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(54) Title: SYSTEM AND METHOD FOR DISPLAYING TABLE SEARCH RESULTS

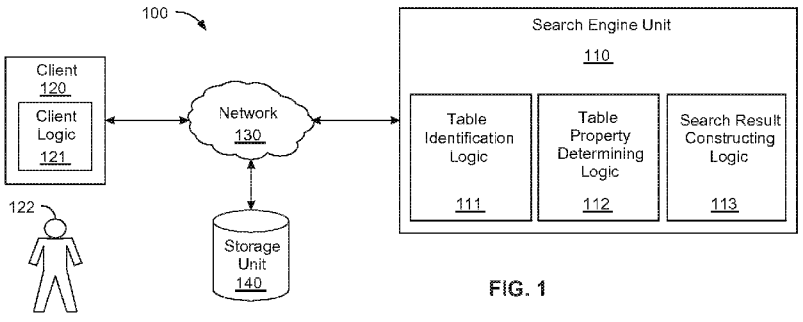


FIG. 1

(57) Abstract: Methods and Systems to display the results of a search operation are provided. More particularly the invention relates to a method to display search results comprising a relevant portion of the data in a tabular form. The said result comprises a search extract preserving table characteristics. The extract may further comprise of one or more table properties.

SYSTEM AND METHOD FOR DISPLAYING TABLE SEARCH RESULTS

CROSS REFERENCE TO RELATED APPLICATION

[001] This application claims priority to U.S. Provisional Application Ser. No. 62/003,560 entitled "Search Result Display" filed on May 28, 2014, which is incorporated herein by reference.

FIELD OF INVENTION

[002] The present disclosure generally relates to search engine operations and method to display the results of a search operation. Particularly, the disclosure relates to improving user experience in viewing the search results and more particularly to a system and method for displaying table search results.

BACKGROUND

[003] It is commonly required in the field of Information Technology to provide a service that searches through existing data sources including, but not limited to, the Internet, intranet, computer hard disks, storage devices, and so on. In order to use a search engine, a user seeking information on a desired topic generally inputs a search query consisting of keyword(s) or phrase(s) relevant to the topic into the search interface of the search engine. In response, the search engine typically displays a report with a prioritized list of links pointing to relevant documents containing the search keywords. Oftentimes, a short summary of text i.e., extract/snippet is also included for each result. The extract/snippet is that portion or portions of the text in the document that contain the keywords from the search query.

[004] Due to the high volume of information available on the Internet, search engines become a very useful tool to find information. While the popularity of search engines may rely on various factors; relevancy of the search results and the manner in which they are displayed play an important role in enhancing a user experience. Known search

engines like Google®, Bing®, Yahoo® etc. typically display a search result page comprising multiple search results and for each search result an extract in a textual format. This is a disadvantage since some important visual cues in the document may be lost, thereby making the results less useful to a user. One example of such disadvantage is when the documents contain tabular data. When a user enters the search query for which a relevant result comprises a table, the search engines only display a relevant portion of the table based on keywords and few fragments around the keywords in a text format that makes it less useful for the reader.

[005] Yet another drawback of existing search engines is that they fail to present results in a way that is easy for the user to understand the nature and type of results.

[006] Systems for searching the Intranets, Extranets, Local Area Networks, individual computers and even single documents also generally suffer from these same drawbacks.

[007] In view of the above drawbacks, there remains a need for an effective method of searching data sources for useful information relating to topics of user's interest.

SUMMARY

[008] The following presents a simplified summary of the disclosure in order to provide a basic understanding of some aspects of the disclosure. This summary is not an extensive overview of the disclosure. It is not intended to identify key elements of the disclosure or to delineate the scope of the disclosure. Its sole purpose is to present some concepts of the disclosure in a simplified form as a prelude to the more detailed description that is presented later.

[009] According to aspects illustrated herein, the present invention relates to a method to display the results of a search operation on at least one data source, wherein at

least one result comprises a relevant portion of the data in a tabular form in an original document; said result comprising at least one search extract and optionally at least one table property; said search extract comprising a first component selected from a the relevant portion of the table and a second component selected from the rest of the table.

[0010] More specifically the present invention relates to a method of visually displaying the results of a search operation on at least one data source; wherein the second component comprises at least one portion selected from the group comprising header, footer, rows succeeding the header, rows preceding the footer and combinations thereof.

[0011] In a preferred embodiment, the second component comprises a header.

[0012] In another preferred embodiment, the second component comprises a footer.

[0013] In a third preferred embodiment, the second component comprises a header and a footer.

[0014] In a fourth preferred embodiment, the second component comprises a header, a row succeeding the header, a row preceding the footer, and the footer.

[0015] In another aspect of the present invention is provided a method of identifying the header or footer by data, metadata, suggestion or a calculated value. The visual display of the said header and footer in the search result extract may be in different presentation semantics than the rest of the search result.

[0016] Optionally, the search result in accordance with the present invention may include a title and a link to the original document.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] The drawings described herein are for illustration purposes only and are not intended to limit the scope of the present disclosure in anyway. Throughout the disclosure, like elements are represented by like reference numerals, which are given by way of illustration only and thus are not limitative of the various embodiments.

