

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
21 December 2000 (21.12.2000)

PCT

(10) International Publication Number
WO 00/77681 A1

(51) International Patent Classification⁷: **G06F 17/30**

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(21) International Application Number: PCT/KR99/00489

(22) International Filing Date: 27 August 1999 (27.08.1999)

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(25) Filing Language: English

(81) Designated States (*national*): CN, JP, US.

(26) Publication Language: English

(84) Designated States (*regional*): European patent (AT, BE,
CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC,
NL, PT, SE).

(30) Priority Data:
1999/19004 26 May 1999 (26.05.1999) KR

Published:

- With international search report.
- Before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments.

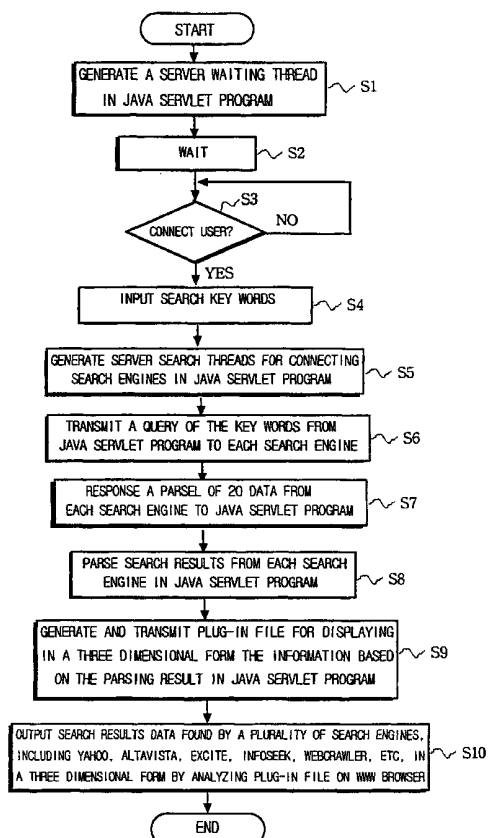
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For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

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(54) Title: METHOD FOR DISPLAYING SEARCH RESULT DATA FROM INTERNET SEARCH ENGINES IN THREE DI-
MENSIONAL FORM



(57) Abstract: A method for displaying search result data from several Internet search engines in a three-dimensional form is disclosed. In a search key words inputting step, a Java servlet program makes a meta information according to search key words inputted by users. In the search result generating step, the Java servlet program transmits corresponding queries into each of the several search engines, brings the search results into itself, parses those results into the meta information, produces a plug-in file based on the meta information, and transmits the plug-in file to the web browser in use. In the search result outputting step, the plug-in file is conducted in the web browser to display all of the search results in a three dimensional form on one screen. In addition, the Internet users can search and get more information faster upon using the three-dimensional search engine (Meta 3D).

METHOD FOR DISPLAYING SEARCH RESULT DATA FROM INTERNET SEARCH ENGINES IN THREE DIMENSIONAL FORM

TECHNICAL FIELD

5 The present invention relates, in general, to a method for displaying search result data from Internet search engines in a three dimensional form and, more particularly, to a method for displaying search result data from a plurality of internet search engines in a three dimensional form in order to display search results of a plurality of search
10 engines by internet users on a cyber space easily and fast .

BACKGROUND ART

Nowadays, the Internet is recognized as the most powerful and abundant information source in the world.

15 Generally, the information existing in the cyber space of the Internet is searched with the aid of search engines, such as Yahoo, AltaVista, eXcite, Infoseek, Webcrawler, etc, which users can access by connecting their uniform resource locators (URLs) with web browsers such as Netscape, Explorer, Opera, etc. These search engines require agent programs to display the search results corresponding to search key
20 words input by users in hypertext markup language (HTML) document forms on the WWW.

 However, since the conventional internet search engines present the search results merely in letter forms only, it is inconvenient for the users to recognize the presented search results at the first glance. The
25 conventional internet search engines can usually display at most 10 to 20

search results on one screen, hence the search results can not be compared at a glance, requiring a long period of time for the users to analyze.

