

## Appendix A

For the Court's convenience, the asserted claims and claim 32 of the '040 patent are listed below, with the disputed claim language emphasized.

### **U.S. Patent No. 6,981,040**

1. A computer-implemented method for providing automatic, personalized information services to a user u, the method comprising:
  - a) transparently monitoring user interactions with data while the user is engaged in normal use of a computer;
  - 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;
  - 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;
  - d) analyzing a document d to identify properties of the document;
  - e) estimating a probability  $P(uld)$  that an unseen document d is of interest to the user u, wherein the probability  $P(uld)$  is estimated by applying the identified properties of the document to the learning machine having the parameters defined by the User Model; and
  - f) using the estimated probability to provide automatic, personalized information services to the user.
11. The method of claim 1 further comprising estimating a posterior probability  $P(uld,q)$  that the document d is of interest to the user u, given a query q submitted by the user.
21. The method of claim 1 further comprising sending to a third party web server user interest information derived from the User Model, whereby the third party web server may customize its interaction with the user.
22. The method of claim 1 wherein the monitored user interactions include a sequence of interaction times.
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:
  - 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;

- 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;
- 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;
- d) analyzing a document d to identify properties of the document;
- e) estimating a probability  $P(uld)$  that an unseen document d is of interest to the user u, wherein the probability  $P(uld)$  is estimated by applying the identified properties of the document to the learning machine having the parameters defined by the User Model; and
- f) using the estimated probability to provide automatic, personalized information services to the user.

34. The program storage devise of claim 32 wherein analyzing the document d provides for the analysis of documents having multiple distinct media types.

#### U.S. Patent No. 7,685,276

1. A computer-implemented method for providing personalized information services to a user, the method comprising:

transparently monitoring user interactions with data while the user is engaged in normal use of a browser program running on the computer;

analyzing the monitored data to determine documents of interest to the user;

estimating parameters of a user-specific learning machine based at least in part on the documents of interest to the user;

receiving a search query from the user;

retrieving a plurality of documents based on the search query;

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

using the estimated probabilities for the respective plurality of retrieved documents to present at least a portion of the retrieved documents to the user.

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.
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.
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.
7. The method of claim 1, wherein said plurality of retrieved documents correspond to a respective plurality of products.
14. The method of claim 1, wherein identifying properties of the retrieved document comprises determining whether at least one of said documents of interest contains a link to said retrieved document.
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.
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 number of users who have saved the retrieved document in a favorite document list.
23. A computer-implemented method for providing personalized information services to a user, the method comprising transparently monitoring user interactions with data while the user is engaged in normal use of a browser program running on the computer;
- transparently monitoring user interactions with data while the user is engaged in normal use of a browser program running on the computer;
- analyzing the monitored data to determine documents of interest to the user;
- estimating parameters of a user-specific learning machine based at least in part on the documents of interest to the user;

collecting a plurality of documents of interest to a user;

for each of said plurality of collected documents: identifying properties of the collected document, and applying the identified properties of the collected document to the user-specific learning machine to estimate a probability that the collected document is of interest to the user;

using the estimated probabilities for the respective plurality of collected documents to select at least a portion of the collected documents;

presenting said selected collected documents to said user.

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.

**Appendix B – Antecedent Basis Terms**

<b><i>Term/Phrase</i></b>	<b><i>Google's Construction</i></b>	<b><i>Plaintiff's Construction</i></b>
"user u"/"the user" and "the user u" ('040 patent, claims 1, 11, 21, 32)	"a user u" and "the user"/"the user u refer to the same user	no construction necessary
"user"/"the user" ('276 patent, claims 1, 6, 21, 23)	"a user" and "the user" refer to the same user	no construction necessary
"user-specific data files"/"the user-specific data files" ('040 patent, claims 1 and 32)	"user-specific data files" and "the user-specific data files" refer to the same files	no construction necessary
"a document d"/"the document" ('040 patent, claims 1, 11, 32)	"a document d" and "the document" refer to the same document	no construction necessary
"a document"/"the document" ('276 patent, claim 6)	"a document" and "the document" refer to the same document	no construction necessary
"a learning machine"/"the learning machine" ('040 patent, claims 1 and 32)	"a learning machine" and "the learning machine" refer to the same learning machine	no construction necessary
"a user-specific learning machine"/"the user-specific learning machine" ('276 patent, claims 1, 5, 23)	"a user-specific learning machine" and "the user-specific learning machine" refer to the same user-specific learning machine	no construction necessary
"a probability $P(u d)$ that an unseen document d is of interest to the user u"/"the probability $P(u d)$ "/"the estimated probability" ('040 patent, claims 1 and 32)	"a probability $P(u d)$ that an unseen document d is of interest to the user u," "the probability $P(u d)$ ," and "the estimated probability" refer to the same probability.	no construction necessary
"parameters of a learning machine"/"the parameters" ('040 patent, claims 1 and 32)	"parameters of a learning machine" and "the parameters" refer to the same parameters	no construction necessary
"a user model"/"the user	"a user model" and "the user	no construction necessary