[0018] FIG. 1 is a block diagram illustrating an exemplary search engine system in accordance with an embodiment of the present invention.

[0019] FIG. 2 is a block diagram illustrating an exemplary search engine computing device of FIG. 1.

[0020] FIG. 3A is a portion of an exemplary web page comprising data formatted in a tabular form.

[0021] FIG. 3B is another portion of the exemplary web page of FIG. 3A.

[0022] FIG. 4 and FIG. 5 depict an exemplary search operation with a comparative illustration of known prior art methods and methods in accordance with the present invention.

[0023] FIG. 6 is a flowchart detailing one embodiment of the present invention.

DETAILED DESCRIPTION

[0024] It is to be understood that the present disclosure is not limited in its application to the details of construction and the arrangement of components set forth in the following description or illustrated in the drawings. The present disclosure is capable of other embodiments and of being practiced or of being carried out in various ways. Also, it is to be understood that the phraseology and terminology used herein is for the purpose of description and should not be regarded as limiting.

[0025] The use of "including", "comprising" or "having" and variations thereof herein is meant to encompass the items listed thereafter and equivalents thereof as well as additional items. The terms "a" and "an" herein do not denote a limitation of quantity, but rather denote the presence of at least one of the referenced item. Further, the use of terms "first", "second", and "third", and the like, herein do not denote any order, quantity, or importance, but rather are used to distinguish one element from another.

[0026] The disclosure described here is equally applicable to searching and returning links to any document containing text and optional presentation semantics, such as, but not limited to, HTML, DHTML, XML, SGML, PDF, E-mail, Microsoft Word documents, Microsoft PowerPoint documents, news group postings, multimedia objects, Graphics Interchange Format images and/or Shockwave Flash files. Such documents may be a resource on WAN/LAN or a device.

[0027] Through the length of the specification and claims, the words “extract” and “snippet” are used interchangeably.

[0028] A table property in accordance with the present invention includes data related to a particular table including but not limited to number of rows and number of columns and combinations thereof.

[0029] A header in accordance to the present invention includes data or portion of the data in a tabular form placed at the top and/or side of the table comprising at least one row or column or both.

[0030] A footer in accordance to the present invention includes data or portion of the data in a tabular form placed at the bottom and/or side of the table comprising at least one row or column or both.

[0031] If the table has no header, the first row may be considered as the first row following the header and so on. If the table no footer, the last row may be considered as the first row preceding the footer and so on.

[0032] FIG. 1 depicts a search environment 100 in accordance with an exemplary embodiment of the present disclosure. It will be understood and appreciated by those of ordinary skill in the art that the computing system architecture 100 shown in FIG. 1 is merely an example of one suitable computing system and is not intended to suggest any limitation as to the scope of use or functionality of the present invention. Neither should the computing system architecture 100 be interpreted as having any dependency or requirement related to any single module/component or combination of modules/components illustrated therein.

[0033] The system 100 comprises a search engine unit 110, a client 120 and a storage unit 140. The search engine unit 110, the client 120 and the storage unit 140 all communicate over a network 130.

[0034] The network 130 can include any type of network known in the art or future-developed. In this regard, the network 130 may be an Ethernet, a local area network (LAN), or a wide area network (WAN), e.g., the Internet, or a combination of networks.

[0035] The search engine unit 110 may be a dedicated or shared server including but not limited to any type of application server, database server, or file server configurable and combinations thereof. The search engine unit 110 and the client 120 may include, but are not limited to, a computer, handheld unit, mobile unit, consumer electronic unit, or the like.

[0036] The exemplary search engine unit 110 comprises table identification logic 111, table property determining logic 112, and search result constructing logic 113.

[0037] In the exemplary search engine unit 110, the table identification logic 111 may be configured to identify presence or existence of a table within the search result. If a table is identified, then the table identification logic 111 may be further configured to identify the header, footer, rows following the header, rows preceding the footer.

[0038] The search engine unit 110 further comprises the table property determining logic 112. The table property determining logic 112 may be configured to determine the properties of tables identified by the table identification logic 111. The properties identified by the table property determining logic 112 may be, for example, number of rows, number of columns in the table etc.,

[0039] The search engine unit 110 further comprises the search result constructing logic 113. The search result constructing logic 113 may be configured to construct the search result. For a search result with a presence of table within the search result, the process of constructing the search result may include adding the table properties identified by the table property determining logic 112 to the search result. For example, number of rows and number of columns may be included in the search result. The search result constructing logic 113 may also be configured to construct the snippet in such a way that the header, footer, rows following the header and rows preceding the footer identified by the table identification logic 111 may be included in the search result. The search result constructing logic 113 may also be configured to construct the snippet in such a way that table rows relevant to the search query are included. The search result constructing logic 113 is further explained with reference to FIG. 5.

[0040] The storage unit 140 is configured to store information associated with search results or the like. In various embodiments, such information may include, without limitation, domains, URLs, webpages, websites, documents, tables, indexes, information associated therewith, and the like. In embodiments, the storage unit 140 is configured to be searchable for one or more of the items stored in association therewith. It will be understood and appreciated by those of ordinary skill in the art that the information stored in association

with the storage unit 140 may be configurable and may include any information relevant to search results, tables, or the like. The content and volume of such information are not intended to limit the scope of embodiments of the present disclosure in any way. Further, though illustrated as a single, independent component, the storage unit 140 may, in fact, be a plurality of storage units, for instance a database cluster, portions of which may reside on the search engine unit 110, the client 120, another external computing device (not shown), and/or any combination thereof. Moreover, the storage unit 140 may be included within the search engine unit 110 or client 120 as a computer-storage medium. The single unit depictions are meant for clarity, not to limit the scope of embodiments in any form.

