SYSTEM AND METHOD FOR ENHANCING E-COMMERCE TRANSACTIONS BY ASSESSING THE USERS' ECONOMIC PURCHASE VALUE RELATIVE TO ADVERTISERS

CROSS-REFERENCE TO RELATED APPLICATIONS

The present invention relates to U.S. patent application Serial No. 09/626695, titled "History Session Logging System and Method for Enhancing E-Commerce Transactions by Providing Personalized Page Content and Advertising," which is filed on even date herewith, which is assigned to the same assignee as the present application, and which is incorporated herein by reference.

FIELD OF THE INVENTION

The present invention relates to the field of data processing. Particularly, this invention relates to a software system and associated method for use in e-commerce advertising with a search engine that searches data maintained in systems that are linked together over an associated network such as the Internet. More specifically, this invention pertains to a computer software product for creating an Internet search and activity history for a user in an Internet search session and using a user history and activity profile to assess the economic purchase value of a user to an advertiser, allowing advertising fees to be paid based on the perceived purchase value of the user to the advertiser.

BACKGROUND OF THE INVENTION

The World Wide Web (WWW) is comprised of an expansive network of interconnected computers upon which businesses, governments, groups, and individuals throughout the world maintain inter-linked computer files known as web pages. Users navigate these pages by means of computer software programs commonly known as Internet browsers. Due to the vast number of WWW sites, many web pages have a redundancy of information or share a strong likeness in either function or title. The vastness of the WWW causes users to rely primarily on Internet search engines to retrieve information or to locate businesses. These search engines use various means to determine the relevance of a user-defined search to the information retrieved.

The authors of web pages provide information known as metadata, within the body of the hypertext markup language (HTML) document that defines the web pages. A computer software product known as a web crawler systematically accesses web pages by sequentially following hypertext links from page to page. The crawler indexes the pages for use by the search engines using information about a web page as provided by its address or Universal Resource Locator (URL), metadata, and other criteria found within the page. The crawler is run periodically to update previously stored data and to append information about newly created web pages. The information compiled by the crawler is stored in a metadata repository or

database. The search engines search this repository to identify matches for the user-defined search rather than attempt to find matches in real time.

A typical search engine has an interface with a search window where the user enters an alphanumeric search expression or keywords. The search engine sifts through available web sites for the user's search terms, and returns the search of results in the form of HTML pages. Each search result includes a list of individual entries that have been identified by the search engine as satisfying the user's search expression. Each entry or "hit" may include a hyperlink that points to a Uniform Resource Locator (URL) location or web page.

In addition to the hyperlink, certain search result pages include a short summary or abstract that describes the content of the URL location. Typically, search engines generate this abstract from the file at the URL, and provide acceptable results for URLs that point to HTML format documents. For URLs that point to HTML documents or web pages, a typical abstract includes a combination of values selected from HTML tags. These values may include a text from the web page's "title" tag, from what are referred to as "annotations" or "meta tag values" such as "description", "keywords", etc., from "heading" tag values (e.g., HI, H2 tags), or from some combination of the content of these tags.

More specifically, the popularity of portal sites that act as gateways to very

specialized information sources has grown concurrently with the WWW, both in complexity and volume of data. The term "portal" is generally synonymous with gateway, and is typically used to refer to a WWW site which is intended to be a major starting site or as an anchor site for web users. Current leading general-purpose portal sites include: Yahoo!®, Excite®, Netscape®, Lycos®, Cnet®, and MSN The Microsoft Network®. Such portal sites serve as gateways to a wide variety of general-purpose information; however, specialized portals have also been gaining popularity in recent years.

The portal database is a vast repository of pre-collected, indexed, and summarized information, typically gathered from the WWW using automated crawling tools. When a user enters a query, the portal's search engine attempts to match the keywords specified by the user with summarized metadata that have been previously extracted from the documents stored in the repository, and then returns an ordered list of matches relevant to the user's query.

