

Autonomy Technology Whitepaper, at AUT00068 (“By applying sophisticated content matching techniques to the problems of information access and distribution, Autonomy has created a set of products to automate the process of getting the right information to the right person at the right time. These products . . . enable the dynamic personalization of digital content”)

Autonomy Technology Whitepaper, at AUT00068 (“The DRE accepts a source of text as input and returns references to documents in another source of text with the highest degree of relevance”)

Autonomy Agentware User Guide, at AUT00002 (“This use of ‘fuzzy logic’ allows an Agent to suggest other ideas that are related to, but not explicitly mentioned in, the training text”)

Autonomy Agentware User Guide, at AUT00004 (“Autonomy browses the web like a person, reacting to its environment, and bringing back only the relevant pages”)

Autonomy Agentware User Guide, at AUT00117 (“In the Library Hit List, the documents are ranked in order of relevance to your query, as indicated by the length of the ‘bone’ shown beside them”)

Autonomy Agentware User Guide, at AUT00116 (“The Press Office will let you use several Agents to create a custom newspaper from articles found in a number of sources.”)

Autonomy Agentware User Guide, at AUT00116 (“When you want to read the paper that your agents have compiled for you, just click on ‘Read Paper.’ . . . Your paper is displayed on your web browser. It will have its name, date and front page of each section. Each section contains a selection of the information retrieved”)

See also

SCHUETZE at 1:29-33, 7:54-60

CULLISS at 2:39-51.

MLADENIC at 2, 12.

	<p>REFUAH at Abstract, 2:63 – 3:11; 3:47-55; 17:21-43; 18:56-65; 23:11-28.</p> <p>WASFI at 61.</p> <p>MONTEBELLO at 4.</p>
Claim 11	<p>Autonomy Technology Whitepaper, at AUT00068 (describing use of Bayesian probabilities)</p> <p>Autonomy Technology Whitepaper, at AUT00071 (describing use of Bayesian theorem)</p> <p><i>See also</i></p> <p>SCHUETZE at 21:57 – 22:16, 22:31-48, 30:58 – 31:13</p> <p>CULLISS at 2:39-51, 9:41-49, 10:1-7, 10:47-52.</p> <p>MLADENIC at 2.</p> <p>REFUAH at 17:21-43.</p>
Claim 22	<p>Autonomy Press Release, at 1 (“Autonomy Agents are persistent. They can be used again and again, in stark contrast to conventional Internet searches”)</p> <p>Autonomy Agentware User Guide, at AUT00124 (“The kennels use a combination of parallel processing and timesharing to process the searches; they run a number of agents for a period of time, and then they move on to the next block of agents”)</p> <p><i>See also</i></p>
<p>11. The method of claim 1 further comprising estimating a posterior probability $P(u d,q)$ that the document d is of interest to the user u, given a query q submitted by the user.</p>	
<p>22. The method of claim 1 wherein the monitored user interactions include a sequence of interaction times.</p>	

	<p>MLADENIC at 2. REFUAH at 5:57-58. WASFI at Abstract, 57.</p>
	<p>Claim 32</p>
<p>32. A program storage device accessible by a central computer, tangibly embodying a program of instructions executable by the central computer to perform method steps for providing automatic, personalized information services to a user u, the method steps comprising:</p>	<p>See citations for claim 1 [preamble].</p>
<p>a) transparently monitoring user interactions with data while the user is engaged in normal use of a client computer in communication with the central computer;</p>	<p>See citations for claim 1 [a].</p>
<p>b) updating user-specific data files, wherein the user-specific data files comprise the monitored user interactions with the data and a set of documents associated with the user;</p>	<p>See citations for claim 1 [b].</p>
<p>c) estimating parameters of a</p>	<p>See citations for claim 1 [c].</p>

<p>learning machine, wherein the parameters define a User Model specific to the user and wherein the parameters are estimated in part from the user-specific data files;</p>	<p>d) analyzing a document d to identify properties of the document;</p>	<p>See citations for claim 1[d].</p>
<p>e) estimating a probability $P(u d)$ that an unseen document d is of interest to the user u, wherein the probability $P(u d)$ is estimated by applying the identified properties of the document to the learning machine having the parameters defined by the User Model; and</p>	<p>f) using the estimated probability to provide automatic, personalized information services to the user</p>	<p>See citations for claim 1[f].</p>
<p>Claim 34</p>		
<p>34. The program storage device of claim 32 wherein analyzing the document d provides for the analysis of documents having multiple</p>		
<p>Autonomy Press Release, at 2 (describing Web Researcher, Press Office, Art Agent, Library, Agent World, and Agent Dating)</p> <p>Autonomy Agentware User Guide, at AUT00004 ("Autonomy creates a local copy of all the relevant documents it finds; so if the Agent has been configured to 'Retrieve Pictures,' the image link points</p>		

distinct media types.	<p>to locations on your hard drive which may not have been created yet. If you come back to the document a little later then you will be able to see all the images")</p> <p>Autonomy Agentware User Guide, at AUT00005 ("You can Skip the current document, which is especially useful for large files (such as MPEG movies)")</p> <p><i>See also</i></p> <p>SCHUETZE at 4:12-35, 5:48-58, "Summary of the Invention", 5:43 – 8:32</p> <p>CULLISS at 1:22-28, 2:19-24.</p> <p>MLADENIC at 2.</p> <p>REFUAH at 1:63 – 2:2.</p> <p>WASFI at 57, 58.</p>
'276 Patent	AGENTWARE
<p>Claim 1</p> <p>A computer-implemented method for providing personalized information services to a user, the method comprising:</p>	<p><i>See</i> citations for '040 Patent, claim 1 [preamble].</p>
<p>a) transparently monitoring user interactions with data while the user is engaged in normal use of a browser program running on the computer;</p>	<p><i>See</i> citations for '040 Patent, claim 1[a].</p> <p><i>See also</i></p> <p>MLADENIC at 2.</p>

	<p>REFUAH at 5:57-58.</p> <p>WASFI at Abstract, 57.</p>
b) analyzing the monitored data to determine documents of interest to the user;	<p>See citations for '040 Patent, claim 1[b].</p>
c) estimating parameters of a user-specific learning machine based at least in part on the documents of interest to the user;	<p>See citations for '040 Patent, claim 1[c].</p>
d) receiving a search query from the user;	<p>Autonomy Agentware User Guide, at AUT00002 ("Autonomy can be used to search for information on the World Wide Web, . . . answer questions on a subject . . .")</p> <p><i>See also</i></p> <p>SCHUEITZ at 21:57 – 22:16, 22:31-48</p> <p>CULLISS at 2:39-51.</p> <p>MLADENIC at 1, 2.</p> <p>REFUAH at 1:63 – 2:2; 3:12-24.</p> <p>MONTEBELLO at 3.</p>
e) retrieving a plurality of documents based on the search query;	<p><i>See also</i></p> <p>SCHUEITZ at 21:57 – 22:16, 22:31-48</p> <p>CULLISS at 2:39-51.</p>

	<p>MLADENIC at 1. REFUAH, 1:63 – 2:2; 3:12-24. MONTEBELLO at 3. See citations for '040 Patent, claim 1 [d, e].</p>
<p>f) for each retrieved document of said plurality of retrieved documents: identifying properties of the retrieved document, and applying the identified properties of the retrieved document to the user-specific learning machine to estimate a probability that the retrieved document is of interest to the user; and</p>	<p>See citations for '040 Patent, claim 1 [f]. Autonomy Agentware User Guide, at AUT00004 (“You can examine the relevant documents by clicking on them in the list, which switches from the Web Map to Preview. This shows the first portion of text in the document to give you an overview of the subject”) Autonomy Agentware User Guide, at AUT00117 (“Each entry in the Hit List corresponds to a document or Web page which has either been retrieved by your agent or created by you and used in the course of its training (.nnt files). If you click on a document in the Hit List, you will be able to see a preview of the first few lines.”)</p>
	<p>Claim 3</p>
<p>3. The method of claim 1,</p>	<p>See citations for '040 Patent, claim 1 [a]</p>

<p>wherein transparently monitoring user interactions with data comprises monitoring user interactions with data during multiple different modes of user interaction with network data.</p>	<p>Autonomy Press Release, at 1 ("Autonomy Agents are persistent. They can be used again and again, in stark contrast to conventional Internet searches")</p> <p><i>See also</i></p> <p>MLADENIC at 2.</p> <p>REFUAH at 5:57-58.</p> <p>WASFI at Abstract, 57.</p>
<p>Claim 5</p> <p>5. The method of claim 1, further comprising analyzing the monitored data to determine documents not of interest to the user, and wherein estimating parameters of a user-specific learning machine further comprises estimating parameters of a user-specific learning machine based at least in part on the documents not of interest to the user.</p>	<p><i>See</i> citations for '040 Patent, claim 1.</p> <p>Autonomy Press Release, at 1 ("Autonomy's Agentware uses Agents which locate information . . . thereby selecting the most relevant information according to the individual's preferences")</p> <p>Autonomy Press Release, at 1 ("The Agent keeps learning about your user's interests and will adapt accordingly as your interests change")</p> <p>Autonomy Technology Whitepaper, at AUT00070 ("Initial concepts that are not present in the new text will be de-emphasized and may even fall out of the set of important concepts")</p> <p>Autonomy Agentware User Guide, at AUT00123 ("Autonomy goes to the page and reads it, before choosing the most relevant link on the page and following it. That link might well lead to a different site. If it encounters too many irrelevant pages in a row . . . then it backs up and tries a different route.")</p> <p><i>See also</i></p> <p>SCHUETZE at 18:62 - 19:10</p>

