated activity. This activity has a single combined role, the recommendation seeker / preference provider. We describe this as *role uniformity*. Everyone does the same work (rates items) and receives the same benefits (gets rated items as recommendations). We might describe rating items as an “ante” – to get recommendations, you have to give them. ***This leads naturally to growth in the system’s knowledge (and thus to better recommendations), since using the database leads to the database being updated.***⁶⁶

103. IBM white papers describe computer-implemented recommendation systems as transforming the data of a previously static website – generating preference information that

⁶⁵ Loren Terveen was a principal member of the technical staff at AT&T Labs.

⁶⁶ Loren Terveen & Will Hill, *Beyond Recommender Systems: Helping People Help Each Other*, in *HCI IN THE NEW MILLENNIUM 13* (Jack Carroll, ed., Addison-Wesley, 2001) (emphasis added).

previously did not exist. Recommendation systems like the inventions disclosed in the ‘282 patent utilize a system for modifying data that has a concrete effect in the field of website and internet usage.

Recommendation systems changed the way inanimate websites communicate with their users. Rather than providing a static experience in which users search for and potentially buy products, recommender systems increase interaction to provide a richer experience. Recommender systems identify recommendations autonomously for individual users based on past purchases and searches, and on other users’ behavior.⁶⁷

104. Further, the ‘282 patent claims improve upon the functioning of a computer system. “Performance improves as the number of entries in the database increases.” ‘282 patent, col. 23:29-30. The claims and specification of the ‘282 patent also describe the use of “cluster analysis,” which improves the functioning of a computer handling the making of recommendations. “As a means for more efficient processing, cluster analysis can be used.” *Id.* 20:36-37.

105. One or more of the claims of the ‘282 patent recite a means or step for performing a specified function. The corresponding structure(s) in the ‘282 patent specification and appendix include computer code that improves the functioning of a computer by being more “RAM-efficient.” ‘282 patent, cols. 33:1-39:60.

106. Academic research has confirmed that using ratings improves the functioning of a computer conducting collaborative filtering.

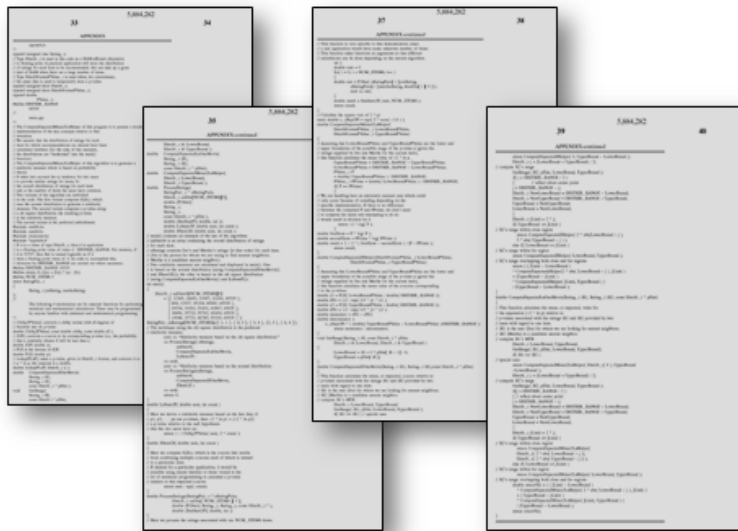
One way to make recommendations of regular, but interesting items, more likely consists in assigning weights to items that devalue ratings given to popular items and appreciate ratings given to regular items. . . . The results of the first set of experiments are shown in Fig. 5. The precision@n values show that when using the weighting functions, the resulting precision@n is slightly higher for low values of n than for the unweighted approach for the Moviepilot dataset (n=5). For the Movielens dataset, the unweighted approach seems to have the upper hand. However, as n increases, the improvement decreases and at a relatively large n (n=50) the weighted

⁶⁷ M. Tim Jones, *IBM Developer Works: Recommender Systems, Part 1: Introduction to Approaches and Algorithms 2* (December 12, 2013), available at <http://www.ibm.com/developerworks/library/os-recommender1/>.

approaches perform worse than the non weighted one. In the Movielens case, the unweighted approach always outperforms the weighted ones, irrelevant of n's value. This seems to be in agreement with the findings by Herlocker et al. Results for the Euclidean and cosine measures showed very similar trends and have thus been omitted.⁶⁸

107. One or more of the claims in the '282 patent recite means-plus-function claim limitations governed by 35 U.S.C. § 112, ¶ 6.