[0041] A user 122 through the client logic 121 on the client 120 may enter a search query consisting of keyword(s) which may identify the type of information that the user is interested in retrieving. The client logic 121 may comprise, for example, an Internet browser; however, other types of client logic 121 for interfacing with the user 122 and for communicating with the search engine unit 110 may be used in other embodiments of the present disclosure. The client logic 121 transmits the user search query to the search engine unit 110 via the network 130. Upon receiving the user search query, the search engine unit 110 examines the storage unit 140 and compiles a prioritized list of documents containing all or some of the keyword(s) and returns the search results comprising tables to the client logic 121 which displays the results to the user 122 in a window.

[0042] FIG. 2 depicts an exemplary search engine unit 110 in accordance with an embodiment of the present disclosure. The search engine computing device 110 is only one example of a suitable computing environment and it is not intended to suggest any limitation as to the scope of use or functionality of the disclosure.

[0043] The exemplary embodiment of the search engine computing device 110 depicted by FIG. 2 may include a bus 206, a processing unit 201, memory 202, a network device 203, one or more input devices 204, and an output devices 205. Bus 206 may include a path that permits communication among the components of the search engine unit 110.

[0044] The memory 202 stores the table identification logic 111, the table property determining logic 112, and the search result constructing logic 113 as software in memory 202.

[0045] The memory 202 may be any type of computer memory known in the art or future-developed for electronically storing data and/or logic, including volatile and non-volatile memory. In this regard, memory 202 can include random access memory (RAM), read-only memory (ROM), flash memory, any magnetic computer storage device, including hard disks, floppy discs, or magnetic tapes, and optical discs.

[0046] The processing unit 201 comprises processing hardware for executing instructions stored in memory 202. Note that the processor 201 may be a microprocessor, a digital processor, or other type of circuitry configured to run and/or execute instructions.

[0047] The network device 203 may be any type of network device (e.g., a modem) known in the art or future-developed for communicating over the network 130 (FIG. 1). In this regard, the search engine unit 110 (FIG. 1) communicates with the storage unit 140 (FIG. 1) and the client 120 (FIG. 1) over the network 130 (FIG. 1) via the network device 203.

[0048] The input device 204 is any type of input unit known in the art or future-developed for receiving data. As an example, the input unit 204 may be a keyboard, a mouse, a touch screen, a serial port, a scanner, a camera, or a microphone. Notably, only one input device 204 is shown in FIG. 2; however, the search engine computing device 110 may include additional input devices in another embodiment.

[0049] The output device 205 is any type of output device known in the art or future-developed for displaying data. As an example, the output device 205 may be a liquid crystal display (LCD) or other type of video display device, a speaker, or a printer. Notably, only

one output device 205 is shown in FIG. 2; however, the search engine computing device 110 may include additional output devices in another embodiment.

[0050] Further note that, the search engine unit 110 (FIG. 1) components may be implemented by software, hardware, firmware or any combination thereof. In the exemplary search engine unit 110 (FIG. 1), depicted by FIG. 1, all the components are implemented by software and stored in memory 202.

[0051] FIG. 3A and FIG. 3B illustrate portions of an exemplary web page 300 with a URL 305. For the purpose of this example, the web page 300 is an original document in accordance with the invention. The document comprises among other things a table 308 listing with a header 302, footer 303, row succeeding the header 306, row preceding the footer 307 and other data.

[0052] FIG. 4 and FIG. 5 are exemplary illustration of a search engine operation in prior art and in accordance with the present invention.

[0053] FIG. 4 illustrates a search operation carried out on Google® by a user. When the user enters a search query 401 “2012 summer olympics russia south korea”, the search engine searches through a given data source and display results in the form of a web page 400. The said search result 402 displays an extract comprising fragments of the web page 300 (FIG 3) containing the keywords – 2012, summer, olympics, russia, south, and korea. The display is in the form of a textual paragraph. While the results identify the keywords, they are not displayed in the visual type (table) as in the original document and hence the user cannot make the entire context of the keywords in relation to each other. To learn more, a user has to click on the URL 305 (FIG. 3) of the search result to open the web page 300 to find relevant information.

[0054] Furthermore, the header 302 (FIG. 3) and the footer 303 (FIG. 3) are omitted from the search extract. Without the header 302 (FIG. 3) and the footer 303 (FIG. 3) it may

be impossible for the user to comprehend the information within the extract of the search result 402.

[0055] The current invention overcomes the above shortcomings of prior methods; an example of which is illustrated in FIG. 5.