DISCLOSURE OF THE INVENTION

5 The object of the present invention is to overcome the above problems encountered in prior arts and has an object to provide a method for displaying search result data from Internet search engines in a three dimensional form by using a three dimensional plug-in technology, which can compare search results with a position mark(P) displaying
10 search result of search engines and a height mark(H) having a result of each search engine, can display the search result data on a screen up to maximum 100 kinds of information, that is, five to ten times as much as search result data of the existing search engines, and can be easily compared with a statistical distribution among the respective search
15 results, with which desired information can be obtained from the Internet quickly and widely.

 In order to achieve the above object of the present invention, there is provided a method for displaying search result data from internet search engines in a three dimensional form, comprising: a key-words
20 inputting step in which a Java servlet program provides a server waiting thread which is used to permit the access to a server of the Internet users who use a web browser, waits until an internet user connects, makes a meta information according to search key words inputted by users; a search result generating step in which the Java servlet program produces
25 as many server search threads as search engines to be used, transmits queries for the search key words into each of the search engines, brings a certain number of search results corresponding to the key words from each of the search engines into itself, parses the search results into the

meta information, produces a plug-in file based on the meta information, and transmits the plug-in file to the web browser in use; and a search result outputting step in which the plug-in file is conducted in the web browser of the Internet users to display the search results from all of the used search engines in a three dimensional form, whereby the Internet users can recognize and compare the quantities of the information which each of the existing search engines detect, easily and fast.

In accordance with the present invention, there is provided a computer-readable storage medium having a program recorded thereon, where the program is to provide a search key words inputting function (a), a search result generating function (b) and a search result outputting function (c) to the computer.

BRIEF DESCRIPTION OF THE DRAWINGS

The above objects, characteristics and other advantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

Fig. 1 is a screen displaying search results from a conventional search engine;

Fig. 2 is a view illustrating a system organization of the three dimensional internet search engine (Meta 3D) according to one embodiment of the present invention;

Fig. 3 is a flow chart illustrating a search key words inputting step, a search result generating step, and a search result outputting step of the Meta3D according to the present invention;

Fig. 4 is a screen showing a key word inputting step of the three dimensional search engine(Meta 3D); and

Fig. 5 is a screen showing search results from the Meta 3D in a

three dimensional form.

BEST MODES FOR CARRYING OUT THE INVENTION

Hereinafter, a method for displaying search result data from search engines in a three dimensional form according to a preferred
5 embodiment of the present invention will be explained in more detail with reference to the accompanying drawings.

With reference to Fig. 2, there is a system organization of the three-dimensional search engine according to one embodiment of the present invention, named "Meta 3D". The system of the "Meta 3D"
10 consists of a web browser 1, a web server 2, a Java servlet program 3, conventional search engines 4, and a plug-in file 7.

To be offered the world wide web (WWW) services, the Internet users can connect into the web server 2 by using the web browser 1.

Through the Java servlet program 3, the web server 2 can access
15 the conventional search engines 4. The Java servlet program brings the search results corresponding to search key words inquiry from the conventional search engines, parses the search results and produces a plug-in file. Upon receiving a query of the search key words from the Java servlet program 3, the conventional search engines which include
20 Yahoo (<http://www.yahoo.com>), AltaVista (<http://www.altavista.com>), eXcite (<http://search.excite.com>), Infoseek (<http://infoseek.go.com>), and Webcrawler (<http://www.webcrawler.com>) provide their search results to the Java servlet program 3.

Upon receiving the search result data from the existing search
25 engines 4, the Java servlet program 3 produces a plug-in file 7 for connecting to the web browser 1. As soon as the plug-in file 7 is transmitted from the Java servlet program 3 through the web server 2 to the web browser 1, it is executed and the search results of the five search

engines are displayed in a three-dimensional form on one screen of the Internet user, at once.

If the Internet user who is on the search page of the WWW browser 1 sends a query of search key words to the web server 2 then the
5 Java servlet program 3 reads data corresponding search parameters and transmits them to the existing search engines 4. After searching the information in response to the search parameter transmission, each of the search engines takes advantage of the common gateway interface (CGI) to make out hypertext markup language (HTML) documents of the
10 search results. The Java servlet program 3 collects the search results from the search engines and produces a temporary file which contains various specifications of the HTML documents, including the relative amount of search results by search engines, URLs, titles, and the number of the search engines involved in finding out the documents.

15 After producing the temporary file, the contents of the temporary file is parsed by a parsing program to analyze the titles, the descriptions, the URL, etc. and then new files are produced on the basis of this analysis. From the Java servlet program 3, a stream of the newly produced files flows through the web server 2 to the web browser 1.
20 The three-dimensional plug-in program which the users are using reads the formats of the transferred files and designates the address of each URL to represent the search results in a tetragonal form.