108. The '282 patent discloses computer algorithms in an appendix to the specification. In addition to the structures and algorithms disclosed throughout the specification, these algorithms correspond to means-plus-function claims in the '282 patent.



'282 patent, cols. 39-40 (computer algorithms disclosed in an appendix to the specification).

109. Means-plus-function claims such as those included in the '282 patent are inherently not abstract ideas. Stanford Law Professor Mark Lemley described his analysis:

If the patent is interpreted as a means-plus-function claim, it will be limited to the particular software implementation the patentee actually built or

⁶⁸ Alan Said et al., *Analyzing Weighting Schemes in Collaborative Filtering: Cold Start, Post Cold Start and Power Users*, in PROCEEDINGS OF THE 27TH ANNUAL ACM SYMPOSIUM ON APPLIED COMPUTING (SAC'12) 2035, 2039 (2012).

described. Such a narrow, specific claim should not be an unpatentable “abstract idea.”⁶⁹

But if you wrote it [an algorithm] and you included it in the step I think you could survive the *Aristocrat* line of cases and then the question will become well what does equivalent thereof mean? Can I show you my algorithm and say, yeah, this is the approach I took but these other four approaches are equivalent and a computer programmer would look at those and say I don't care which one of those you use. ***And if you can do that then you might end up with a claim that's still pretty broad even though it's in means plus function format.***⁷⁰

COUNT I
INFRINGEMENT OF U.S. PATENT NO. 5,885,282

110. Fellowship Filtering references and incorporates by reference paragraphs 1 through 109 of this Complaint.

111. On, information and belief, the user of aggregate ratings data is incorporated in Match's recommendation system. Barry Diller, the Chairman of IAC was described as understanding the relationship between IAC, its subsidiaries and executing accurate matching thus:

The idea of going into online dating came out of a meeting in which Diller and Pleasants were talking about what was wrong with Citysearch - a static information repository, not enough people going to it, no way for them to connect bingo! Such discussions can be chancy: Just ask the TV exec who had a section of his wall framed after Diller hurled a videotape into it . People who work for Diller know to be thoroughly prepared, able to defend their positions, and, when all else fails, ready to duck. When things go well, however, Diller's method can be quite rewarding. "He's very Socratic," says Pleasants, "very inquisitive. He likes to poke at things. People say he's picking up on random details, like the color of a Web page, but in fact he's scratching. He's trying to find the essence of things all the time."⁷¹

⁶⁹ Mark A. Lemley, *Software Patents and the Return of Functional Claiming*, 2013 WISC. L. REV. 905 (2013).

⁷⁰ Eugene Quinn, *The Ramifications of Alice: A Conversation with Mark Lemley*, IPWATCHDOG BLOG, September 4, 2014, <http://www.ipwatchdog.com/2014/09/04/the-ramifications-of-alice-a-conversation-with-mark-lemley/id=51023/> (emphasis added).

⁷¹ http://archive.wired.com/wired/archive/11.04/diller_pr.html

112. On information and belief, Match segment relies upon issued patents and patent-pending proprietary technologies relating to matching process systems and related features, products and services.

113. On information and belief the following patents have been assigned to Match.com U.S. Patent Nos. 8,195,668 & 7,613,706.

114. The preceding patents describe one or more features implemented on the Match.com website.

115. On information and belief, Defendant has claimed that the recommendation technology in Match.com relies upon patent-pending proprietary technologies relating to matching process systems and related features, products and services.