[0056] FIG. 5 is an illustrative example 500 of methods in accordance with the present invention. In the current example, when a user enters a search query 401 "2012 summer olympics russia south korea", the search engine unit 110 (FIG. 1) may return search results to the user in the form of the search result page 500. The search result 501 is constructed by the search result constructing logic 113 (FIG. 1). The search result 501 comprises a snippet 502 from the document 300 (FIG. 3) identified by the URL 305. The search snippet 502 comprises data from table 308 (FIG. 3). The snippet 502 comprises header 302 (FIG. 3), row succeeding the header 306 (FIG. 3), footer 303 (FIG. 3), row preceding the footer 307 (FIG. 3) along with the relevant rows 301(FIG. 3) to the user search query 401 to enhance the user experience. The table 308 (FIG. 3) and the header 302 (FIG. 3), row succeeding the header 306 (FIG. 3), footer 303 (FIG. 3), row preceding the footer 307 (FIG. 3) are identified by the table identification logic 111 (FIG. 1). The table identifying logic 111 (FIG. 1) identifies table 308 (FIG. 3) by the border and the markup tags surrounding the table 308. The table identifying logic 111 identifies header 302 (FIG. 3) and footer 303 (FIG. 3) from the higher font weight for rows 302 (FIG. 3) and 303 (FIG. 3).

[0057] The search result 501 further comprises of table properties 503. The table properties are computed by the table property determining logic 112 (FIG. 1).

[0058] FIG. 6 is a flow chart illustrating one method in accordance with the present disclosure. In step 600, the search engine unit may accept the search query and find all results matching the search query criteria 601. For each matching search result, the search engine determines if any of the results comprise of a table 602. In absence of a table, the search engine generates extract in textual format 603 and returns the results to the user 606.

If any of the matching search results comprise a table, the search engine generates extracts preserving the table characteristics 604. The table characteristics may include header, footer, row succeeding the header, row preceding the footer. Further the search engine may identify and add table properties to the extract 605 and return the results to the user 606.

CLAIMS

1. A method to display the results of a search operation on at least one data source, wherein at least one result comprises a relevant portion of the data in a tabular form in an original document; said result comprising at least one search extract and optionally at least one table property; said search extract comprising a first component selected from a the relevant portion of the table and a second component selected from the rest of the table.
2. A method to display the results of a search operation on at least one data source as in claim 1, wherein the second component comprises at least one portion selected from the group comprising header, footer, rows succeeding the header, rows preceding the footer and combinations thereof.
3. A method as in claim 2, wherein the second component comprises a header, a row succeeding the header, a row preceding the footer, a footer and combinations thereof.
4. A method as in claim 1, wherein the table property is selected from the group comprising number of rows, number of columns and combinations thereof.
5. A method as in claim 1, wherein the search extract comprises the first and second component in textual form.
6. A method as in claim 1, wherein the search extract comprises the first and second component formatted in tabular form.
7. A method as in claim 2, wherein the header is identified by data, metadata, suggestion or a calculated value of the relevant search results.
8. A method as in claim 2, wherein the footer is identified by data, metadata, suggestion or calculated value of the relevant search result.
9. A method as in claim 2, wherein the header and footer are in a different presentation semantics than the rest of the search result.
10. A system to display the results of a search operation on at least one data source, wherein at least one result comprises a relevant portion of the data in a tabular form in an original document; said display comprising at least one search extract; said extract further comprising a first component selected from the relevant portion of the table and a second component selected from the rest of the table.
11. A system to display the results of a search operation on at least one data source as in claim 16, wherein the second component comprises at least one portion selected from the group

comprising header, footer, rows succeeding the header, rows preceding the footer and combinations thereof.

12. A system as in claim 11, wherein the second component comprises a header, a row succeeding the header, a row preceding the footer, footer and combinations thereof.
13. A system as in claim 10, wherein the table property is selected from the group comprising number of rows, number of columns and combinations thereof.
14. A system as in claim 10, wherein the search extract comprises the first and second component in textual form.
15. A system as in claim 10, wherein the search extract comprises the first and second component formatted in tabular form.
16. A system as in claim 11, wherein the header is identified by data, metadata, suggestion or a calculated value of the relevant search results.
17. A system as in claim 11, wherein the footer is identified by data, metadata, suggestion or calculated value of the relevant search result.
18. A system as in claim 11, wherein the header and footer are in a different presentation semantics than the rest of the search result.