With reference to Fig. 3, the method for displaying search result data from search engines in a three dimensional search engines(Meta3D)
25 according to the present invention comprises the steps of inputting search key words, generating search results, and outputting a search results.

First, in the search key word inputting step of the three dimensional search engine (Meta 3D), the Java servlet program
30 produces a server waiting thread (S1) for user connection on internet and

goes into a wait state (S2) until users connect with the program. Upon users connection, the Java servlet program checks the user identification and password (S3). When connecting the web server 2, the Java servlet program 3 produces a meta information by inputting the search key words.

In the result generating step, the Java servlet program 3 produces five server search threads (S5) which are to connect with the five existing search engines including Yahoo, AltaVista, eXcite, Infoseek, and Webcrawler, respectively, and transmits a query of the search key words to each of the search engines 4 (S6). After completion of the searching of the engines, the Java servlet program 3 fetches the search results by a parcel of 20 data, if present, from the individual search engines (S7) and then, parses the result of the individual search engines(S8). Based on the meta information obtained from the parsing of the result, the Java servlet program 3 makes out a plug-in file (S9) which is a three dimensional result file and is then transmitted through the web server 2 to the web browser 1 which is being used by the users.

Finally, in the search result outputting step, the plug-in file 7 which is received by the web browser 1 is analyzed and outputted the search results from the five existing search engines used in the invention, that is, Yahoo, AltaVista, eXcite, Infoseek and Webcrawler, in a three-dimensional form (S10) in order to display in such statistical distribution forms concurrently on one screen that they can be easily compared with one another as to a position mark(P) and a height mark(H) representing their average search quantity and accuracy of each search engine respectively.

For example, the outermost concentric circle relates to the search information which is detected individually by the search engines, the second outermost concentric circle to the search information which is detected commonly by any two of the search engines, the third outermost

concentric circle to the search information commonly detected by any three of the search engines, and the innermost concentric circle for the search information detected commonly by all of the search engines.

Referring to Fig. 5, the higher the position mark(P) shown as triangle reaches, the higher the average accuracy of the corresponding search results becomes. On the contrary, the lower the position mark(P) reaches, the lower the average accuracy of the corresponding search results becomes.

The three dimensional search engine(Meta3D) is capable of displaying up to maximum 100 kinds of information on a search screen. Thus the search results five to ten times more than those of conventional search engines can appear in a narrow space, and displaying a statistical distribution of the search results to be easily compared.

On the other hand, the web browser 1 for the present invention are Internet Explorer 4.0 or higher versions, Netscape 4.0 or higher versions, Opera, etc. A web site of the three dimensional search engine(Meta3D) is <http://www.meta3d.net> and a plug-in file of the Meta3D can be downloaded through it.

With reference to Fig. 4, there is shown a search key word inputting screen of the three-dimensional search engine (Meta 3D). If a search key word or key words are inputted on a search screen of the Meta3D, the search results from Yahoo, AltaVista, eXcite, Infoseek and Webcrawler are displayed as an analyzed form in the three-dimensional space as shown in Fig. 5.

The three dimensional search engines (Meta 3D) can reduce time for re-searching several times, the Meta3D is very convenient search engine, and is effective in an advertisement by confirming the statistical distribution of many search results from a plurality of search engines.

In addition, because the three-dimensional search engine (Meta

3D) enables the Internet users to search information which are the search result of a plurality of search engines including Yahoo, Altavista, eXcite, Infoseek, Webcrawler etc, fast and accurately and to recognize more quantities of desired information easily in a three-dimensional space.

5 **INDUSTRIAL APPLICABILITY**

As described above, the three-dimensional search engine (Meta 3D) hunts more information in cyber space by taking advantage of the existing search engines, for example, Yahoo, AltaVista, eXcite, Infoseek and Webcrawler, at once and provides the search results found by the
10 existing search engine for the Internet users in such a three-dimensional form by the use of a plug-in technique.

The search results of three dimensional search engine(Meta 3D) can be compared with a position mark(P) displaying search result data of the search engines and a height mark(H) having a search result data
15 of each search engine.