116. On information and belief, Match.com's matching functionality is named at least "Synapse."

117. On information and belief, Synapse has functionality for calculating a recommended matching user using "triangulation" which factors in the ratings of similar uses.

118. Chris Haltiner, Match.com's Director of Development, described his work on the recommendation functionality of Match.com as:

Proposed, designed, and performed initial implementation of highly successful collaborative filtering algorithm that was 2.5 times more likely to produce a matching candidate profile. Free members engaged by the collaborative filtering match were 154% more likely to upgrade to a paid subscription.⁷²

119. On information and belief, Match.com generates scores based on ratings. "Match.com provides its users with a questionnaire of 15 to 100 questions and then points are allocated to the user based on the pre-defined parameters in the system such as religion, income, education, hair color, age, etc. The users are then matched to people who have similar points. Match.com uses advanced big data analytics to find out any discrepancies in what people actually do on the website and what they actually confess. If any discrepancies are found,

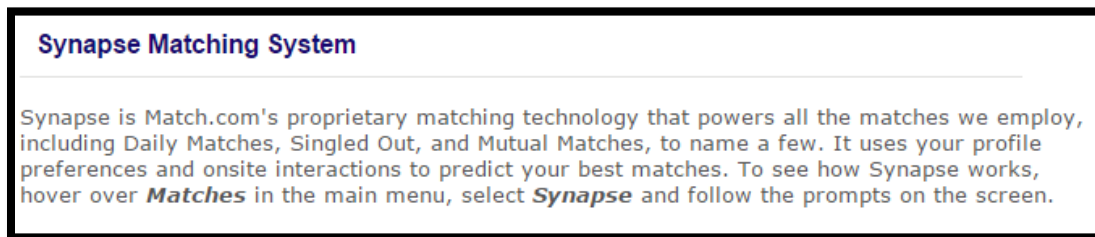
⁷² *LinkedIn Profile Of Chris Haltiner*, LINKEDIN WEBSITE, May 20, 2015, <https://www.linkedin.com/in/haltiner>.

the match making algorithms adjust the compatible match results based on this behavior.”⁷³

120. On information and belief, Match.com’s infringing systems and methods calculate a shared trait tolerance.

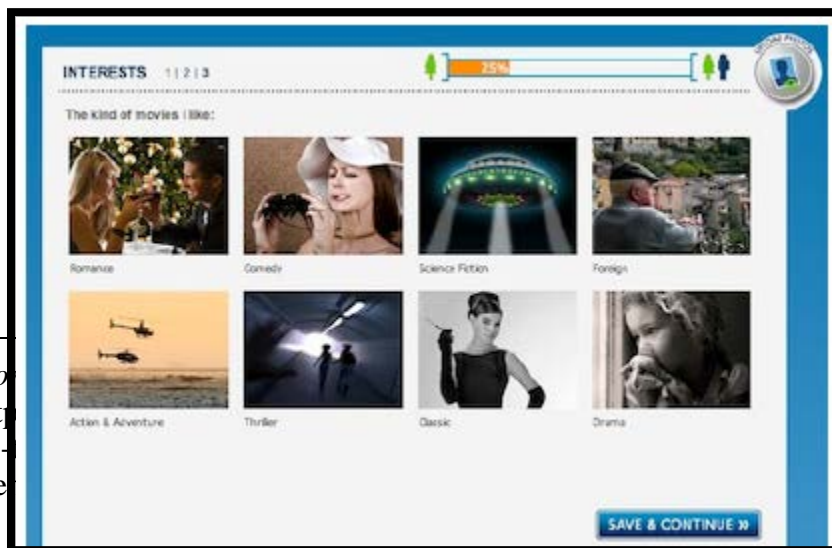
An engineer named Amarnath Thombre oversees Match's base algorithm, which takes into account fifteen hundred variables: whether you smoke, whether you can go out with a smoker, whether your behavior says otherwise. These are compared with the variables of others, creating a series of so-called "interactions." Each interaction has a score: a numerical expression of shared trait-tolerance. The closest analogy, Thombre told me, is to Netflix, which uses a similar process to suggest movies you might like—"except that the movie doesn't have to like you back."⁷⁴

121. Match.com uses Synapse to conduct at least in part of its functionality where users of Match.com are recommended to one another.