Many web pages contain advertisements that assume various forms such as banner ads (or advertisements) across the top or bottom of the page. Such ads may include scrolled information containing images that change with time. Several attempts have been proposed to target users, some of which resorting to cookies to gather information about these users. Exemplary advertisement targeting methods are generally described in the following publications:

1. U.S. Patent No. 6,064,967 to Speicher;
2. U.S. Patent No. 5,948,061 to Merriman;
3. U.S. Patent No. 5,572,643 to Judson; and
4. U.S. Patent No. 4,833,308 to Humble.

However, disadvantageously from an advertiser's perspective, web users have a tendency to mentally "tune-out" ads as they read or interact with the information displayed on the main work area of a page. Furthermore, by utilizing a portion of the valuable "real estate" on a web page for ads, the remaining available work area on the page is reduced from its maximum full-screen capabilities. In order for the valuable space dedicated to advertisements to be optimally utilized, the advertisements need to be very specifically tailored to each user individually, without overburdening the information flow.

Currently, Internet businesses (or ebusinesses) employ the customer's activities on their own web sites to focus their sites and advertisements toward the customer's interests and needs. However, ebusinesses do not have access to information from web pages visited by the user prior to their web page, and are thus at a competitive disadvantage due to their inability to closely tailor or target their ebusinesses, individually to each customer. As an analogy, each customer visiting a store is expected to have his or her individual needs; however, current ebusinesses do not fully account for the individuality in taste and needs of the customers.

Therefore, there is a need for a system and method that enhance e-commerce transactions by personalizing the content and the advertisements of web pages being browsed by a particular customer, during a particular session. The need for such a system has heretofore remained unsatisfied.

In addition, advertising revenue is paid to ebusinesses based on the number of users that click on the advertiser's banner ads. Currently, the fee paid to the ebusiness is most likely fixed in that the advertiser pays the same referral fee whether the users that click on the banner ads do so by accident or by intent. There is no way currently to differentiate the value of the user to the advertiser when the user clicks on the banner ad.

Therefore, there is still a need for a system and method that determine the value of a user to an advertiser based on the search and activity history profile, which would allow the ebusinesses to charge a higher referral fee for advertising that targets a specific user's needs and to provide access to a potentially more lucrative clientele basis. The need for such a system has heretofore remained unsatisfied.

SUMMARY OF THE INVENTION

The path tracking and associated method satisfy this need. The system records the web user's history and activity and calculates a user "economic purchase value"

based on the relevance of the user's activity to the web page's topic and the web page's advertisers. The referral fee paid to a web page by the advertiser would be based on a sliding scale depending on the economic purchase values of the users referred to the advertiser's web site. For example, a user whose purchase history indicates a higher likelihood of purchasing the advertiser's products and/or services would be assigned a higher economic purchase value and thus a correspondingly higher referral fee than a user with a lower economic purchase value.

The path tracking system provides numerous advantages to the users, ebusinesses, and advertisers, among which are the following:

1. The ebusinesses can now target advertising to the perceived individual needs of the users, maximizing the effectiveness of the banner advertising and enhancing its attractiveness; and
2. The advertisers' referral fees can be more efficiently allocated, varying among customers in correspondence to their individual economic purchase value.

The path tracking system uses a history session logging that sends information, such as the user's session history or the user's profile to the current web server B. To this end, a proxy server attaches the information to the base domain of the current web site B, as an extension string or as part of a larger extension string. As an example, the URL or base domain for the web site B is: www.URLB.com. The

extension string containing the desired information can be embedded in the extension string, which is then attached to the base domain, as follows: www.URLB.com/extension string.

At the completion of step 440, the proxy server 221 assigns an economic purchase value to the user at step 510. This economic purchase value is based on the assessment of the user's purchase history or profile and on the goods or services provided by the web server B that correspond to the user's profile. In the above example, if, prior to visiting web site B, the user has made several visits to competitive web sites A and made one or more purchases, this user may be assigned a higher economic purchase value than a user who has neither made any previous purchases or visited competitive sites.