<i>Term/Phrase</i>	<i>Google's Construction</i>	<i>Plaintiff's Construction</i>
model" ('040 patent, claims 1, 21, 32)	model" refer to the same user model	
"a search query"/"the search query" ('276 patent, claim 1, 21)	"a search query" and "the search query" refer to the same search query	no construction necessary

## Appendix C – Antecedent Basis Terms

'040 Patent, claim 1: "User u"/"the user" and "the user u";

1. A computer-implemented method for providing automatic, personalized information services to a user u, the method comprising:

- a) transparently monitoring user interactions with data while the user is engaged in normal use of a computer;

"user-specific data files" / "the user-specific data files"

- 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;

"a document d" / "the document";

- d) analyzing a document d to identify properties of the document;

"a learning machine" / "the learning machine";

- 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;
- d) analyzing a document d to identify properties of the document;
- e) estimating a probability  $P(uld)$  that an unseen document d is of interest to the user u, wherein the probability  $P(uld)$  is estimated by applying the identified properties of the document to the learning machine having the parameters defined by the User Model; and

"a probability  $P(u|d)$  that an unseen document  $d$  is of interest to the user  $u$ " / "the probability  $P(u|d)$ " / "the estimated probability";

- 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
- f) using the estimated probability to provide automatic, personalized information services to the user.

"parameters of a learning machine" / "the parameters";

- 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;

"a user model" / "the user model"

- 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;
- d) analyzing a document  $d$  to identify properties of the document;
- 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

'040 Patent, claim 32: "User  $u$ " / "the user" and "the user  $u$ ";

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:

- 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;



"user-specific data files" / "the user-specific data files"

- 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;

"a document d" / "the document";

- d) analyzing a document d to identify properties of the document;

"a learning machine" / "the learning machine";

- 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;
- d) analyzing a document d to identify properties of the document;
- 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

"a probability  $P(u|d)$  that an unseen document d is of interest to the user u" / "the probability  $P(u|d)$ " / "the estimated probability";

- 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
- f) using the estimated probability to provide automatic, personalized information services to the user.

"parameters of a learning machine" / "the parameters";

- 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;

"a user model" / "the user model"

- 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;
- d) analyzing a document d to identify properties of the document;
- e) estimating a probability P(uld) that an unseen document d is of interest to the user u, wherein the probability P(uld) is estimated by applying the identified properties of the document to the learning machine having the parameters defined by the User Model; and

'276 Patent, claim 1: "user" / "the user"

1. A computer-implemented method for providing personalized information services to a user, the method comprising: transparently monitoring user interactions with data while the user is engaged in normal use of a browser program running on the computer;

"a user-specific learning machine" / "the user-specific learning machine"

estimating parameters of a user-specific learning machine based at least in part on the documents of interest to the user;  
receiving a search query from the user;  
retrieving a plurality of documents based on the search query;  
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

"a search query" / "the search query"

receiving a search query from the user;  
retrieving a plurality of documents based on the search query;

'276 Patent, claim 6: "a document" / "the document"

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.

'276 Patent, claim 23: "user" / "the user"

23. A computer-implemented method for providing personalized information services to a user, the method comprising:

transparently monitoring user interactions with data while the user is engaged in normal use of a browser program running on the computer;

"a user-specific learning machine" / "the user-specific learning machine"

estimating parameters of a user-specific learning machine based at least in part on the documents of interest to the user;  
collecting a plurality of documents of interest to a user;  
for each of said plurality of collected documents: identifying properties of the collected document, and applying the identified properties of the collected document to the user-specific learning machine to estimate a probability that the collected document is of interest to the user;

## Appendix D – Order of Steps in '276 Patent

'276 patent, claim 23:

23. A computer-implemented method for providing personalized information services to a user, the method comprising:

- a. transparently monitoring user interactions with data while the user is engaged in normal use of a browser program running on the computer;
- b. analyzing the monitored data to determine documents of interest to the user;
- c. estimating parameters of a user-specific learning machine based at least in part on the documents of interest to the user;
- d. collecting a plurality of documents of interest to a user;
- e. for each of said plurality of collected documents: identifying properties of the collected document, and applying the identified properties of the collected document to the user-specific learning machine to estimate a probability that the collected document is of interest to the user;
- f. using the estimated probabilities for the respective plurality of collected documents to select at least a portion of the collected documents;
- g. presenting said selected collected documents to said user.

(annotations added, including lettered paragraphs)