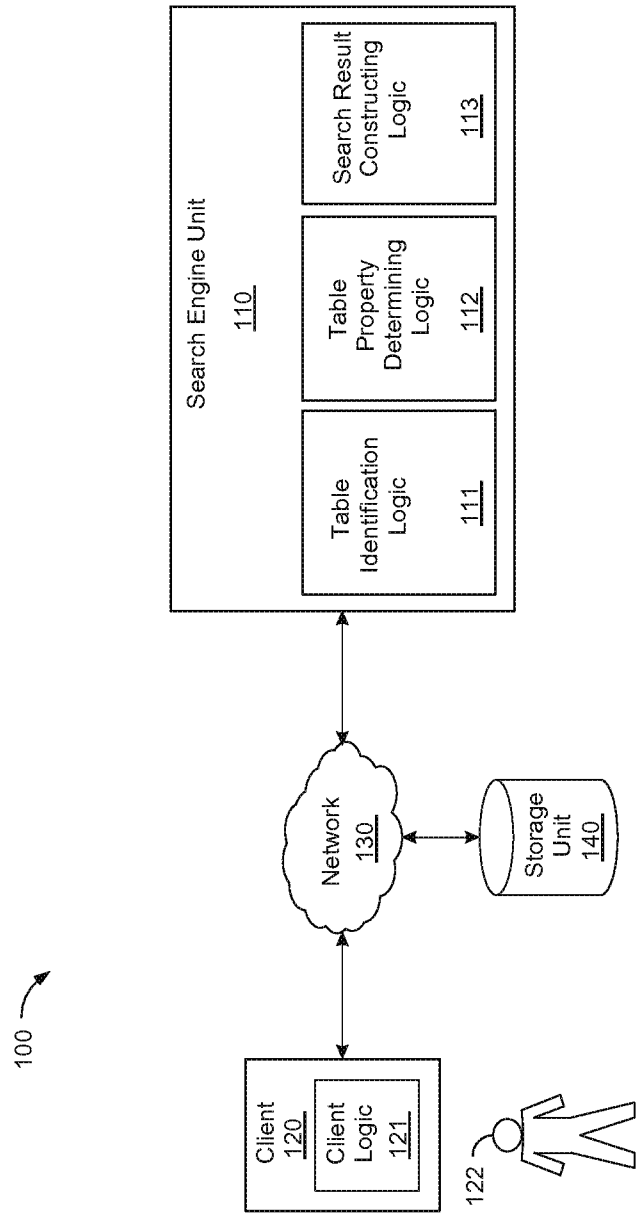

100
Search Engine Unit
110
Table Identification Logic
111
Table Property Determining Logic
112
Search Result Constructing Logic
113
Network
130
Storage Unit
140
Client
120
Client Logic
121
122

FIG. 1

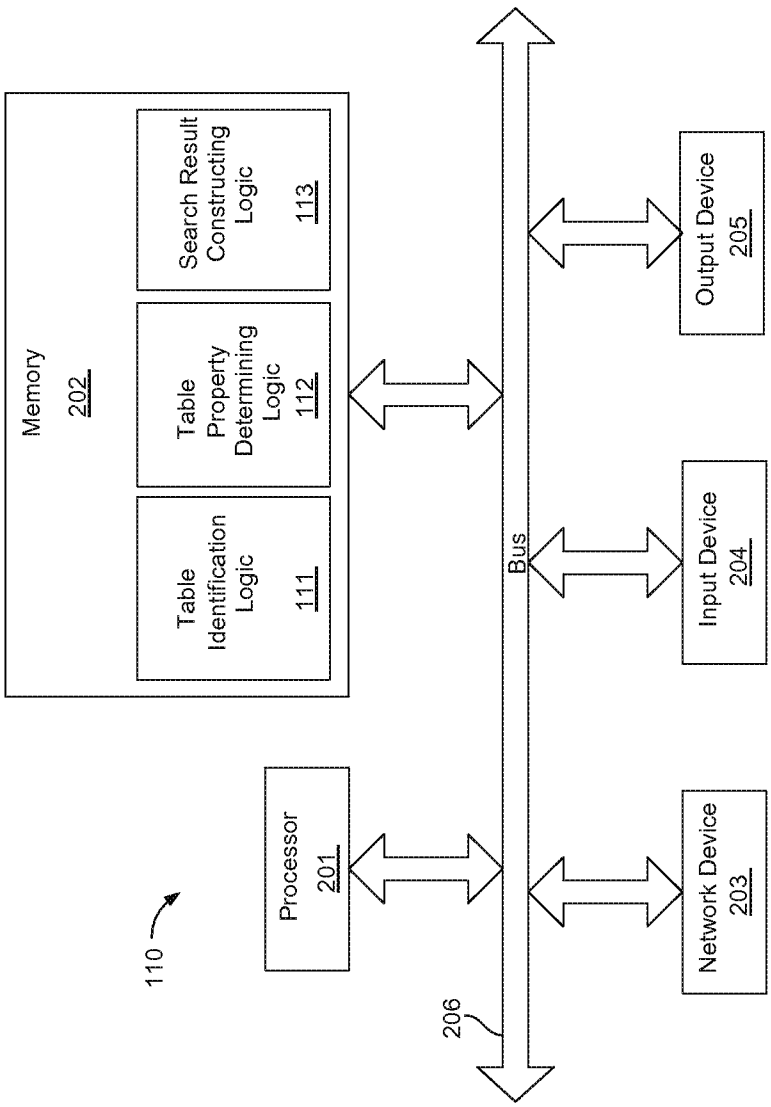

Memory
202
Table Identification Logic
111
Table Property Determining Logic
112
Search Result Constructing Logic
113
Processor
201
Bus
206
Network Device
203
Input Device
204
Output Device
205
110