Based on the client's profile, the path tracking system assesses an economic purchase value to the client, which economic purchase value reflects the perceived needs of the user that can be filled by the products and / or services offered by the current web server B. In summary, a user with perceived needs that closely match the content of the web page would receive a higher economic purchase value than one whose needs are not shared with the web server B.

The proxy server assesses a referral fee based on the economic purchase value of the client. The referral fee information can be generated by a look up table that

associates the economic purchase value to a referral fee schedule. This assessment can be calculated by the web page server B, by the proxy server 221, or alternatively, by an independent proxy server.

BRIEF DESCRIPTION OF THE DRAWINGS

The various features of the present invention and the manner of attaining them will be described in greater detail with reference to the following description, claims, and drawings, wherein reference numerals are reused, where appropriate, to indicate a correspondence between the referenced items, and wherein:

FIG. 1 is a schematic illustration of an exemplary operating environment in which a path tracking system of the present invention can be used;

FIG. 2 is a block diagram that illustrates a high level architecture of the path tracking system of FIG. 1, shown used in the context of an ebusiness transaction;

FIG. 3 is a block diagram that provides additional details to the architecture of the path tracking system of FIG. 2; and

FIG. 4 is a flow chart that depicts the operation of the path tracking system of FIGS. 1 – 3.

DETAILED DESCRIPTION OF THE INVENTION

The following definitions and explanations provide background information pertaining to the technical field of the present invention, and are intended to facilitate the understanding of the present invention without limiting its scope:

Applet: An application such as a utility or a simple program.

Cookie: Information supplied by a server and placed on a user's side of a user/server communication. Cookies typically reside on the user's hard disk and provide information to the server about the user. In the majority of cases, cookies have a finite lifetime.

Data Stream: A flow of data from one place to another.

Ebusiness: business transactions conducted online using the Internet or another communications network.

Internet: A collection of interconnected public and private computer networks that are linked together with routers by a set of stand protocols to form a global distributed network.

Intra-Domain Links: Links to documents within a specific Internet site.

Internet: A collection of interconnected public and private computer networks that are linked together with routers by a set of standards protocols to form a global, distributed network.

Server: A software program or a computer that responds to requests from a web browser by returning ("serving") web documents.

URL (Uniform Resource Locator): A unique address that fully specifies the location of a content object on the Internet. The general format of a URL is protocol://server-address/path/filename.

Web browser: A software program that allows users to request and read hypertext documents. The browser gives some means of viewing the contents of web documents and of navigating from one document to another.

Web document or page: A collection of data available on the World Wide Web and identified by a URL. In the simplest, most common case, a web page is a file written in HTML and stored on a web server. It is possible for the server to generate pages dynamically in response to a request from the user. A web page can be in any format that the browser or a helper application can display. The format is transmitted as part of the headers of the response as a MIME type, e.g. "text/html",

"image/gif". An HTML web page will typically refer to other web pages and Internet resources by including hypertext links.

Web site: A database or other collection of inter-linked hypertext documents ("web documents" or "web pages") and associated data entities, which is accessible via a computer network, and which forms part of a larger, distributed informational system such as the WWW. In general, a web site corresponds to a particular Internet domain name, and includes the content of a particular organization. Other types of web sites may include, for example, a hypertext database of a corporate "intranet" (i.e., an internal network which uses standard Internet protocols), or a site of a hypertext system that uses document retrieval protocols other than those of the WWW.

World Wide Web (WWW): An Internet user - server hypertext distributed information retrieval system.

FIG. 1 portrays the overall environment in which a path tracking system 10 according to the present invention may be used. The system 10 includes a software or computer program product that is typically embedded within, or installed at least in part, on a host server 15. Alternatively, the system 10 can be saved on a suitable storage medium such as a diskette, a CD, a hard drive, or like devices. While the system 10 will be described in connection with the WWW, the system 10 can be

used with a stand-alone database of terms that may have been derived from the WWW and / or other sources.