	<p>CULLISS at 2:43-51; 5:36-62.</p> <p>MLADENIC at 5, 7, 10, 12, Table 2.</p> <p>REFUAH at 3:56 – 4:4; 17:32 – 18:4.</p> <p>WASFI at 60, 61.</p>
<p>Claim 6</p> <p>6. The method of claim 1, wherein monitoring user interactions with data for a document comprises monitoring at least one type of data selected from the group consisting of information about the document, whether the user viewed the document, information about the user's interaction with the document, context information, the user's degree of interest in the document, time spent by the user viewing the document, whether the user followed at least one link contained in the document, and a number of links in the document followed by the user.</p>	<p>See citations for '040 Patent claim 1.</p> <p>Autonomy Technology Whitepaper, at AUT00070 ("Autonomy's software applies the pattern-matching technology to extract key ideas from the articles a user reads online.")</p> <p><i>See also</i></p> <p>SCHUETZE at 5:36-40, 11:12-14, 18:11-17</p> <p>CULLISS at 2:43-46, 3:27-35.</p> <p>MLADENIC at 8.</p> <p>REFUAH at 5:34-50, 14:54-59.</p> <p>WASFI at Abstract, 60, 61.</p>
<p>Claim 7</p>	

<p>7. The method of claim 1, wherein said plurality of retrieved documents correspond to a respective plurality of products.</p>	<p>See citations for '040 Patent claim 1.</p> <p><i>See also</i></p> <p>SCHUEITZE at 35:66 – 36:8</p> <p>CULLISS at 9:55- 10:13. <i>See generally</i> 9:55 – 11:33.</p> <p>MLADENIC at 2, 8, Fig. 2.</p> <p>REFUAH at 1:63 – 2:2, 3:56 – 4:4, 7:24-32, 18:35-39, 18:40-55.</p>
<p>Claim 21</p> <p>21. The method of claim 1, wherein using the estimated probabilities for the respective plurality of retrieved documents to present at least a portion of the retrieved documents to the user comprises presenting to the user at least said portion of the retrieved documents based on the estimated probability that the retrieved document is of interest to the user and the relevance of the retrieved document to the search query.</p>	<p>See citations for claim 1 [g].</p>
<p>Claim 22</p> <p>22. The method of claim 1,</p>	<p>Autonomy Technology Whitepaper, at AUT00070 (“Autonomy’s software applies the pattern-</p>

<p>wherein identifying properties of the retrieved document comprises identifying properties selected from the properties consisting of a topic associated with the retrieved document, at least one product feature extracted from the retrieved document, an author of the retrieved document, an age of the retrieved document, a list of documents linked to the retrieved document, a number of users who have accessed the retrieved document, and a number of users who have saved the retrieved document in a favorite document list.</p>	<p>matching technology to extract key ideas from the articles a user reads online.”</p> <p><i>See also</i></p> <p>SCHUETZE at 5:36-40, 11:12-14, 18:11-17</p> <p>CULLISS at 2:43-46, 3:27-35.</p> <p>MLADENIC at 8.</p> <p>REFUAH at 5:34-50, 14:54-59.</p> <p>WASFI at Abstract, 60, 61.</p>
<p>24. The method of claim 23, wherein presenting said selected collected documents to said user comprises displaying said selected collected documents to said user on a personal web page associated with the user.</p>	<p>Autonomy Agentware User Guide, at AUT00116 (“The Press Office will let you use several Agents to create a custom newspaper from articles found in a number of sources.”)</p> <p>Autonomy Agentware User Guide, at AUT00116 (“When you want to read the paper that your agents have compiled for you, just click on ‘Read Paper.’ . . . Your paper is displayed on your web browser. It will have its name, date and front page of each section. Each section contains a selection of the information retrieved”)</p> <p>Autonomy Agentware User Guide, at AUT00117 (“If you wish to view the document you have highlighted on the Web, then click on the ‘View’ button, which shows an arrow pointing to the icon of your browser. This loads it into your Browser, and you may then access the rest of the Internet through your particular document”)</p>

See also

SCHUETZE at 34:56 – 35:4

CULLISS at 10:47-52. *See generally* 10:47 – 11:33.

MLADENIC at 2.

REFUAH at 2:63 – 3:24, 3:47-55, 17:21-43, 18:35-39, 18:56-65.

WASFI at 57, 61.

MONTEBELLO at 4.

EXHIBIT 3 C

Exhibit 3-C

Claim Chart of M. Montebello, W.A. Gray, S. Hurley, S. Hurley, *A Personal Evolvable Advisor for WWW Knowledge-Based Systems*
 (“Montebello”)

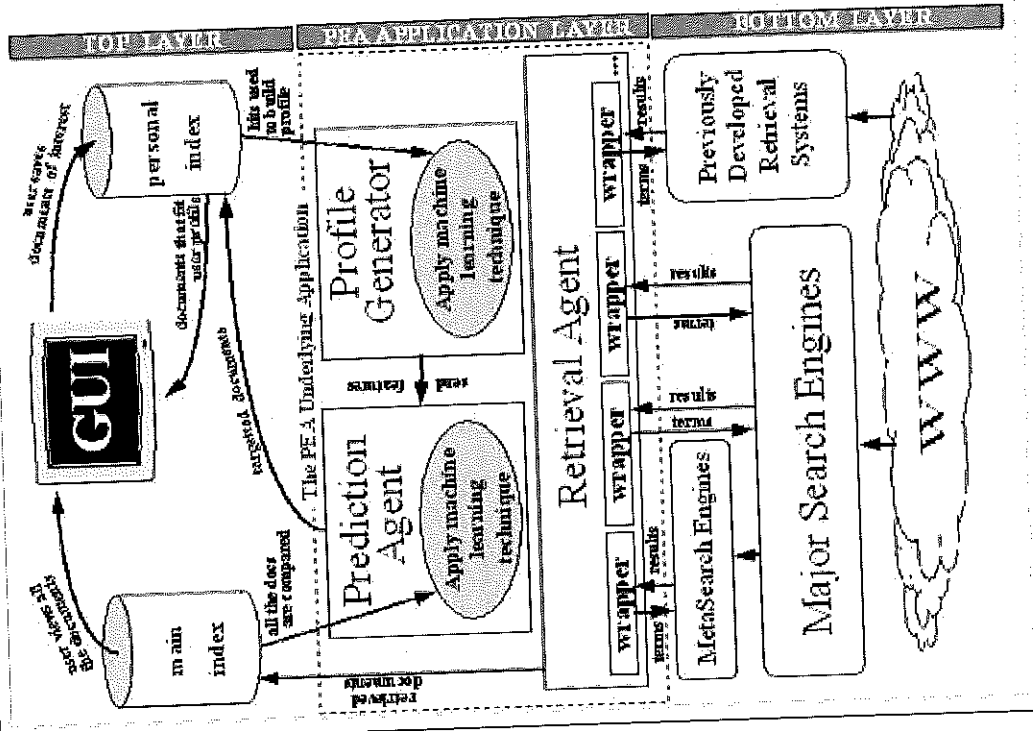
as prior art to

Asserted Claim of U.S. Patent No. 6,998,104 (“’040 Patent”)

and

Asserted Claims of U.S. Patent No. 7,685,276 (“’276 Patent”)

’040 Patent	Montebello
<p>Claim 1</p> <p>A computer-implemented method for providing automatic, personalized information services to a user u, the method comprising:</p>	<p>Montebello is a flexible and modular system that uses machine learning technologies to learn user models from user-specific search data. The system predicts the relevance of documents for the user according to the user model and suggests new documents that are likely to be interesting to a user. It takes personalization ideas from prior art systems, including Mladenic, and applies them to the results retrieved from a search engine. (Montebello at 1.) “Conceptually, the PEA is similar to a meta-search engine, but with the major difference that it employs user profiling to specifically target documents for individual users. In this way duplication and redundancy of information is significantly reduced, while the real needs and interests of the users are fully addressed in a more focussed [<i>sic</i>] retrieval.” (<i>Id.</i>)</p>



See Montebello, Abstract: "In this position paper we present a system that reuses the information generated from search engines together with previously developed systems, and adapts it, by generating user profiles, to better meet the needs and interests of the users by improving recall and