Due to the statistical distribution among the respective search results by Meta 3D, an easy and quick comparison on the search results is possible. This will serve as an effective means in an internet advertisement area by reducing time for re-searching the desired
20 information several times.

In addition, the three-dimensional search engine (Meta 3D) displays the search results, which are replied from many existing search engines including Yahoo, AltaVista, eXcite, Infoseek and Webcrawler etc, in response to the search key word query, concurrently in one screen,
25 the Internet users can search and get more information faster upon using the three-dimensional search engine (Meta 3D) than upon using the existing search engines individually.

The present invention has been described in an illustrative manner,

and it is to be understood the terminology used is intended to be in the nature of description rather than of limitation. Many modifications and variations of the present invention are possible in light of the above teachings. Therefore, it is to be understood that within the scope of the
5 appended claims, the invention may be practiced otherwise than as specifically described.

CLAIMS

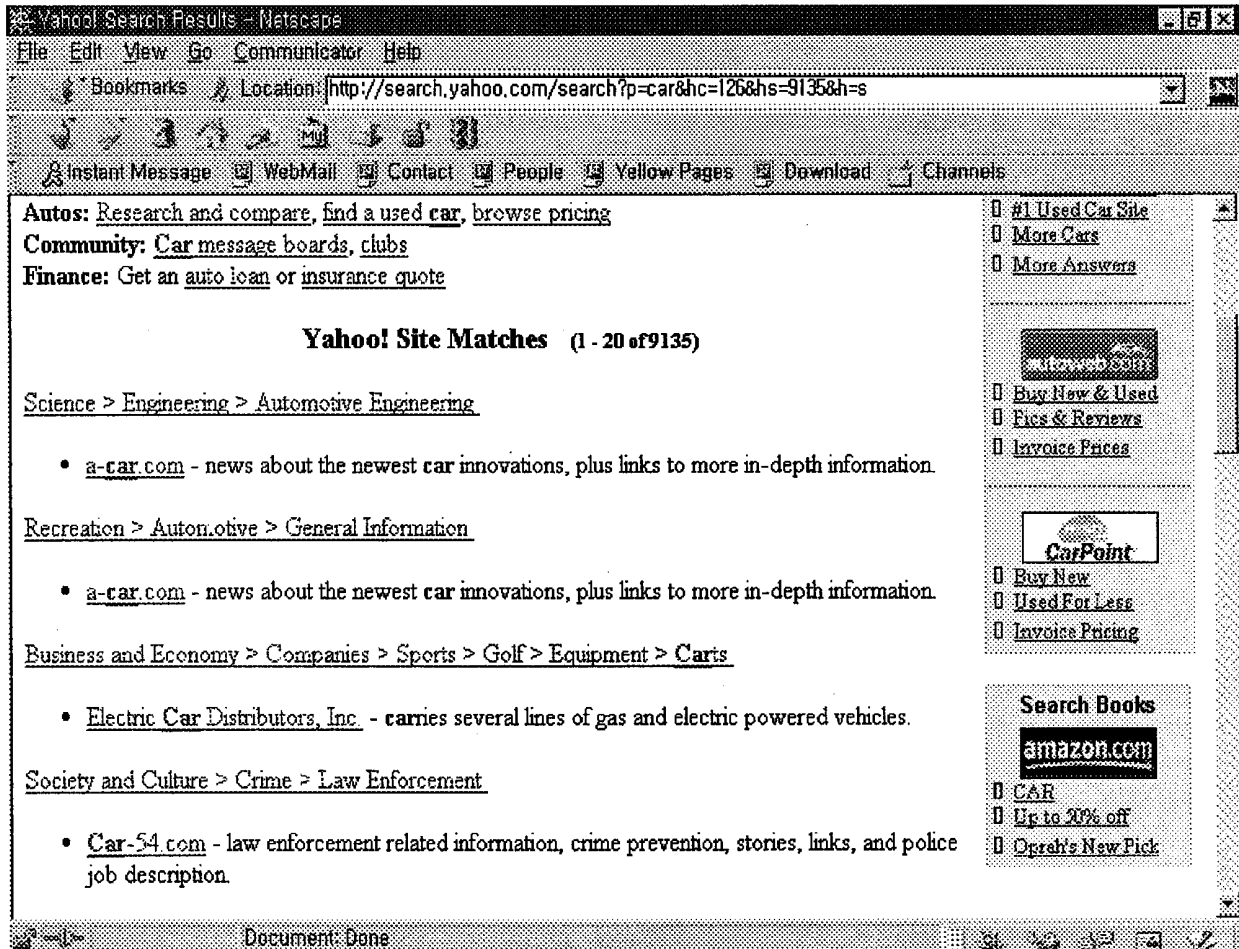
1. A method for displaying search result data from search engines in a three dimensional form, comprising:

- 5 search key-words inputting step in which a Java servlet program generates a server waiting thread which is used to permit the access to a server of the Internet users who use a web browser, waits until Internet user connects, and makes a meta information according to search key words inputted by users;
- 10 a search result generating step in which the Java servlet program produces as many server search threads as search engines to be used, transmits queries for the search key words into each of the search engines, brings a certain number of search results corresponding to the key words from each of the search engines into itself, parses the search results into the meta information, produces a plug-in file based on the
- 15 meta information, and transmits the plug-in file through a web server to the web browser in use; and
- a search result outputting step in which the plug-in file is conducted in the web browser of the Internet users to display the search results from all of the used search engines in a three dimensional form,
- 20 whereby the Internet uses can recognize and compare the quantities of the information which each of the existing search engines detect, easily and fast.

2. A computer-readable storage medium having a program recorded thereon; where the program is to provide a search key world
- 25 inputting function (a), a search result generating function (b) and a search result outputting function (c) to the computer.

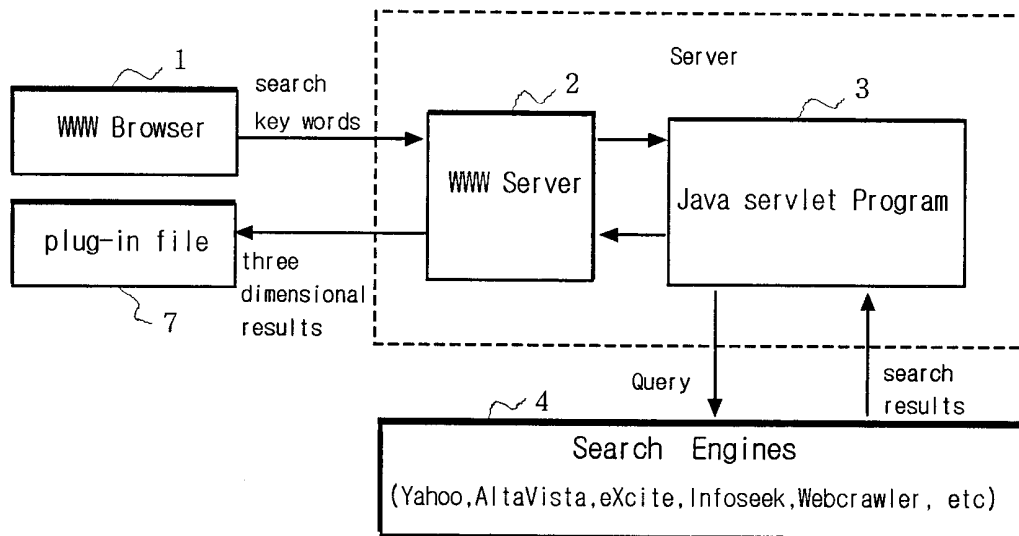
1/5

FIG. 1



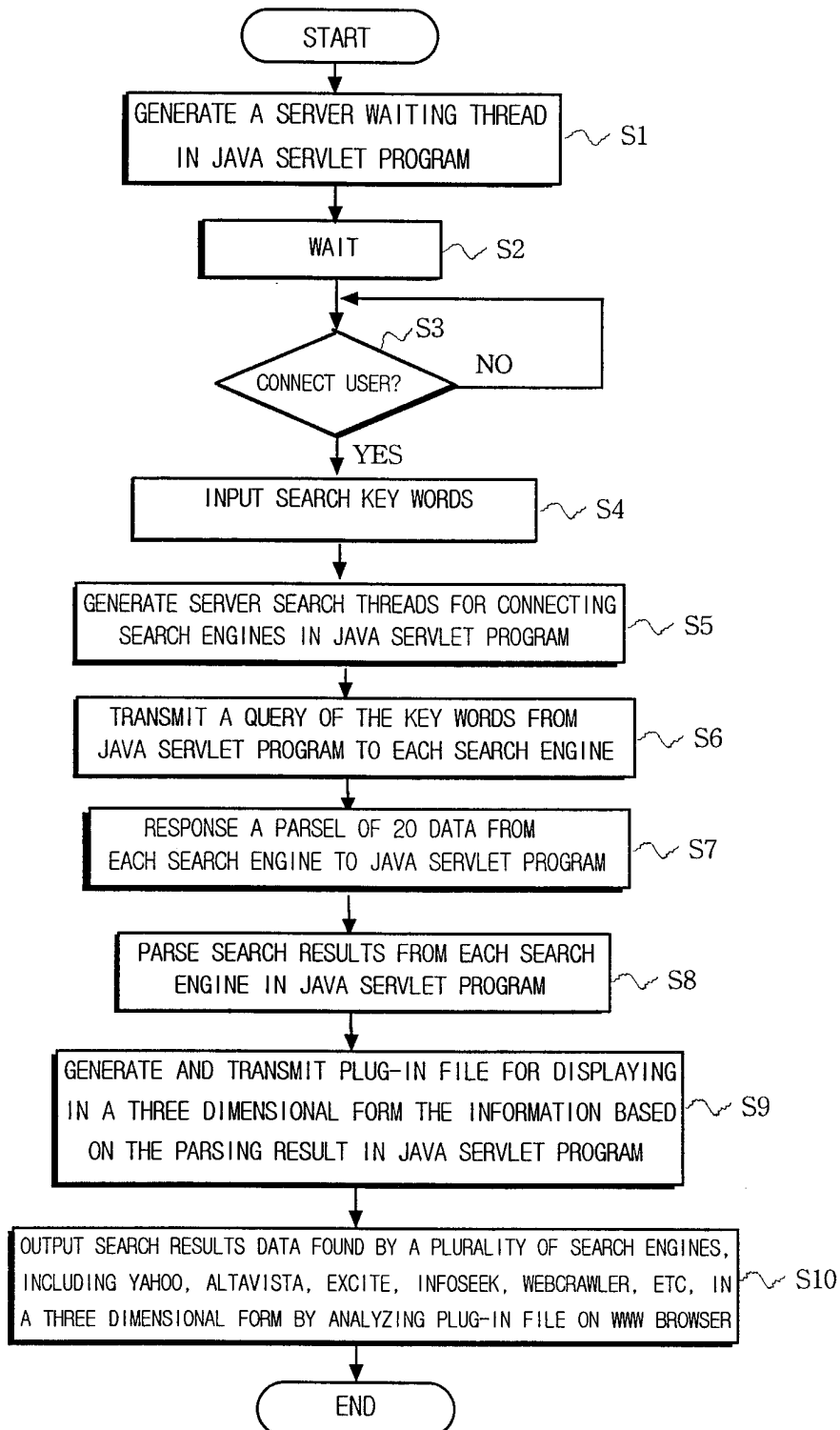
2/5

FIG. 2



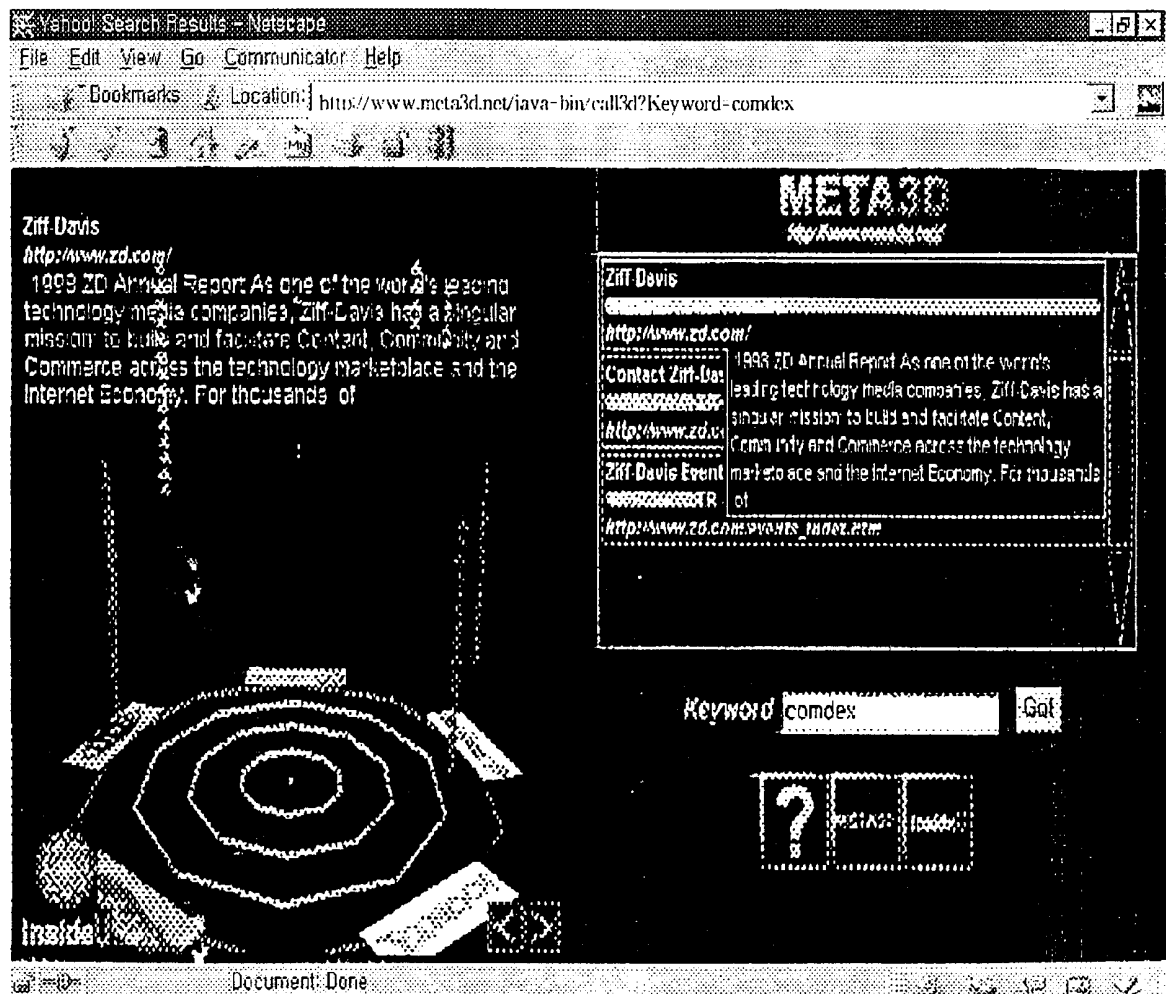
3/5

FIG. 3



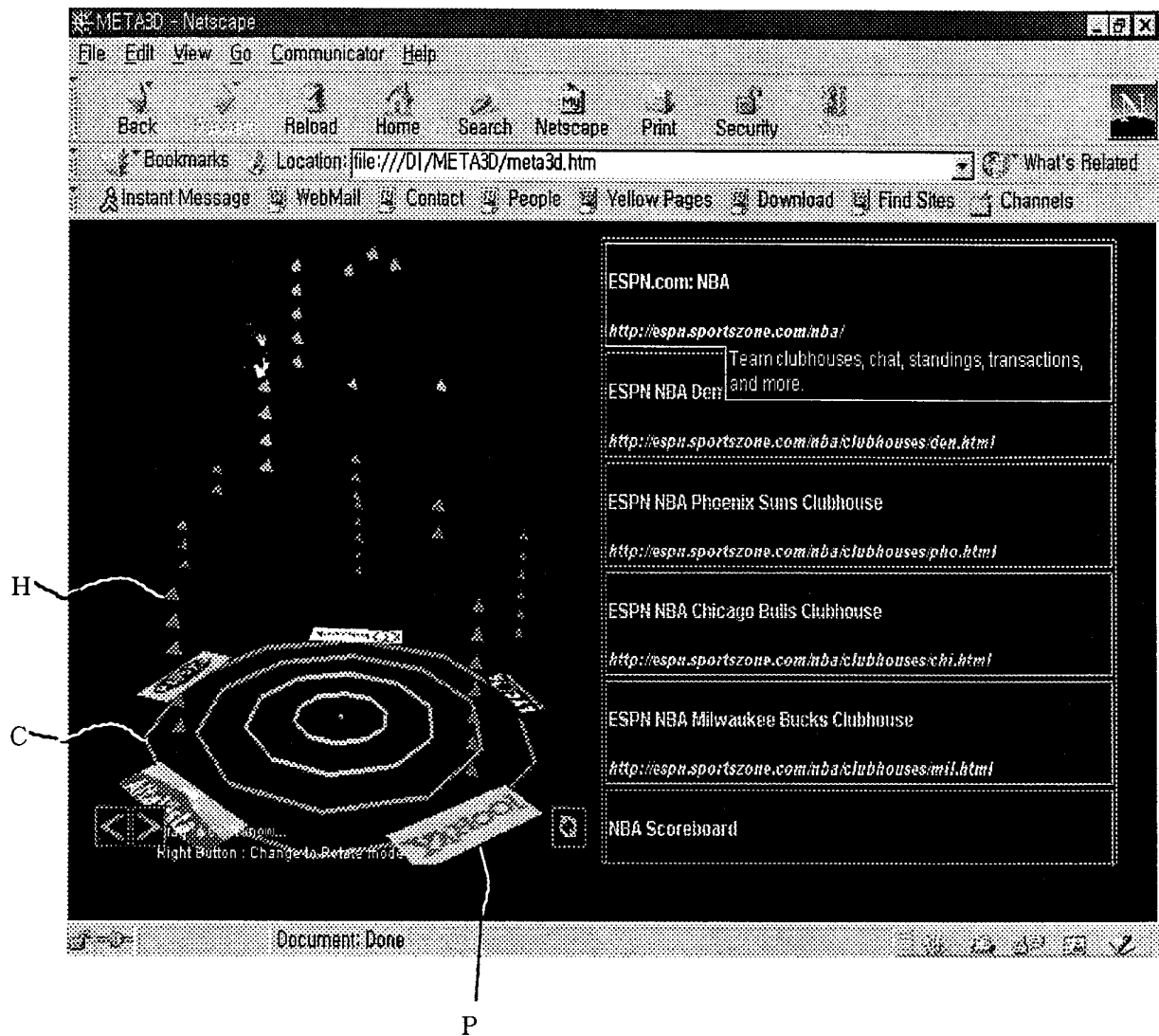
4/5

FIG. 4



5/5

FIG. 5



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR 99/00489

A. CLASSIFICATION OF SUBJECT MATTER

IPC⁷: G06F 17/30

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC⁷: G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, WPI, PAJ, The ACM Digital Library