The cloud-like communication network 20 is comprised of communication lines and switches connecting servers such as servers 25, 27, to gateways such as gateway 30. The servers 25, 27 and the gateway 30 provide the communication access to the WWW Internet. Users, such as remote Internet users, are represented by a variety of computers such as computers 35, 37, 39, and can query the host server 15 for desired information through the communication network 20.

The host server 15 is connected to the network 20 via a communications link such as a telephone, cable, or satellite link. The servers 25, 27 can be connected via high-speed Internet network lines 44, 46 to other computers and gateways. The servers 25, 27 provide access to stored information such as hypertext or web documents indicated generally at 50, 55, and 60. The hypertext documents 50, 55, 60 most likely include embedded hypertext link to other locally stored pages, and hypertext links 70, 72, 74, 76 to other webs sites or documents 55, 60 that are stored by various web servers such as the server 27.

FIG. 2 illustrates the system 10 of FIG. 1 in relation to a user or a graphical user interface (GUI) 140 and the WWW 20. The system 10 records all the actions performed by a user (illustrated as a computer 35) via a browser or graphical user

interface 140. The user's actions can be, for example, queries, searches, clicks on intra-domain links, etc.

A proxy server 221 is used in conjunction with the system 10 and acts as an interface between a service provider 100 and the system 10. In this illustration, the system 10 is shown implemented on the user's computer 35, and the proxy server 221 is shown implemented by the service provider 100 in order to protect the user's private information from unauthorized hacking. It should however be understood that from a technical aspect, the proxy server 221 and the system 10 can be integrated into a single application or software program, and can reside either on the user's computer 35 or on the server of the service provider 100.

Searches on the WWW are performed by the search service provider 100 that generally comprises a web crawler 200, a search engine repository 210, an indexing engine 220, a query transformer 230, a search engine 240, a search results transformer 250, and an indexed data repository 260. In use, the crawler 200 crawls the WWW 20 and downloads web documents to the search engine repository 210 where they are stored and updated systematically. The abstract/indexing engine 220 indexes the web documents and generates abstracts for the documents. The abstracts and the indexed data are stored in the abstracts/indexed data repository 260 for later use by the search engine 240, as appropriate.

The search engine repository 210 is a data store maintained by a web information gatherer such as the web crawler 200. The search engine repository 210 maintains information or metadata from previously encountered web pages. This metadata is used by the indexing engine 220 to prepare the index. Preferably, the search engine repository 210 is maintained centrally by the search service provider 100. Alternatively, the search engine repository 210 may be located and maintained on an independently provided system to which the search service provider 100 has access. The indexing engine 220 generates a description for each web document from the metadata stored in the search engine repository 210. The query transformer 230, prompted by the browser 140, applies an internal query request to the indexed data stored in the indexed data repository 260, and generates a search result with matches (or query results) 270 that are specific to the user's query.

The system 10 records the user's actions during a visit to a web server A, which is representative or the web sites visited by the user prior to browsing the current web server B. The user's actions include for example the queries made by the user, the URLs visited by the user, the products and/or services purchased by the user, the quotes requested by the user, the prices provided to the user, individual session profiles, etc. In addition, the user can manually enter additional information about himself or herself, such as hobbies, resume information, etc.

The bulk of this information is referred to herein as "user profile," and can be

saved on the user's computer 35 for privacy reason, or, if authorized by the user, it can be saved on a secure site such as a dedicated repository provided by the service provider 100, or on an independently maintained server. The information forming the user profile is indexed by an indexing engine for ease of access. The user profile can be saved for either a short time, such as the duration of the session to the current web server B, or for an extended period of time for use in future sessions.

FIG. 4 illustrates a method of operation 400 of the system 10 of FIGS. 1 – 3. At step 405, the user logs on one or more web servers, illustrated by the web server A. At step 410, the proxy server 221 opens session A and starts logging selected session information such as the URL of the web site A and the start time of session A. The user performs any one or more of the actions described herein, and the data stream generated by such actions is logged as a user profile, at step 415, by the system 10 on the user's computer 35.