<http://www.match.com/help/help.aspx>

122. Match.com gathers ratings data including by having users rate movies as shown in the below screenshot.



⁷³ Looking for
15, 2015, <http://www.ezyre.com/blog/2015/04/15/looking-for-big-data-analysis-this-way/>

⁷⁴ Paumgartner
2011).

eZyre Blog, April
-try-big-data-

ORKER (July 4,

DAWN RENEE SHEPHERD, *TECHNOLOGIES OF MATCHING: ROMANTIC MATCHMAKING, POWER, AND ALGORITHMIC CULTURE* 121 (2012) (screenshot showing the Match.com interface where a member inputs their movie ratings).

123. On information and belief, Match.com calculates similarity values by taking into account aggregated data from all of its users.⁷⁵

124. On information and belief, Match.com's infringing products and services create a singular value decomposition.⁷⁶

125. On information and belief, Match.com users receive a *Top Matches* e-mail message that includes username, photograph, total number of candidate's photographs available, age and location, and a link to view the profile page for up to twelve matches.

126. On information and belief, the *Top Matches* e-mail message sent by match.com contains recommendations of user profiles that are divided into two categories: *Mutual Matches* and *Members We Selected for You*. The former is made up of candidates who fit the user's preferences and whose preferences the candidate fits; the latter includes additional, matches chosen by the site.

127. On information and belief, for an extra fee, Match.com premium subscribers are included in the initial message sent to new users who fit within their matching preferences, regardless of whether the premium subscriber meets the preferences of the new user.

128. On information and belief, Match.com gathers ratings data by presenting users with photo arrays (*Like at First Sight*) in which users are shown a number of images (*e.g.*, containing

⁷⁵ DAWN RENEE SHEPHERD, *TECHNOLOGIES OF MATCHING: ROMANTIC MATCHMAKING, POWER, AND ALGORITHMIC CULTURE* 121 (2012) (finding that Match.com makes recommendations based on aggregating user data and describing the algorithm as similar to Netflix where "The site then uses its Cinematch system for matching users with movies, television shows, etc. that they might enjoy by comparing their rankings to aggregated data from all of its users.).

⁷⁶ Emily Gould, *True Match*, MIT TECHNOLOGICAL REVIEW, December 21, 2009. ("More likely, the programmers use an algebraic tool called singular-value decomposition, or SVD, which has many applications in statistics. Match.com's computers are ignorant of the qualities that humans are thinking of when they use terms like *religion* or *body type*. Instead, they recognize patterns: SVD assigns values to the likelihood that two users with various combinations of stated preferences and characteristics will think each other a good match.").

celebrities, automobiles, dating scenarios) and asked to choose which in the group is most attractive.

129. On information and belief, match.com generates recommendations based on the data it gathers from users in Match.com's *Like at First Sight* feature.

130. On information and belief, Match.com includes a *Daily 5* page linked from the main navigation banner. On this page, users are presented with five potential matches and asked, "Does he [or she] spark your interest?" They then respond to the question by clicking a button (yes, no, or maybe) and are presented the next match. The banner of the *Daily 5* page proclaims, "The more you rate, the better matches you get."

131. On information and belief, Match.com generates recommendations based on the data it gathers from users who provide ratings data for the *Daily 5* feature.

132. On information and belief, Match.com uses an aggregated system of using ratings to determine which user profiles to recommend to users.

133. On information and belief, Match's initial account setup phase takes users through a series of screens that are divided into eight categories: *Basics*, *Appearance*, *Interests*, *Lifestyle*, *Background & Values*, *Get to Know Me*, *About My Date*, and *In My Own Words*.

134. On information and belief, user data are converted to numerical values and stored in a database that is searchable by other users and used by Match.com to identify potential matches.