	<p>precision measures.”</p> <p>Montebello, pg. 1: “Our goal with PEA is to achieve a high recall and high precision performance score on the information presented to the user. . . . precision measures the relevance of the retrieved set of documents to the user requirements.”</p> <p>Montebello, pg. 1: “we generate user profiles to predict and suggest the most suitable information for specific users.”</p>
<p>a) transparently monitoring user interactions with data while the user is engaged in normal use of a computer;</p>	<p>Montebello, pg. 3: “The underlying application layer has the difficult task of performing all the work required, transparently from the user.”</p> <p>Montebello, pg. 3: “We assume that normally, when searching or even browsing, a user bookmarks a page of interest and proceeds with the activity he/she was performing. Taking this activity into perspective, all that is required is to take into consideration what the user bookmarks, and utilize this information to generate the profile. While this method may have problems of over identification, it is more reliable than asking users to assign ratings, as it is less demanding on the user’s time.”</p> <p><i>See also:</i></p> <p>SCHUETZE at 5:36-40, 11:12-14, 18:11-17, 28:65 – 29:6</p> <p>CULLISS at 3:46-56; 5:18-21; 7:14-20.</p> <p>MLADENIC, at 3.</p> <p>REFUAH at Abstract; 3:3-11; 5:34-50; 19:20-22.</p> <p>WASFI at Abstract, 60.</p>
<p>b) updating user-specific data files, wherein the user-</p>	<p>Montebello, pg. 3: “The task that the profile generator sets out to achieve is to analyse each users’ personal index and generate a profile. If users have different interests stored in their personal index,</p>

then a separate profile is required and generated for each interest.”

specific data files comprise the monitored user interactions with the data and a set of documents associated with the user;

Montebello, pg. 3: “We assume that normally, when searching or even browsing, a user bookmarks a page of interest and proceeds with the activity he/she was performing. Taking this activity into perspective, all that is required is to take into consideration what the user bookmarks, and utilize this information to generate the profile.”

Montebello, pg 3: “If the document is valid, then an initial paragraph from the document is extracted and saved locally in the main database index together with the reference search term, its reference within the index, the URL, and the document title.”

Montebello, pg. 3-4: “Some profile generators develop the ‘specific user profile’, especially those systems which have been produced to cater for specific items like emails or newsgroups. . . . different profiles need to be generated for every different interest a user has if the predicted results are to be focused accurately.”

See also:

SCHUETZE at 10:14-18, 10:32-39, 11:12-17, 17:47 – 18:27, 28:65 – 29:6, 34:34-37

CULLISS at 3:13-35; 5:36-48; 7:14-42.

MLADENIC at 3, 8.

PAYNE at Abstract, 2, 3, Fig. 2.

PAYNE II at 3, 4, 5, Fig. 1. *See generally* 6-10.

REFUAH at Abstract; 5:34-50; 6:5-15; 8:31-39; 20:31-37.

WASFI at 58, 60, 61.

c) estimating parameters of a learning machine, wherein the parameters define a User Model specific to the user and wherein the parameters are estimated in part from the user-specific data files;

Montebello, pg. 3: "No novel machine learning technique has been developed for the profile generator. It uses specific techniques previously employed by other similar systems," including Edwards, Payne, and Green.

Montebello, pg. 3: "The task that the profile generator sets out to achieve is to analyse each users' personal index and generate a profile."

Montebello, pg. 3: "If users have different interests stored in their personal index, then a separate profile is required and generated for each interest."

Montebello, pg. 3-4: "Issues regarding how many profiles to generate for a user - one specific profile per user, a general profile for a group of users, different profiles for different users or different profiles for the same users - have been tackled differently. Some profile generators develop the 'specific user profile', especially those systems which have been produced to cater for specific items like emails or newsgroups, while others specialise in a 'specific topic profile'.... We take this argument one step further, and argue that what one user finds interesting in a specific topic, differs from what another user describes as interesting about the same topic. Therefore, different profiles need to be generated for every different interest a user has if the predicted results are to be focused accurately."

Montebello, pg. 4: "The user interest profile generated by the profile generator will be used by the prediction agent in combination with the extracted features from documents in order to predict and suggest new interesting documents to a user."

See also:

SCHUETZE at 27:44-64, 27:65-28:14

CULLISS at 3:57-65; 4:54 - 5:10.

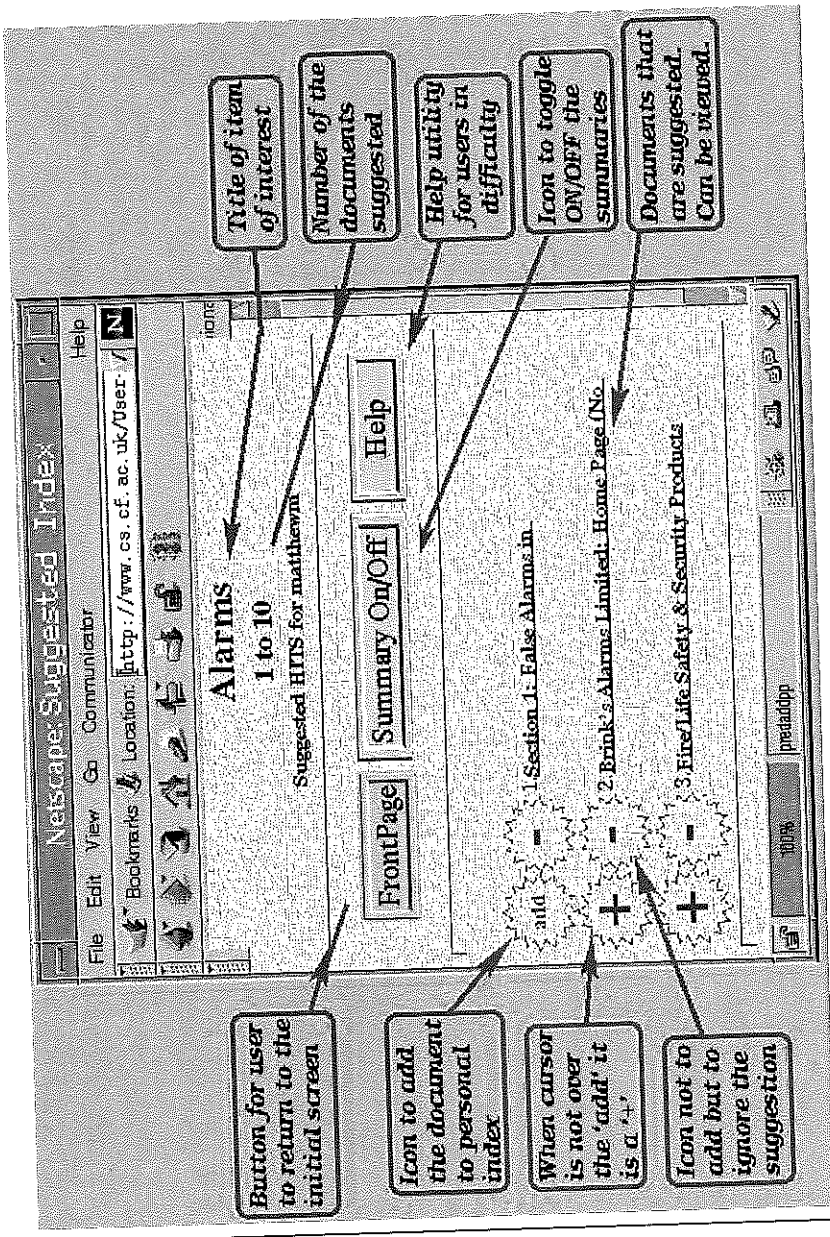
MLADENIC, at 9, 10.

REFUAH at 2:9-35; 6:49-64; 8:30-58; See generally 14:21 - 15:45.

<p>d) analyzing a document to identify properties of the document;</p>	<p>WASFI at 58, 61, 63.</p> <p>Montebello, pg. 3 "The retrieval agent, is responsible for aggregating all the hits returned by the external systems. It collates the results, by removing duplicates and ensuring integrity, and stores the formatted and pre-ranked results as a single list in a local database, known as the main index.... A scan through the WWW page will quickly identify the URL links and list them. Some of the links are useless to the user, so the retrieval agent initially removes adverts, duplicates, and site specific links. It then analyses the vetted URLs and accesses the document on-line. This will identify whether the link is still accessible, has moved or been removed completely. If the document is valid, then an initial paragraph from the document is extracted and saved locally in the main database index together with the reference search term, its reference within the index, the URL, and the document title."</p> <p>Montebello, pg. 4: "The user interest profile generated by the profile generator will be used by the prediction agent in combination with the extracted features from documents in order to predict and suggest new interesting documents to a user. Documents that have been retrieved and stored within the main index by the retrieval agent will have their features extracted and compared to the profile of each individual user generated by the profile generator."</p> <p><i>See also:</i></p> <p>SCHUEITZE at 3:40-44, 5:59-63, 5:59-63, 10:20-31, 11:42 – 15:19</p> <p>CULLISS at 2:43-46; 5:36-48; 10:47-52.</p> <p>MLADENIC, at 4, 12.</p> <p>REFUAH at 7:53 – 8:6; 20:31-37; 21:6-30.</p> <p>WASFI at 61.</p>
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<p>e) estimating a probability $P(u d)$ that an unseen document d is of interest to the user u, wherein the probability $P(u d)$ is estimated by applying the identified properties of the document to the learning machine having the parameters defined by the User Model; and</p>	<p>Montebello, pg. 3: "This profile generation utilizes the term frequency/inverse document frequency machine learning technique."</p> <p>Montebello, pg. 4: "The user interest profile generated by the profile generator will be used by the prediction agent in combination with the extracted features from documents in order to predict and suggest new interesting documents to a user. Documents that have been retrieved and stored within the main index by the retrieval agent will have their features extracted and compared to the profile of each individual user generated by the profile generator. This is performed on every item a user has shown interest in, and if any of the documents from the main index happen to fit the user's interests or needs, then they will be eventually suggested to the user the next time the user logs in (Figure 2)."</p> <p><i>See also:</i></p> <p>SCHUETZE at 18:62 – 19:10</p> <p>CULLISS at 2:43-51; 5:36-62.</p> <p>MLADENIC at 5, 7, 10, 12, Table 2.</p> <p>REFUAH at 3:56 – 4:4; 17:32 – 18:4.</p> <p>WASFI at 60, 61.</p>
<p>f) using the estimated probability to provide automatic, personalized information services to the user.</p>	<p>Montebello, Abstract: "a system that reuses the information generated from search engines together with previously developed systems, and adapts it, by generating user profiles, to better meet the needs and interests of the users by improving recall and precision measures"</p> <p>Montebello, pg. 4: "The user interest profile generated by the profile generator will be used by the prediction agent in combination with the extracted features from documents in order to predict and suggest new interesting documents to a user. Documents that have been retrieved and stored within the main index by the retrieval agent will have their features extracted and compared to the profile of each individual user generated by the profile generator. This is performed on every item a user has shown interest in, and if any of the documents from the main index happen to fit the user's interests</p>