At step 420, the user clicks on an inter-domain link or explicitly enters the URL of the web server B, causing the proxy server 221 closes session A and opens a current session B associated with the visit to the web server B (step 425). The proxy server 221 and the system 10 append the data stream from the web server B to the data compiled from visits to the previous web server A, as discussed earlier in connection with steps 410 and 415.

At step 440, the web server B can expressly query the proxy server 221 for the user's session history saved by the proxy server 221, or for more detailed information such as the complete user's profile saved by the system 10, as explained earlier. Alternatively, the proxy server 221 and/or the system 10 can automatically selected information from the session A logged at step 410 by the proxy server 221, and/or the user's profile stored by the system at step 415, without being queried by the web server B. As a privacy precautionary measure, the user can disable this function at will, thus preventing the web server B from accessing session information or the user profile.

In order to send the information (i.e., the user's session history or the user's profile) to the current web server B, the proxy server 221 (or the system 10) attaches this information to the base domain of the web site B, as an extension string or as part of a larger extension string. As an example, the URL or base domain for the web site B is: www.URLB.com. The extension string containing the desired information can be embedded in the extension string, which is then attached to the base domain, as follows: www.URLB.com/extension string.

The web server B, now in possession of the extension string, uses the information contained therein to provide the user with personalized page content and/or advertising. For example, the web server B can perform price comparison,

and provide the user with competitively priced products or services.

Another way to implement the method 400 is for the proxy server 221-(or the web server B) to send an applet or cookie to the system 10. When the applet or cookie is executed, it queries the system 10 for the user's profile. Alternatively, the web server B can send an applet or a cookie to the proxy server 221, which, when recognized by the proxy server 221, is executed to query for the session information logged at step 410.

Another alternative would be for the web server B to send the applet or cookie to the proxy server 221, which, when executed, causes the proxy server 221 to transmit the query from the web server B to the system 10 for execution. Upon, execution of the query by the system 10 on the user's computer 35, the system 10 transmits the query result back to the proxy server 221, which, in turn, processes (e.g. indexes and filters) the data, or transmits the raw data back to the web server B.

The data stream containing the user related information is processed by the web server B to better service the user by generating, for example, personalized banner ads, or by changing the web page content based on the perceived needs of the user. As an example, the user logs onto www.amazon.com (web site A) and queries for books, and then queries for a compiler software book:

www.amazon.com

books section

compiler software.

The user then visits www.barnesandnoble.com (web site B). The proxy server closes session A associated with www.amazon.com, and opens session B associated with www.amazon.com. The web server B, upon receiving a log in request from the user, activates a cookie on the user's computer. The cookie acquires the information from the system 10 about the user's previous activities and provides some filtering of non-relevant information.

The cookie then queries the proxy server 221 and sends the user history and profile to the web server B. Once the web server B receives the history and profile information, it can reformat the web-page content and advertising to meet the user's perceived needs and interests. For instance, the web server B can redesign its web page so that the latter contains information from and about the books section, and also provides a compiled list of compiler softwares. The server can also offer products and services at a competitive rate based on information provided by the system 10 on products and services provided at web sites previously visited by the user.

At the completion of step 440, the proxy server 221 assigns an economic

purchase value to the user at step 510. This economic purchase value is based on the assessment of the user's purchase history or profile and on the goods or services provided by the web server B that correspond to the user's profile. In the above example, if, prior to visiting web site B, the user has made several visits to competitive web sites A and made one or more purchases, this user may be assigned a higher economic purchase value than a user who has neither made any previous purchases or visited competitive sites.

The economic purchase value therefore reflects the perceived needs of the user that can be filled by the products and / or services offered by the current web server B. In summary, a user with perceived needs that closely match the content of the web page would receive a higher economic purchase value than one whose needs are not shared with the web server B.

As an example, the user logs on to www.amazon.com through the portal www.yahoo.com and queries for music and then queries for a compact disk:

www.yahoo.com

www.amazon.com

music category

compact disks.