FIG. 2

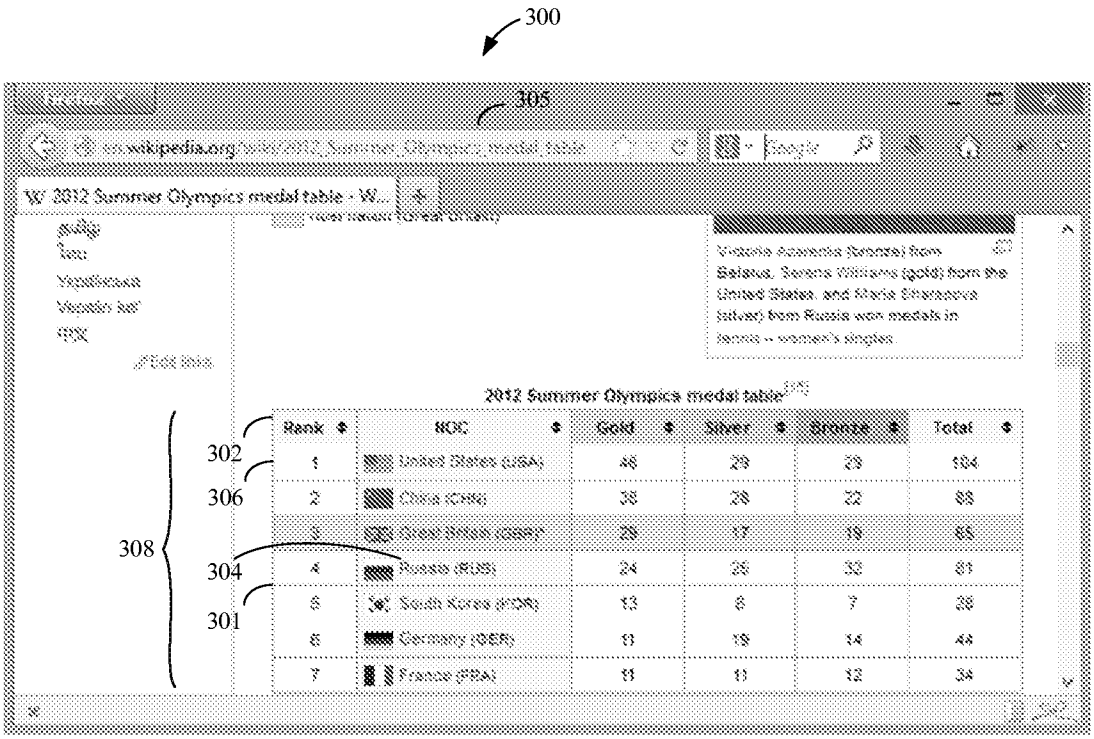

300
305
2012 Summer Olympics medal table
Rank
NOC
Gold
Silver
Bronze
Total
302
306
308
304
301
1 United States (USA) 46 29 29 104
2 China (CHN) 38 28 22 88
3 Great Britain (GBR) 29 17 19 65
4 Russia (RUS) 24 26 32 81
5 South Korea (KOR) 13 8 7 28
6 Germany (GER) 11 19 14 44
7 France (FRA) 11 11 12 34

FIG. 3A

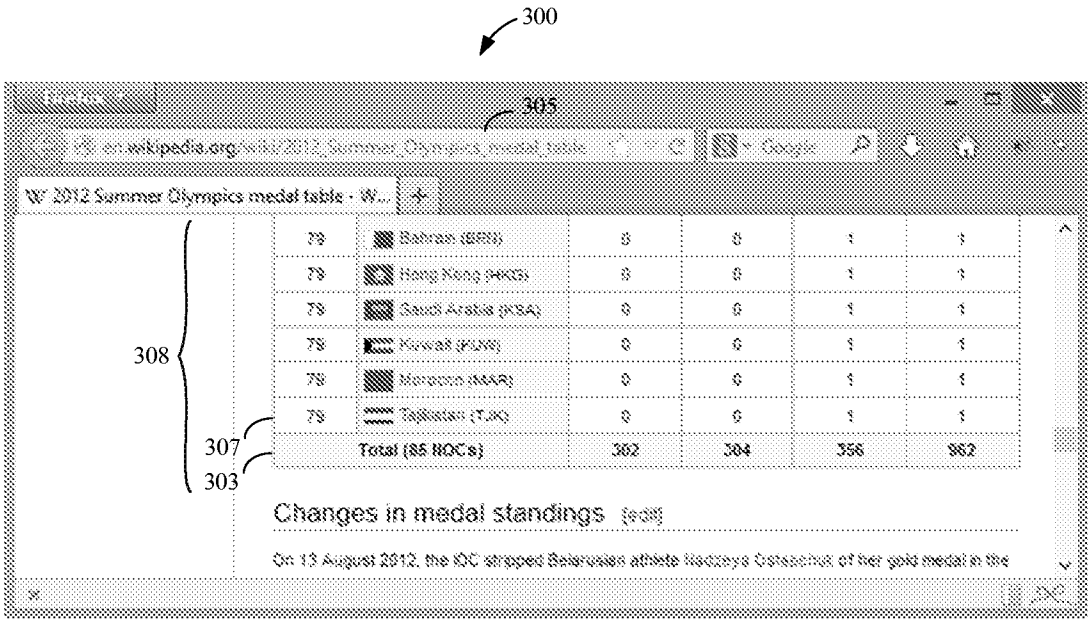

300
305
2012 Summer Olympics medal table
79 Bahrain (BRN) 0 0 1 1
79 Hong Kong (HKG) 0 0 1 1
79 Saudi Arabia (KSA) 0 0 1 1
79 Kuwait (KUW) 0 0 1 1
79 Morocco (MAR) 0 0 1 1
79 Tajikistan (TJK) 0 0 1 1
Total (85 NOCs) 302 304 356 962
308
307
303
Changes in medal standings [edit]
On 13 August 2012, the IOC stripped Belarusian athlete Nadzeya Ostapchuk of her gold medal in the