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y X	CHOI Yong S., YOO Suk I.: Multi-agent learning approach to WWW information retrieval using neural network. Proceedings of the 1999 international conference on Intelligent user interfaces, Redondo Beach, CA USA, p. 23-30 [online], 5-8 Jan 1999 [retrieved on 2000-10-30]. Retrieved from the Internet URL: <http://www.acm.org/pubs/articles/proceedings/uist/291080/p23-choi/p23-choi.pdf>, abstract, fig. 1, totality.	1 2
Y X	CHALMERS Matthew, CHITSON Paul: Bead: explorations in information visualization. Proceedings of the Fifteenth Annual International ACM SIGIR conference on Research and development in information retrieval, Copenhagen, Denmark, p. 330-337 [online], 21-24 June 1992 [retrieved on 2000-10-30]. Retrieved from the Internet URL: <http://www.acm.org/pubs/articles/proceedings/ir/133160/p330-chalmers/p330-chalmers.pdf>, abstract.	1 2

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

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„&“ document member of the same patent family

Date of the actual completion of the international search

08 November 2000 (08.11.00)

Date of mailing of the international search report

14 November 2000 (14.11.00)

Name and mailing address of the ISA/AT
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR 99/00489

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 99/10819 A (PFEFFER et al.), 04 March 1999 (04.03.99),	1
X	abstract.	2
A	JP-10-187755 A (NEC CORP) 21 July 1998 (21.7.98), claim 1, fig.5.	1
X		2
A	SPOERRI Anselm: InfoCrystal. Proceedings of the CHI '94	1
X	conference companion on Human factors in computing systems, Boston, United States , p. 11-12 [online], April 24-28,1994 [retrieved on 2000-10-30]. Retrieved from the Internet URL:< http://www.acm.org/pubs/articles/proceedings/chi/259963/p11-spoerri/p11-spoerri.pdf >.	2

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR 99/00489

Patent document cited in search report			Publication date	Patent family member(s)			Publication date
WO	A1	9910819	04-03-1999	EP	A1	1008067	14-06-2000
JP	A2	10187755	21-07-1998	none			