While the user is conducting a specific search for products at the

www.amazon.com web site, the proxy server 221 builds a session profile. At this stage, the user would enjoy a high economic purchase value relative to future web sites B that sell music and music products, but not relative to other web sites B that sell gardening products or sports equipment.

Based on the economic purchase value of the client, the proxy server 221 assesses a corresponding referral fee at step 520. The referral fee information can be generated by a look up table that associates the economic purchase value to a referral fee schedule. This assessment can be calculated by the web page server B, by the proxy server 221, or alternatively, by an independent proxy server.

It is to be understood that the specific embodiments of the invention that have been described are merely illustrative of certain application of the principle of the present invention. Numerous modifications may be made to the path tracking system, and associated methods described herein without departing from the spirit and scope of the present invention. For example, a business alliance between two associated sites that wish to promote each other's products and/or services could result in an "electronic coupon," which means that a part of the extension string that is appended to the domain of URL B (upon link from URL A to URL B) will grant the user certain discounts or other special discounts or similar promotions. Moreover, while the present invention is described for illustration purpose only in relation to the WWW, it should be clear that the invention is applicable as well to databases and

other tables with indexed entries.



What is claimed is:

1. A method for enhancing business transactions, comprising:

compiling user's activity information gathered from one or more visits to a prior site;

generating a personal profile for the user from the activity information, the personal profile including any one or more of a perceived user interest or a perceived user need; and

based on the user's profile, assessing an individual economic purchase value to the user relative to an advertiser.

2. The method of claim 1, further including allotting a referral fee for the user based on the user's economic purchase value.

3. The method of claim 2, further including presenting the user's personal profile to a current site being visited by the user.

4. The method of claim 3, wherein compiling the user's activity information includes storing link information of the prior site.

5. The method of claim 3, wherein compiling the user's activity information includes storing information about any one or more of a product or a service purchased by the user.

6. The method of claim 3, wherein compiling the user's activity information includes storing any one or more of a quote requested by the user or a price provided to the user during a visit to the prior site.

7. The method of claim 3, wherein presenting the activity information to the current site includes embedding the activity information as an extension string to a base domain of the current site.

8. The method of claim 2, wherein allotting a referral fee includes generating the associating the user's economic purchase value to a referral fee schedule.

9. A system for enhancing business transactions comprising:

a data store for compiling user's activity information gathered from one or more visits to a prior site;

a proxy server for generating a personal profile for the user from the activity information, the personal profile including any one or more of a perceived user interest or a perceived user need; and

the proxy server assessing an individual economic purchase value to the user relative to an advertiser, based on the user's profile.

10. The system of claim 9, wherein the proxy server allots a referral fee based

on the user's economic purchase value.

11. The system of claim 10, wherein the proxy server presents the user's personal profile to a current site being visited by the user.

12. The system of claim 11, wherein the user's activity information includes link information of the prior site.

13. The system of claim 11, wherein the user's activity information includes information about any one or more of a product or a service purchased by the user.

14. The system of claim 11, wherein the user's activity information includes any one or more of a quote requested by the user or a price provided to the user during a visit to the prior site.

15. The system of claim 10, wherein the proxy server allots a referral fee by associating the user's economic purchase value to a referral fee schedule.

16. A software program product comprising:

a tracking module for compiling user's activity information gathered from one or more visits to a prior site;

a proxy server for generating a personal profile for the user from the activity information, the personal profile including any one or more of a perceived user interest or a perceived user need; and

the proxy server assessing an individual economic purchase value to the user relative to an advertiser, based on the user's profile.

17. The system of claim 16, wherein the proxy server allots a referral fee for the user based on the user's economic purchase value.

18. The system of claim 17, wherein the proxy server allots a referral fee by associating the user's economic purchase value to a referral fee schedule.

19. The system of claim 16, wherein the proxy server presents the user's personal profile to a current site being visited by the user.

20. The system of claim 16, wherein the user's activity information includes any one or more of:

link information of the prior site;

* C L M S *

a product or a service purchased by the user.

a quote requested by the user; or

a price provided to the user during a visit to the prior site.