FIG. 3B

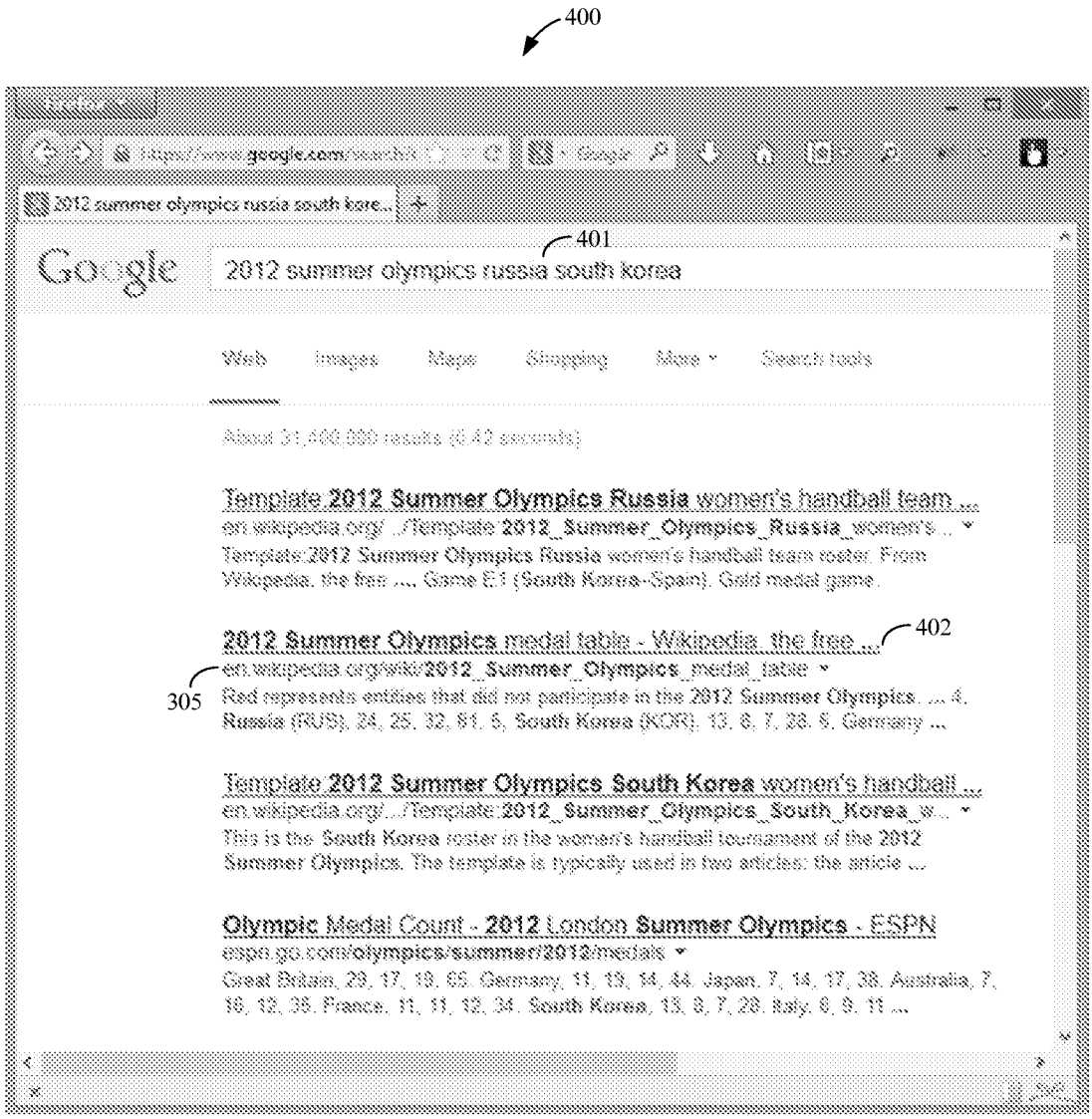
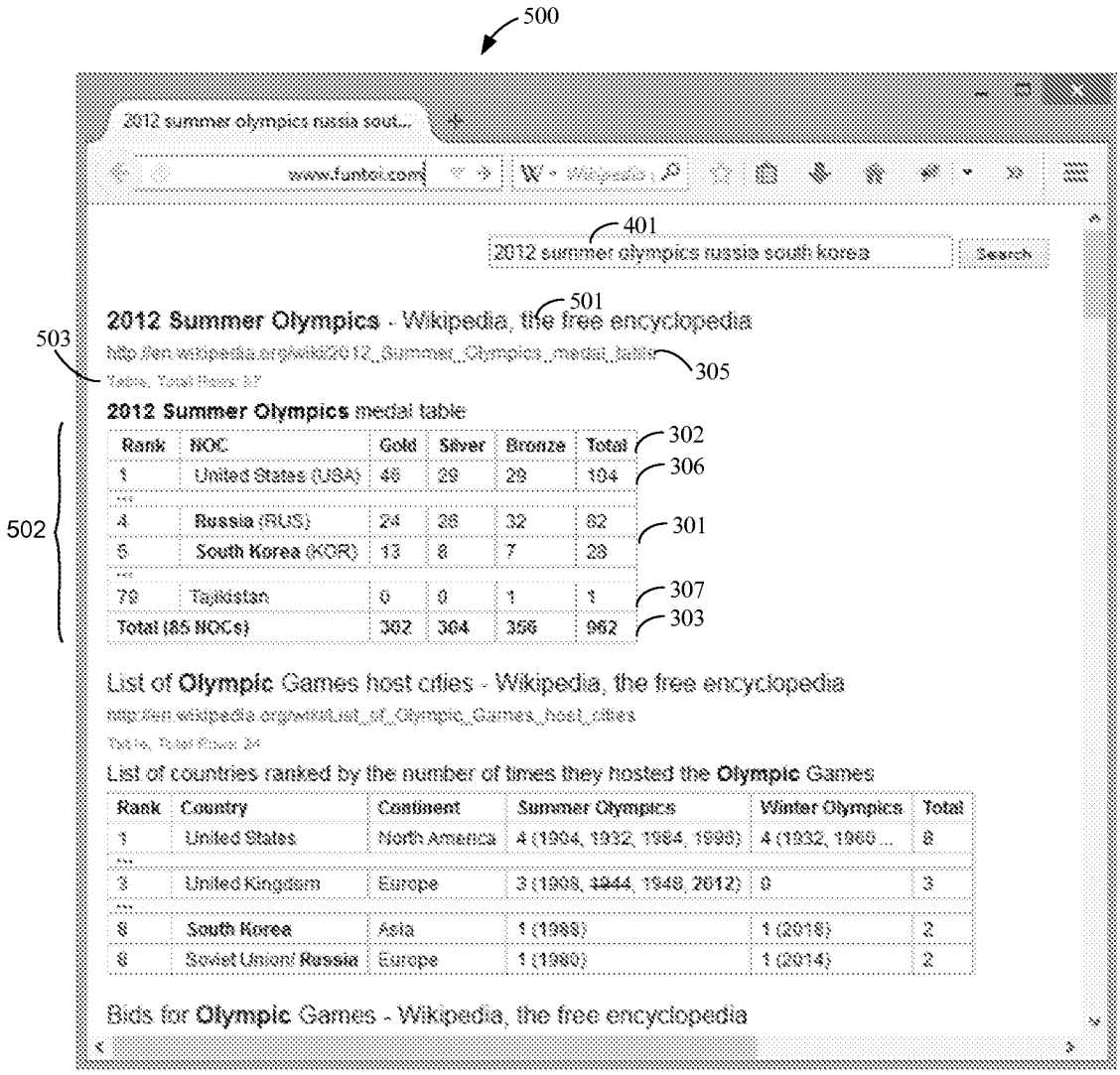