135. Match makes, uses, sells, and/or offers for sale in the United States products and/or services for generating profile and/or content recommendations. On information and belief, Match's recommendation products and/or services provide or support generating product and/or content recommendations based on enhanced collaborative filtering technologies to drive more successful and relevant recommendations (*e.g.*, matches).

136. Match operates the internet site <http://www.match.com> ("Match Website").

137. Match operates the internet site <http://www.chemistry.com> ("Chemistry Website").

138. Match has created and offers to its customers the applications and services: Match Website and Chemistry.com (collectively, "Match Products").

139. On information and belief, one or more of the Match Products include collaborative filtering technology.

140. On information and belief, one or more of the Match Products enable the calculation of recommendations based on affinity, so People who bought this bought that or People who viewed this bought that, or People who viewed this viewed that are recommended relevant content or products.

141. On information and belief, Match Products are available to businesses and individuals throughout the United States.

142. On information and belief, Match Products are provided to businesses and individuals located in the Eastern District of Texas.⁷⁷

143. On Information and belief, match customizes application software for products that are incorporated in webpages offered to users in the Eastern District of Texas.

144. On information and belief, one or more of the Match services gather and calculate user recommendations based on “explicit ratings.”

145. On information and belief, Match computes the efficiency of a recommendation technique using one or more of the following calculations: K-means, near neighbor, etc.

146. On information and belief, one or more of the Match Products enables the collection of ratings data using an “information-gathering module.”

147. On information and belief, it is advantageous for one or more of the Match Products to generate recommendations based on algorithms that account for the overall ratings and/or data distribution of a piece of content and/or product.

⁷⁷ *Texas Dating, Singles and Personals*, MATCH.COM WEBSITE, May 2015, <http://www.match.com/online-dating/texas/singles.html>; *see also McKinney Dating, TX Singles & Personals*, MATCH.COM WEBSITE, May 2015, <http://www.match.com/online-dating/texas/mckinney/singles.html> (“It’s not easy being single in Mckinney - but it’s a cinch meeting single men and single women on Match.com.”); *Singles in Garland, TX | Garland, Texas Dating | Match.com*, MATCH.COM WEBSITE, May 2015, <http://www.match.com/online-dating/texas/garland/singles.html> (“Browse the profiles of other singles in Garland and meet new people today!”).

148. On information and belief, at least one of the Match Products generates a contextual score as part of creating a recommendation of a product and/or content.

149. On information and belief, Match Products contain functionality to recommend content and/or products based on “affinity.”

150. On information and belief, one or more of the Match Products conduct “affinity” scoring.

151. On information and belief, “affinity” scoring in one or more of the Match Products use “out-of-the-box” functionality that includes algorithms that use averaging to improve predictive accuracy.

152. On information and belief, one or more of the Match Products use “k-means” to generate recommendations of products and/or content.

153. On information and belief, one or more of the Match Products enable the identification of recommended products and/or content based on linking products to users’ browsing and purchase history.

154. On information and belief, one or more of the Match Products incorporate one or more of the following technologies: (1) item-item similarity based on User Item Metric; (2) affinities based on view-view, view-bought, bought-bought similarity; or (3) similarity measure that is tested using an “interaction” score.

155. On information and belief, one or more of the Match Products enable the generation of Statistical Confidence Reports.

156. On information and belief, one or more of the Match Products uses algorithmic approaches to generate recommendations and preference data.

157. On information and belief, one or more of the Match Products transforms data associated with a user to provide product and/or content recommendations.

158. On information and belief, Match has directly infringed and continues to directly infringe the ‘282 patent by, among other things, making, using, offering for sale, and/or selling collaborative filtering products and services, including but not limited to, the Match Products,

which include infringing content and/product recommendation technologies. Such products and/or services include, by way of example and without limitation, Match.com, Chemistry.com matching systems, and the synapse algorithms, which are covered by one or more claims of the '282 patent, including but not limited to claims 19 and 25.