or needs, then they will be eventually suggested to the user the next time the user logs in (Figure 2).”



See also:

SCHUETZE at 1:29-33, 7:54-60

CULLISS at 2:39-51.

MLADENIC at 2, 12.

	<p>REFUAH at Abstract, 2:63 – 3:11; 3:47-55; 17:21-43; 18:56-65; 23:11-28.</p> <p>WASFI at 61.</p>
<p>Claim 11</p> <p>11. The method of claim 1 further comprising estimating a posterior probability $P(u d,q)$ that the document d is of interest to the user u, given a query q submitted by the user.</p>	<p>Montebello, pg. 1: “The Personal Evolvable Advisor (PEA), presented in this position paper, is a system we have developed to reuse information generated by search engines and utilise previously developed retrieval systems. Conceptually, the PEA is similar to a meta-search engine.”</p> <p>Montebello, pg. 3: “Query terms are used to locate documents and retrieve results from the external systems.”</p> <p>Montebello, pg. 3: “Every query term is employed by the wrapper which will command the associated system to locate documents from its local index and return related results.”</p> <p>Montebello, pg. 5: “users will be able to suggest any other terms to add to the main search list.”</p> <p><i>See also:</i></p> <p>SCHUETZE at 21:57 – 22:16, 22:31-48, 30:58 – 31:13</p> <p>CULLISS at 2:39-51, 9:41-49, 10:1-7, 10:47-52.</p> <p>MLADENIC at 2.</p> <p>REFUAH at 17:21-43.</p>
<p>Claim 22</p> <p>22. The method of claim 1 wherein the monitored user</p>	<p><i>See also:</i></p>

<p>interactions include a sequence of interaction times.</p>	<p>MLADENIC at 2. REFUAH at 5:57-58. WASFI at Abstract, 57.</p>
<p>Claim 32</p>	
<p>32. A program storage device accessible by a central computer, tangibly embodying a program of instructions executable by the central computer to perform method steps for providing automatic, personalized information services to a user u, the method steps comprising:</p>	<p>See citations for claim 1 [preamble].</p>
<p>a) transparently monitoring user interactions with data while the user is engaged in normal use of a client computer in communication with the central computer;</p>	<p>See citations for claim 1[a].</p>
<p>b) updating user-specific data files, wherein the user-specific data files comprise the monitored user interactions with the data and a set of documents associated with the user;</p>	<p>See citations for claim 1[b].</p>

<p>c) estimating parameters of a learning machine, wherein the parameters define a User Model specific to the user and wherein the parameters are estimated in part from the user-specific data files;</p>	<p>See citations for claim 1[e].</p>
<p>d) analyzing a document d to identify properties of the document;</p>	<p>See citations for claim 1[d].</p>
<p>e) estimating a probability $P(u d)$ that an unseen document d is of interest to the user u, wherein the probability $P(u d)$ is estimated by applying the identified properties of the document to the learning machine having the parameters defined by the User Model; and</p>	<p>See citations for claim 1[e].</p>
<p>f) using the estimated probability to provide automatic, personalized information services to the user</p>	<p>See citations for claim 1[f].</p>
<p>Claim 34</p>	
<p>34. The program storage device of claim 32 wherein analyzing the document d provides for the analysis of</p>	<p>Montebello at 3 (disclosing that the user documents are in HTML), 4 (disclosing computing prediction scores for web pages, which are HTML documents). <i>See also:</i></p>

documents having multiple distinct media types.	<p>SCHUETZE at 4:12-35, 5:48-58, "Summary of the Invention", 5:43 – 8:32</p> <p>CULLISS at 1:22-28, 2:19-24.</p> <p>MLADENIC at 2.</p> <p>REFUAH at 1:63 – 2:2.</p> <p>WASFI at 57, 58.</p>
'276 Patent	MONTEBELLO
<p>Claim 1</p> <p>A computer-implemented method for providing personalized information services to a user, the method comprising:</p>	<p>See citations for '040 Patent, claim 1 [preamble].</p>
<p>a) transparently monitoring user interactions with data while the user is engaged in normal use of a browser program running on the computer;</p>	<p>See citations for '040 Patent, claim 1 [a].</p> <p>Montebello, pg. 3: "We assume that normally, when searching or even browsing, a user bookmarks a page of interest and proceeds with the activity he/she was performing. Taking this activity into perspective, all that is required is to take into consideration what the user bookmarks, and utilise this information to generate the profile."</p> <p>See also:</p> <p>MLADENIC at 2.</p> <p>REFUAH at 5:57-58.</p>

	WASFI at Abstract, 57.
b) analyzing the monitored data to determine documents of interest to the user;	See citations for '040 Patent, claim 1 [b].
c) estimating parameters of a user-specific learning machine based at least in part on the documents of interest to the user;	See citations for '040 Patent, claim 1 [c].
d) receiving a search query from the user;	<p>Montebello, pg. 1: "The Personal Evolvable Advisor (PEA), presented in this position paper, is a system we have developed to reuse information generated by search engines and utilise previously developed retrieval systems. Conceptually, the PEA is similar to a meta-search engine."</p> <p>Montebello, pg. 3: "Query terms are used to locate documents and retrieve results from the external systems."</p> <p>Montebello, pg. 3: "Every query term is employed by the wrapper which will command the associated system to locate documents from its local index and return related results."</p> <p>Montebello, pg. 5: "users will be able to suggest any other terms to add to the main search list."</p> <p><i>See also:</i></p> <p>SCHUETZE at 21:57 – 22:16, 22:31-48</p> <p>CULLISS at 2:39-51.</p> <p>MLADENIC at 1, 2.</p> <p>REFUAH at 1:63 – 2:2; 3:12-24.</p>

<p>e) retrieving a plurality of documents based on the search query;</p>	<p>Montebello, pg. 1: "The Personal Evolvable Advisor (PEA), presented in this position paper, is a system we have developed to reuse information generated by search engines and utilise previously developed retrieval systems. Conceptually, the PEA is similar to a meta-search engine."</p> <p>Montebello, pg. 3: "Query terms are used to locate documents and retrieve results from the external systems."</p> <p>Montebello, pg. 3: "Every query term is employed by the wrapper which will command the associated system to locate documents from its local index and return related results."</p> <p>Montebello, pg. 5: "users will be able to suggest any other terms to add to the main search list."</p> <p><i>See also:</i></p> <p>SCHUEITZ at 21:57 – 22:16, 22:31-48</p> <p>CULLISS at 2:39-51.</p> <p>MLADENIC at 1.</p> <p>REFUAH, 1:63 – 2:2; 3:12-24.</p>
<p>f) for each retrieved document of said plurality of retrieved documents: identifying properties of the retrieved document, and applying the identified properties of the retrieved document to the user-specific learning machine to estimate a probability that the</p>	<p><i>See citations for '040 Patent, claim 1 [d, e].</i></p>

<p>retrieved document is of interest to the user; and</p> <p>g) using the estimated probabilities for the respective plurality of retrieved documents to present at least a portion of the retrieved documents to the user.</p>	<p>See citations for '040 Patent, claim 1[f].</p>
<p>Claim 3</p>	
<p>3. The method of claim 1, wherein transparently monitoring user interactions with data comprises monitoring user interactions with data during multiple different modes of user interaction with network data.</p>	<p>See citations for '040 Patent, claim 1[a].</p> <p>See also:</p> <p>MLADENIC at 2.</p> <p>REFUAH at 5:57-58.</p> <p>WASFI at Abstract, 57.</p>
<p>Claim 5</p>	
<p>5. The method of claim 1, further comprising analyzing the monitored data to determine documents not of interest to the user, and wherein estimating parameters of a user-specific learning machine further comprises estimating parameters of a user-specific</p>	<p>See citations for '040 Patent, claim 1.</p> <p>See also:</p> <p>SCHUEITZE at 18:62 – 19:10</p> <p>CULLISS at 2:43-51; 5:36-62.</p> <p>MLADENIC at 5, 7, 10, 12, Table 2.</p>