159. By making, using, testing, offering for sale, and/or selling collaborative filtering products and services, including but not limited to the Match Products is liable to Fellowship Filtering for directly infringing one or more claims of the '282 patent, including at least claims 19 and 25, pursuant to 35 U.S.C. § 271(a).

160. On information and belief, Match also infringes indirectly the '282 patent by active inducement under 35 U.S.C. § 271(b).

161. On information and belief, Match has had knowledge of the '282 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Match knew of the '282 patent and knew of its infringement, including by way of this lawsuit.

162. On information and belief, Match intended to induce patent infringement by third-party customers and users of the Match Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Match specifically intended and was aware that the normal and customary use of the accused products would infringe the '282 patent. Match performed the acts that constitute induced infringement, and would induce actual infringement, with the knowledge of the '282 patent and with the knowledge, or willful blindness to the probability, that the induced acts would constitute infringement. For example, Match provides the Match Products that have the capability of operating in a manner that infringe one or more of the claims of the '282 patent, including at least claims 19 and 25, and Match further provides documentation and training materials that cause customers and end users of the Match Products to utilize the products in a manner that directly infringe one or more of the claims of the '282 patent. By providing instruction and training to customers and end users on how to use the Match Products in a manner that directly infringes one or more claims of the '282 patent, including at least claims 19 and 25, Match specifically intended

to induce infringement of the '282 patent. On information and belief, Match engaged in such inducement to promote the sales of the Match Products, *e.g.*, through Match user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '282 patent. Accordingly, Match has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '282 patent, knowing that such use constitutes infringement of the '282 patent.

163. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '282 patent.

164. As a result of Match's infringement of the '282 patent, Fellowship Filtering has suffered monetary damages in an amount adequate to compensate for Match's infringement, but in no event less than a reasonable royalty for the use made of the invention by Match, together with interest and costs as fixed by the Court.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff Fellowship Filtering respectfully requests that this Court enter:

- A. A judgment in favor of Plaintiff Fellowship Filtering that Match has infringed, either literally and/or under the doctrine of equivalents, the '282 patent;
- B. An award of damages resulting from Match's acts of infringement in accordance with 35 U.S.C. § 284;
- C. A judgment and order requiring Match to provide accountings and to pay supplemental damages to Fellowship Filtering, including, without limitation, prejudgment and post-judgment interest; and
- D. Any and all other relief to which Fellowship Filtering may show itself to be entitled.

JURY TRIAL DEMANDED

Pursuant to Rule 38 of the Federal Rules of Civil Procedure, Fellowship Filtering requests a trial by jury of any issues so triable by right.

Dated: May 25, 2015

Respectfully submitted,

/s/ Elizabeth L. DeRieux
Elizabeth L. DeRieux (TX Bar No. 05770585)
D. Jeffrey Rambin (TX Bar No. 00791478)
CAPSHAW DERIEUX, LLP
114 E. Commerce Ave.
Gladewater, Texas 75647
Telephone: 903-236-9800
Facsimile: 903-236-8787
E-mail: ederieux@capshawlaw.com
E-mail: jrambin@capshawlaw.com

OF COUNSEL:

Matt Olavi (CA SB No. 265945)
Brian J. Dunne (CA SB No. 275689)
OLAVI & DUNNE LLP
816 Congress Ave., Ste. 1620
Austin, Texas 78701
Telephone: 512-717-4485
Facsimile: 512-717-4495
E-mail: molavi@olavidunne.com
E-mail: bdunne@olavidunne.com

Dorian S. Berger (CA SB No. 264424)
Daniel P. Hipskind (CA SB No. 266763)
OLAVI & DUNNE LLP
445 S. Figueroa St., Suite 3170
Los Angeles, CA 90071
Telephone: 213-516-7900
Facsimile: 213-516-7910
E-mail: dberger@olavidunne.com
E-mail: dhipskind@olavidunne.com

*Attorneys for Fellowship Filtering
Technologies LLC*