<p>learning machine based at least in part on the documents not of interest to the user.</p>	<p>REFUAH at 3:56 – 4:4; 17:32 – 18:4. WASFI at 60, 61.</p>
<p>Claim 6</p>	
<p>6. The method of claim 1, wherein monitoring user interactions with data for a document comprises monitoring at least one type of data selected from the group consisting of information about the document, whether the user viewed the document, information about the user's interaction with the document, context information, the user's degree of interest in the document, time spent by the user viewing the document, whether the user followed at least one link contained in the document, and a number of links in the document followed by the user.</p>	<p>Montebello, pg. 3: "We assume that normally, when searching or even browsing, a user bookmarks a page of interest and proceeds with the activity he/she was performing. Taking this activity into perspective, all that is required is to take into consideration what the user bookmarks, and utilise this information to generate the profile." See citations for '040 Patent claim 1. <i>See also:</i> SCHUETZE at 5:36-40, 11:12-14, 18:11-17 CULLISS at 2:43-46, 3:27-35. MLADENIC at 8. REFUAH at 5:34-50, 14:54-59. WASFI at Abstract, 60, 61.</p>
<p>Claim 7</p>	
<p>7. The method of claim 1, wherein said plurality of retrieved documents</p>	<p><i>See also:</i> SCHUETZE at 35:66 – 36:8</p>

<p>correspond to a respective plurality of products.</p>	<p>CULLISS at 9:55- 10:13. See generally 9:55 – 11:33.</p> <p>MLADENIC at 2, 8, Fig. 2.</p> <p>REFUAH at 1:63 – 2:2, 3:56 – 4:4, 7:24-32, 18:35-39, 18:40-55.</p>
<p>Claim 21</p> <p>21. The method of claim 1, wherein using the estimated probabilities for the respective plurality of retrieved documents to present at least a portion of the retrieved documents to the user comprises presenting to the user at least said portion of the retrieved documents based on the estimated probability that the retrieved document is of interest to the user and the relevance of the retrieved document to the search query.</p>	<p>Montebello, pg. 1: “The Personal Evolvable Advisor (PEA), presented in this position paper, is a system we have developed to reuse information generated by search engines and utilise previously developed retrieval systems. Conceptually, the PEA is similar to a meta-search engine.”</p> <p>Montebello, pg. 3: “Query terms are used to locate documents and retrieve results from the external systems.”</p> <p>Montebello, pg. 3: “Every query term is employed by the wrapper which will command the associated system to locate documents from its local index and return related results.”</p> <p>Montebello, pg. 5: “users will be able to suggest any other terms to add to the main search list.”</p> <p>See citations for claim 1[g].</p>
<p>Claim 22</p> <p>22. The method of claim 1, wherein identifying properties of the retrieved document comprises identifying properties selected from the properties</p>	<p>Montebello, pg. 3: “If the document is valid, then an initial paragraph from the document is extracted and saved locally in the main database index together with the reference search term, its reference within the index, the URL, and the document title.”</p> <p>See also:</p>

<p>consisting of a topic associated with the retrieved document, at least one product feature extracted from the retrieved document, an author of the retrieved document, an age of the retrieved document, a list of documents linked to the retrieved document, a number of users who have accessed the retrieved document, and a number of users who have saved the retrieved document in a favorite document list.</p>	<p>SCHUETZE at 5:36-40, 11:12-14, 18:11-17</p> <p>CULLISS at 2:43-46, 3:27-35.</p> <p>MLADENIC at 8.</p> <p>REFUAH at 5:34-50, 14:54-59.</p> <p>WASFI at Abstract, 60, 61.</p>
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EXHIBIT 3 D

Exhibit 3-D

Ahmad M. Ahmad Wasfi, "Collecting User Access Patterns for building User Profiles and Collaborative Filtering," Proceedings of the 4th International Conference on Intelligent User interfaces. (January 1999) ("WASFI")

as prior art to

Asserted Claims of U.S. Patent No. 6,998,104 ("'040 Patent")

and

Asserted Claims of U.S. Patent No. 7,685,276 ("'276 Patent")

<p>'040 Patent</p> <p>Claim 1</p> <p>A computer-implemented method for providing automatic, personalized information services to a user u, the method comprising:</p>	<p>WASFI</p> <p>Wasfi describes the ProfBuilder system, "a transparent, adaptive, autonomous agent which works as a recommender system." (Wasfi at 60.) "ProfBuilder inhabits a Web site and is assigned the goal of finding relevant local pages for the site's users." (<i>Id.</i>) "ProfBuilder keeps track of each individual user and provides that person online assistance.... Content-based filtering is based on the correlation between the content of the pages and the user's preferences." (<i>Id.</i>) ProfBuilder operates as a separate HTML "frame" at the top of the user's browser. (<i>Id.</i> at 61.) The frame contains a list of recommended web pages along with the strength of the recommendations:</p>
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	<p>The screenshot shows a web browser window with the following content:</p> <ul style="list-style-type: none"> Browser title: Year of the Tiger - Microsoft Internet Explorer Address bar: http://www.wwf.org/ Navigation buttons: Content-based filtering, Collaborative filtering Table: <table border="1"> <thead> <tr> <th>Year for the Tiger: Conversation Science</th> <th>Year for the Tiger: Background on Tiger</th> <th>Year of the Tiger: Slide Show</th> <th>Year for the Tiger: Market Research Field</th> </tr> </thead> <tbody> <tr> <td>2011</td> <td>2015</td> <td>2007</td> <td>2014</td> </tr> </tbody> </table> Buttons: HOME, CLUB STAFF, CONSENTS, TAKE ACTION, BACKGROUND ON TIGERS Section: TIGER NEWS Footer: Notes from the Field: WWF, Internet zone 	Year for the Tiger: Conversation Science	Year for the Tiger: Background on Tiger	Year of the Tiger: Slide Show	Year for the Tiger: Market Research Field	2011	2015	2007	2014
Year for the Tiger: Conversation Science	Year for the Tiger: Background on Tiger	Year of the Tiger: Slide Show	Year for the Tiger: Market Research Field						
2011	2015	2007	2014						
<p>a) transparently monitoring user interactions with data</p>	<p>See also WASFI, Abstract: “The paper proposes a new learning mechanism to extract user preferences transparently for a World Wide Web recommender system. The general idea is that we use the entropy of the page being accessed to determine its interestingness based on its occurrence probability following a sequence of pages accessed by the user.”</p> <p>WASFI, Abstract: “The paper proposes a new learning mechanism to extract user preferences transparently for a World Wide Web recommender system. The general idea is that we use the</p>								

Figure 2. PrefBackNet's interface.

<p>while the user is engaged in normal use of a computer;</p>	<p>entropy of the page being accessed to determine its interestingness based on its occurrence probability following a sequence of pages accessed by the user.”</p> <p>p. 57: “Indirect or transparent learning technique: The system learns user preferences transparently without any extra effort from the user.”</p> <p>p. 60: ProfBuilder is described as “a transparent, adaptive, autonomous agent which works as a recommender system.”</p> <p>p. 60: “It is transparent as it extracts the preferences without user intervention.”</p> <p><i>See also:</i></p> <p>CULLISS at 3:46-56; 5:18-21; 7:14-20.</p> <p>MLADENIC, at 3.</p> <p>REFUAH at Abstract; 3:3-11; 5:34-50; 19:20-22.</p> <p>SCHUETZE at 5:36-40; 11:12-14; 18:11-17; 28:65 – 29:6.</p> <p>Autonomy Press Release, at 2</p> <p>Autonomy Technology Whitepaper, AUT00069-70</p> <p>Autonomy Agentware User Guide, at AUT00119</p>
<p>b) updating user-specific data files, wherein the user-specific data files comprise the monitored user interactions with the data and a set of documents associated</p>	<p>WASFI, p. 58: “A profile is a description of user interests. To deliver information a user wants to see, we should search for pages that are similar to his/her profile. An appropriate representation for profiles and pages is based on vectorspace representation, commonly used in information retrieval (IR) literature”</p> <p>p. 58: “Consider that page s_i is the current page of user U_j. Let us assume that variable t_{ij}, which is a</p>

<p>with the user;</p>	<p>nonnegative number between zero and one, indicates the relevance or importance of page s_i to user U_j."</p> <p>p. 60: "ProfBuilder keeps track of each individual user and provides that person online assistance. The assistance includes two lists of recommendations based on two different filtering paradigms: content-based and collaborative. ProfBuilder updates the lists each time the user changes his/her current page."</p> <p>p. 61: "The general mechanism of building is to update the frequency of the occurrence of the current page in order-0 sub-model, and update its frequency of occurrence in order-1 sub-models based on the user's previous page."</p> <p><i>See also:</i></p> <p>CULLISS at 3:13-35; 5:36-48; 7:14-42.</p> <p>MLADENIC at 3, 8.</p> <p>REFUAH at Abstract; 5:34-50; 6:5-15; 8:31-39; 20:31-37.</p> <p>SCHUETZE at 10:14-18; 10:32-39; 11:12-17; 28:65 - 29:6; 34:34-37; <i>See generally</i> 17:47 - 18:27.</p> <p>Autonomy Press Release, at 1</p> <p>Autonomy Technology Whitepaper, at AUT00069-70</p> <p>MONTEBELLO at 3.</p>
<p>c) estimating parameters of a learning machine, wherein the parameters define a User Model specific to the user and wherein the parameters</p>	<p>WASFI, p. 58: "An appropriate representation for profiles and pages is based on vector-space representation, commonly used in information retrieval (IR) literature."</p> <p>p. 58: "Consider that page s_i is the current page of user U_j. Let us assume that variable t_{ij}, which is a nonnegative number between zero and one, indicates the relevance or importance of page s_i to user</p>

are estimated in part from the user-specific data files;

U_j . A reformulation of vector Q_j representing the user profile is obtained by taking Q_j and adding the vector elements D_i representing page s_i after it is changed in proportion to t_{ij} ,

$$Q_j = Q_j + t_{ij} * D_i$$

i.e. the weight of each word in D_i is modified proportional to t_{ij} . The resulting effect is that, for those words already present in the profile, the word-weights are modified in proportion to $t_{ij} * D_i$. Words which are not in the profile are added to it."

p. 60: "ProfBuilder keeps track of each individual user and provides that person online assistance.... Content-based filtering is based on the correlation between the content of the pages and the user's preferences."

p. 60: "a timeout mechanism is used to delete user's session information after a predetermined amount of idle time."

p. 60: "a connection after the specified period having the same IP is identified as a new user."

p. 61: "The similarity metric between the vector D_i representing page s_i and the vector Q_j representing the interests of user u_j is calculated by taking a scalar product of the two vector,

$$\text{Similarity}(D_i, Q_j) = \sum_k w_{ik} * w_{jk}$$

p. 63: "ProfBuilder assists a user by finding relevant information on only one Web site. We intend to solve the problem by maintaining user profiles across different Web sites that use ProfBuilder. So that, when a user jumps to another site, the user's profile will also be transferred to the new site whose ProfBuilder will search for pages similar to the profile. Thus, the user can find relevant recommendations in the first page accessed in the new site."

p. 63: "In this paper, we have proposed a new learning mechanism to learn user preferences from the retrieved pages."

See also:

	<p>CULLISS at 3:57-65; 4:54 – 5:10.</p> <p>MLADENIC, at 9, 10.</p> <p>REFUAH at 2:9-35; 6:49-64; 8:30-58; See generally 14:21 – 15:45.</p> <p>SCHUEITZ at 27:44-64. See also 27:65 – 28:14.</p> <p>Autonomy Press Release, at 1</p> <p>Autonomy Technology Whitepaper, at AUT00069-70</p> <p>Autonomy Agentware User Guide, at AUT000002</p> <p>MONTEBELLO at 3, 4.</p>
<p>d) analyzing a document d to identify properties of the document;</p>	<p>WASFI, p. 61: "The filtering process consists of translating pages to their vector space representation, finding pages that are similar to the profile, and selecting the top-scoring pages for presentation to a user.</p> <p>The vector representation is obtained by a text analysis of HTML pages. This is done by extracting keywords from page titles, all level of headings, and anchor hypertexts. This narrow analysis leads to retrieval of fewer pages, but most of the retrieved materials are likely to be helpful to the user; as it is reasonable to assume that the author of a Web page used these words to give the main aspect of the page. Stop words are filtered out and word stemming is then performed to improve IR performance. The keywords are weighted based on the well-test algorithm TDIDF. The weight of a keyword in one page is the product of its keyword frequency and the inverse of its document frequency. The weight of the keyword k_j is given by:</p> $w_{ij} = tf_{ij} * idf_j$ <p>where tf_{ij} is the number of occurrences of k_j in page s_i and idf_j is the inverse document frequency of</p>

<p>e) estimating a probability $P(u d)$ that an unseen document d is of interest to the user u, wherein the probability $P(u d)$ is estimated by applying the identified properties of the document to the learning machine having the parameters defined by the User Model; and</p>	<p>k_j in the Web site."</p> <p><i>See also:</i></p> <p>CULLISS at 2:43-46; 5:36-48; 10:47-52.</p> <p>MLADENIC, at 4, 12.</p> <p>REFUAH at 7:53 – 8:6; 20:31-37; 21:6-30.</p> <p>SCHUETZE at 3:40-44; 5:59-63; 10:20-31; Fig.1. <i>See generally</i> 11:42 – 15:19.</p> <p>Autonomy Press Release, at 1</p> <p>Autonomy Technology Whitepaper, at AUT00068-69, AUT00071</p> <p>Autonomy Agentware User Guide, at AUT00002, AUT00117</p> <p>MONTEBELLO at 3, 4.</p> <p>WASFI, p. 60: "ProfBuilder keeps track of each individual user and provides that person online assistance. The assistance includes two lists of recommendations based on two different filtering paradigms: content-based and collaborative. ProfBuilder updates the lists each time the user changes his/her current page. Content-based filtering is based on the correlation between the content of the pages and the user's preferences. The collaborative filtering is based on a comparison between the user's path of navigation and the access patterns of past users. Combining the two paradigms may eliminate the shortcomings in each approach. By making collaborative filtering, we can deal with any kind of content and explore new domains to find something interesting to the user. By making content-based filtering, we can deal with pages unseen by others."</p> <p>p. 60: "ProfBuilder keeps track of <i>each individual user</i> and provides that person online assistance.... Content-based filtering is based on the correlation between the content of the pages and the user's preferences."</p>
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	<p>p. 60: "By making content-based filtering, we can deal with pages unseen by others."</p> <p>p. 61: "The similarity metric between the vector D_i representing page s_i and the vector Q_j representing the interests of user u_j is calculated by taking a scalar product of the two vector,</p> $\text{Similarity}(D_i, Q_j) = \sum_k w_{ik} * w_{jk}$ <p><i>See also:</i></p> <p>CULLISS at 2:43-51; 5:36-62.</p> <p>MLADENIC at 5, 7, 10, 12, Table 2.</p> <p>REFUAH at 3:56 – 4:4; 17:32 – 18:4.</p> <p>SCHUETZE at 18:62 – 19:10.</p> <p>Autonomy Press Release, at 1-2</p> <p>Autonomy Technology Whitepaper, at AUT00069, AUT00071</p> <p>Autonomy Agentware User Guide, at AUT00119</p> <p>MONTEBELLO at 4.</p>
<p>f) using the estimated probability to provide automatic, personalized information services to the user.</p>	<p>WASFI, p. 61: "The filtering process consists of translating pages to their vector space representation, finding pages that are similar to the profile, and selecting the top-scoring pages for presentation to the user."</p> <p>p. 61: "The result frame displays a list of the recommended pages represented by their respective titles.... ProfBuilder highlights each recommendation to show its relevance and access frequency</p>

(given the user's current path) by putting 'ball' and 'man' icons, respectively, in front of the title.... Titles in 'bold' font indicate unread pages, while titles in 'normal' font indicate pages have been read by the user."

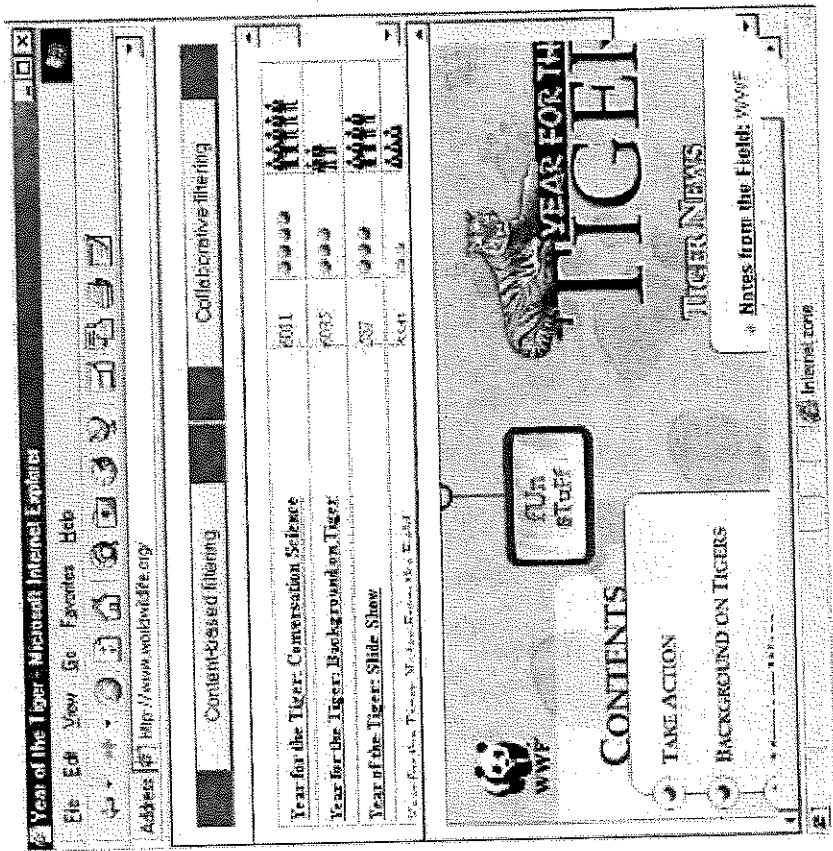


Figure 2 ProDenNet's interface.

See also:

CULLISS at 2:39-51.

	<p>MLADENIC at 2, 12.</p> <p>REFUAH at Abstract, 2:63 – 3:11; 3:47-55; 17:21-43; 18:56-65; 23:11-28.</p> <p>SCHUETZE at 1:29-33; 7:54-60.</p> <p>Autonomy Press Release, at 1</p> <p>Autonomy Technology Whitepaper, at AUT00068</p> <p>Autonomy Agentware User Guide, at AUT00002, AUT00004, AUT00116-117</p> <p>MONTEBELLO at 4.</p>
<p>Claim 11</p> <p>11. The method of claim 1 further comprising estimating a posterior probability $P(u d,q)$ that the document d is of interest to the user u, given a query q submitted by the user.</p>	<p><i>See also:</i></p> <p>CULLISS at 2:39-51, 9:41-49, 10:1-7, 10:47-52.</p> <p>MLADENIC at 2.</p> <p>REFUAH at 17:21-43.</p> <p>SCHUETZE at 21:57 – 22:16, 22:31-48, 30:58 – 31:13.</p>
<p>Claim 22</p> <p>22. The method of claim 1 wherein the monitored user interactions include a sequence of interaction times</p>	<p>WASFI, p. 60: “a timeout mechanism is used to delete user’s session information after a predetermined amount of idle time. So that, a connection after the specified period having the same IP is identified as a new user.”</p> <p><i>See also:</i></p>

	<p>MLADENIC at 2.</p> <p>REFUAH at 5:57-58.</p> <p>WASFI at Abstract, 57.</p> <p>Autonomy Press Release, at 1</p> <p>Autonomy Agentware User Guide, at AUT00124</p>
<p>Claim 32</p>	
<p>32. A program storage device accessible by a central computer, tangibly embodying a program of instructions executable by the central computer to perform method steps for providing automatic, personalized information services to a user u, the method steps comprising:</p>	<p>See citations for claim 1 [preamble].</p>
<p>a) transparently monitoring user interactions with data while the user is engaged in normal use of a client computer in communication with the central computer;</p>	<p>See citations for claim 1 [a].</p>
<p>b) updating user-specific data files, wherein the user-specific data files comprise the monitored user</p>	<p>See citations for claim 1 [b].</p>

<p>interactions with the data and a set of documents associated with the user;</p>	
<p>c) estimating parameters of a learning machine, wherein the parameters define a User Model specific to the user and wherein the parameters are estimated in part from the user-specific data files;</p>	<p>See citations for claim 1 [c].</p>
<p>d) analyzing a document d to identify properties of the document;</p>	<p>See citations for claim 1 [d].</p>
<p>e) estimating a probability $P(u d)$ that an unseen document d is of interest to the user u, wherein the probability $P(u d)$ is estimated by applying the identified properties of the document to the learning machine having the parameters defined by the User Model; and</p>	<p>See citations for claim 1 [e].</p>
<p>f) using the estimated probability to provide automatic, personalized information services to the user</p>	<p>See citations for claim 1 [f].</p>
<p>Claim 34</p>	

<p>34. The program storage device of claim 32 wherein analyzing the document d provides for the analysis of documents having multiple distinct media types.</p>	<p>WASFI, p. 57: "The paper proposes a new learning mechanism to extract user preferences transparently for a World Wide Web recommender system."</p> <p>p.58: "A profile is a description of user interests. To deliver information a user wants to see, we should search for pages that are similar to his/her profile. An appropriate representation for profiles and pages is based on vectorspace representation, commonly used in information retrieval (IR) literature."</p> <p><i>See also:</i></p> <p>CULLISS at 1:22-28, 2:19-24.</p> <p>MLADENIC at 2.</p> <p>REFUAH at 1:63 – 2:2.</p> <p>SCHUETZE at 4:12-35, 5:48-58. <i>See generally</i> "Summary of the Invention", 5:43 – 8:32.</p> <p>Autonomy Press Release, at 2</p> <p>Autonomy Agentware User Guide, at AUT00004-5.</p>
<p>'276 Patent</p>	<p>WASFI</p>
<p>Claim 1</p>	
<p>A computer-implemented method for providing personalized information services to a user, the method comprising:</p>	<p>See citations for '040 Patent, claim 1 [preamble].</p>

<p>a) transparently monitoring user interactions with data while the user is engaged in normal use of a browser program running on the computer;</p>	<p>See citations for '040 Patent, claim 1 [a].</p> <p>WASFI, Abstract: "The probability distribution of the pages is obtained by collecting the access patterns of users navigating on the Web."</p> <p>p. 57: "Agent-based recommenders have been proposed as a solution to this problem. During a browsing session, these computer systems work collaboratively with a user without the need of an explicit initiation."</p> <p><i>See also:</i></p> <p>MLADENIC at 2.</p> <p>REFUAH at 5:57-58.</p>
<p>b) analyzing the monitored data to determine documents of interest to the user;</p>	<p>See citations for '040 Patent, claim 1 [b].</p>
<p>c) estimating parameters of a user-specific learning machine based at least in part on the documents of interest to the user;</p>	<p>See citations for '040 Patent, claim 1 [c].</p>
<p>d) receiving a search query from the user;</p>	<p><i>See also:</i></p> <p>CULLISS at 2:39-51.</p> <p>MLADENIC at 1, 2.</p> <p>REFUAH at 1:63 – 2:2; 3:12-24.</p> <p>SCHUETZE at 21:57 – 22:16; 22:31-48.</p>

	<p>Autonomy Agentware User Guide, at AUT00002</p> <p>MONTEBELLO at 3.</p>
<p>e) retrieving a plurality of documents based on the search query;</p>	<p><i>See also:</i></p> <p>CULISS at 2:39-51.</p> <p>MLADENIC at 1.</p> <p>REFUAH, 1:63 – 2:2; 3:12-24.</p> <p>SCHUETZE, 21:57 – 22:16; 22:31-48.</p> <p>MONTEBELLO at 3.</p>
<p>f) for each retrieved document of said plurality of retrieved documents: identifying properties of the retrieved document, and applying the identified properties of the retrieved document to the user-specific learning machine to estimate a probability that the retrieved document is of interest to the user; and</p>	<p><i>See citations for '040 Patent, claim 1[d, e].</i></p>
<p>g) using the estimated probabilities for the respective plurality of retrieved documents to present at least a portion of</p>	<p><i>See citations for '040 Patent, claim 1[f].</i></p>

<p>the retrieved documents to the user.</p>	
<p>Claim 3</p> <p>3. The method of claim 1, wherein transparently monitoring user interactions with data comprises monitoring user interactions with data during multiple different modes of user interaction with network data.</p>	<p>WASFI, p. 58: "Users navigate in the collection by using any navigation technique such as selecting hypertext links, specifying page addresses, or selecting pages from interest lists."</p> <p>p. 61: "The context model is built progressively as users jump from one page to another using any navigation technique. The general mechanism of building is to update the frequency of the occurrence of the current page in order-O sub-model, and update its frequency of occurrence in order-1 sub-models based on the user's previous page."</p> <p><i>See also:</i></p> <p>CULLISS at 2:43-46, 3:29-35, 3:46-56.</p> <p>MLADENIC at 3.</p> <p>REFUAH at 5:34-50.</p> <p>SCHUETZE at 18:11-17.</p> <p>Autonomy Press Release, at 1</p>
<p>Claim 5</p> <p>5. The method of claim 1, further comprising analyzing the monitored data to determine documents not of interest to the user, and wherein estimating parameters of a user-specific</p>	<p>p. 58: "For this representation, the method for profile reformulation in response to the changes of user's interest is based on vector adjustment. Since profiles and pages are both vectors, the profile should move closer to the vectors representing pages which are relevant and away from the vector representing pages which are non-relevant. The implicit assumption of this is that pages resemble each other are represented by reasonably similar vectors. Consider that page s_j is the current page of user U_j. Let us assume that variable t_{ij}, which is a nonnegative number between zero and one, indicates the relevance or</p>

<p>learning machine further comprises estimating parameters of a user-specific learning machine based at least in part on the documents not of interest to the user.</p>	<p>importance of page s_i to user U_j. A reformulation of vector Q_j representing the user profile is obtained by taking Q_j and adding the vector elements D_i representing page s_i after it is changed in proportion to t_{ij}, $Q_j = Q_j + t_{ij} * D_i$ i.e. the weight of each word in D_i is modified proportional to t_{ij}. The resulting effect is that, for those words already present in the profile, the word-weights are modified in proportion to $t_{ij} * D_i$. Words which are not in the profile are added to it."</p> <p><i>See also:</i></p> <p>CULLISS at 3:57-65, 4:61-64, 5:4-10.</p> <p>MLADENIC at 8. <i>See generally</i> 10-11.</p> <p>REFUAH at 22:6-14.</p> <p>SCHUETZE at 17:47-67.</p> <p>Autonomy Press Release, at 1</p> <p>Autonomy Technology Whitepaper, at AUT00070</p> <p>Autonomy Agentware User Guide, at AUT00123</p>
<p>Claim 6</p>	
<p>6. The method of claim 1, wherein monitoring user interactions with data for a document comprises monitoring at least one type of data selected from the</p>	<p>WASFI, Abstract: "The paper proposes a new learning mechanism to extract user preferences transparently for a World Wide Web recommender system. The general idea is that we use the entropy of the page being accessed to determine its interestingness based on its occurrence probability following a sequence of pages accessed by the user."</p> <p>p. 60: "It is transparent as it extracts the preferences without user intervention."</p>

<p>group consisting of information about the document, whether the user viewed the document, information about the user's interaction with the document, context information, the user's degree of interest in the document, time spent by the user viewing the document, whether the user followed at least one link contained in the document, and a number of links in the document followed by the user.</p>	<p>p. 61: "To read the content of the page, the user clicks on its title. Titles in 'bold' font indicate unread pages, while titles in 'normal' font indicate pages have been read by the user."</p> <p><i>See also:</i></p> <p>CULLISS at 2:43-46, 3:27-35.</p> <p>MLADENIC at 8.</p> <p>REFUAH at 5:34-50, 14:54-59.</p> <p>SCHUETZE at 5:36-40, 11:12-14, 18:11-17.</p>
<p>Claim 7</p>	
<p>7. The method of claim 1, wherein said plurality of retrieved documents correspond to a respective plurality of products.</p>	<p><i>See also:</i></p> <p>CULLISS at 9:55- 10:13. <i>See generally</i> 9:55 – 11:33.</p> <p>MLADENIC at 2, 8, Fig. 2.</p> <p>REFUAH at 1:63 – 2:2, 3:56 – 4:4, 7:24-32, 18:35-39, 18:40-55.</p> <p>SCHUETZE at 35:66 – 36:8.</p>
<p>Claim 21</p>	
<p>21. The method of claim 1, wherein using the estimated probabilities for the</p>	<p><i>See citations for claim 1 [g].</i></p>

<p>respective plurality of retrieved documents to present at least a portion of the retrieved documents to the user comprises presenting to the user at least said portion of the retrieved documents based on the estimated probability that the retrieved document is of interest to the user and the relevance of the retrieved document to the search query.</p>	
<p>Claim 22</p>	
<p>22. The method of claim 1, wherein identifying properties of the retrieved document comprises identifying properties selected from the properties consisting of a topic associated with the retrieved document, at least one product feature extracted from the retrieved document, an author of the retrieved document, an age of the retrieved document, a list of documents linked to the retrieved document, a number of users who have accessed the retrieved document, and a</p>	<p>WASFI, p. 61: "ProfBuilder highlights each recommendation to show its relevance and access frequency (given the user's current path) by putting 'ball' and 'man' icons, respectively, in front of the title. The number of balls shows levels of relevance: one-ball pages are poor, two-ball pages are neutral, three-ball pages are good, and so on. The number of men shows level of access frequency logarithmically: one-man pages are visited once, two-man pages visited two to three times, three-man pages are visited four to seven times, four-man pages are visited eight to fifteen times, and so on."</p> <p>p. 61: "The vector representation is obtained by a text analysis of HTML pages. This is done by extracting keywords from page titles. all level of headings, and anchor hypertext."</p> <p><i>See also:</i></p> <p>CULLISS at 2:26-37.</p> <p>MLADENIC at 3, 4, 12. <i>See generally</i> 3-6.</p> <p>REFUAH at 7:53 - 8:6, 9:50-59, 20:19-30, 21:6-30. <i>See generally</i> 20:19- 21:36.</p>

number of users who have saved the retrieved document in a favorite document list.

SCHUETZE at 6:58 – 7:15, 10:40-56, Fig. 3. See generally 17:47 – 18:27.

EXHIBIT 3 E

Exhibit 3-E

Claim Chart of U.S. Patent No. 6,182,068 to Culliss (“CULLISS”)

as prior art to

Asserted Claims of U.S. Patent No. 6,998,104 (“’040 Patent”)

and

Asserted Claims of U.S. Patent No. 7,685,276 (“’276 Patent”)

’040 Patent	CULLISS
<p>Claim 1</p> <p>A computer-implemented method for providing automatic, personalized information services to a user u, the method comprising:</p>	<p>Culliss describes a search engine wherein the results of the search are personalized based on the characteristics of a user: “[T]he invention can accept a search query from a user and a search engine will identify matched articles and display squibs of the matched articles in accordance with their comparison scores. Articles can have their key term scores or key term total scores altered according to whether they were displayed to a user, whether they were selected by a user, how much time the user spent with the article, etc.” (Culliss at 2:39-46.) Articles can be “documents, files, databases, text collections, audio clips, video clips and samples of any other type of information.” (<i>Id.</i> at 2:20-24.) Furthermore, the scores can be represented as “key term score, key term total score, key term probability score, comparison score, or other ranking score.” (<i>Id.</i> at 2:48-51.)</p> <p>See CULLISS, 1:16-19: “The present invention relates to search engines, and more particularly pertains to a method for organizing information by monitoring the search activity and personal data of searchers.”</p> <p>1:38-40: “It is another object of the present invention to monitor searching activity to organize articles in accordance with the searching activity of one or more users.”</p> <p>1:41-43: “It is another object of the present invention to utilize personal data about a searcher to organize articles in accordance with the searching activity of one or more users.”</p>

<p>a) transparently monitoring user interactions with data while the user is engaged in normal use of a computer;</p>	<p>3:12-13: disclosing a method of “utiliz[ing] personal data to further refine search results.”</p> <p>CULLISS, 3:46-56: “Users can explicitly specify their own personal data, or it can be inferred from a history of their search requests or article viewing habits. In this respect, certain key words or terms, such as those relating to sports (i.e. “football” and “soccer”), can be detected within search requests and used to classify the user as someone interested in sports. Also, certain known articles or URLs can be detected in a users searching or browsing habits, such as those relating to CNNfn (www.cnnfn.com) or Quote.com (www.quote.com), and also used to classify the user as someone interested in finance.”</p> <p>5:18-21: “When a first user enters a search query, the personal data can be considered part of the request and stored within or added to the index, individually or in groupings with other items of data such as key terms, categories, or ratings.”</p> <p>7:14-20: “Another embodiment of the present invention keeps track of the full queries, or portions thereof such as key terms groupings, which are entered by users having certain personal data characteristics. In this embodiment, queries or portions thereof such as key term groupings, are stored within an index, preferably along with the personal data and a previous-user relevancy score for each query.”</p> <p><i>See also:</i></p> <p>MLADENIC, at 3.</p> <p>REFUAH at Abstract; 3:3-11; 5:34-50; 19:20-22.</p> <p>SCHUETZE at 5:36-40; 11:12-14; 18:11-17; 28:65 – 29:6.</p> <p>WASFI at Abstract, 60.</p> <p>Autonomy Press Release, at 2</p>
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<p>Autonomy Technology Whitepaper, AUT00069-70</p> <p>Autonomy Agentware User Guide, at AUT00119</p> <p>MONTEBELLO at 3.</p>	<p>b) updating user-specific data files, wherein the user-specific data files comprise the monitored user interactions with the data and a set of documents associated with the user;</p> <p>CULLISS, 3:13-35: “The present embodiment of the invention utilizes personal data to further refine search results. Personal data includes, but is not limited to, demographic data, psychographic data, personal interest data, personal activity data or other data about users.... Personal activity data includes data about past actions of the user, such as reading habits, viewing habits, searching habits, previous articles displayed or selected, previous search requests entered, previous or current site visits, previous key terms utilized within previous search requests, and time or date of any previous activity.”</p> <p>3:46-48: disclosing that users’ personal data “can be inferred from a history of their search requests or article viewing habits.”</p> <p>3:57-65: “A cumulative score can be kept with regard to these occurrences of certain classified key terms, queries or visited URLs to quantify how strongly someone is associated with a particular item of personal data. The score can be normalized over time, frequency or other activity such as the number of searches performed, the amount of time spent online, the amount of time spent browsing on a particular subject, the number of URLs or articles selected for a particular subject, or otherwise.”</p> <p>4:60-64: “keeping a cumulative score for a user for search requests or URLs. For example, whenever there is a match (whole or partial) between a search request or URL and an item of personal data, a record for the user can be updated to give a +1 for that item of personal data.”</p> <p>5:36-48: “The personal data can be used to recall different lists of articles in response to new queries from new users. In this respect, it is possible to simply store all elements of personal data, individually or in key term groupings, within the index separately, with components of the query or</p>
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