400
401
2012 summer olympics russia south korea
Google
Web
Images
Maps
Shopping
More
Search tools
Template:2012 Summer Olympics Russia women's handball team ...
en.wikipedia.org/.../Template:2012_Summer_Olympics_Russia_women's ...
Template:2012 Summer Olympics Russia women's handball team roster. From Wikipedia, the free ..., Game E1 (South Korea–Spain). Gold medal game.
2012 Summer Olympics medal table - Wikipedia, the free ...
402
305
en.wikipedia.org/wiki/2012_Summer_Olympics_medal_table
Red represents entities that did not participate in the 2012 Summer Olympics. ... 4. Russia (RUS), 24, 25, 32, 81. 5. South Korea (KOR), 13, 8, 7, 28. 6. Germany ...
Template:2012 Summer Olympics South Korea women's handball ...
en.wikipedia.org/.../Template:2012_Summer_Olympics_South_Korea_w...
This is the South Korea roster in the women's handball tournament of the 2012 Summer Olympics. The template is typically used in two articles: the article ...
Olympic Medal Count - 2012 London Summer Olympics - ESPN
espn.go.com/olympics/summer/2012/medals
Great Britain, 29, 17, 19, 65. Germany, 11, 19, 14, 44. Japan, 7, 14, 17, 38. Australia, 7, 16, 12, 35. France, 11, 11, 12, 34. South Korea, 13, 8, 7, 28. Italy, 8, 9, 11 ...

FIG. 4



Rank	NOC	Gold	Silver	Bronze	Total
1	United States (USA)	46	29	29	104
...					
4	Russia (RUS)	24	26	32	82
5	South Korea (KOR)	13	8	7	28
...					
79	Tajikistan	0	0	1	1
Total (85 NOCs)		302	304	356	962

Rank	Country	Continent	Summer Olympics	Winter Olympics	Total
1	United States	North America	4 (1904, 1932, 1984, 1996)	4 (1932, 1960 ...	8
...					
3	United Kingdom	Europe	3 (1908, 1944, 1948, 2012)	0	3
...					
8	South Korea	Asia	1 (1988)	1 (2018)	2
8	Soviet Union/ Russia	Europe	1 (1980)	1 (2014)	2

FIG. 5

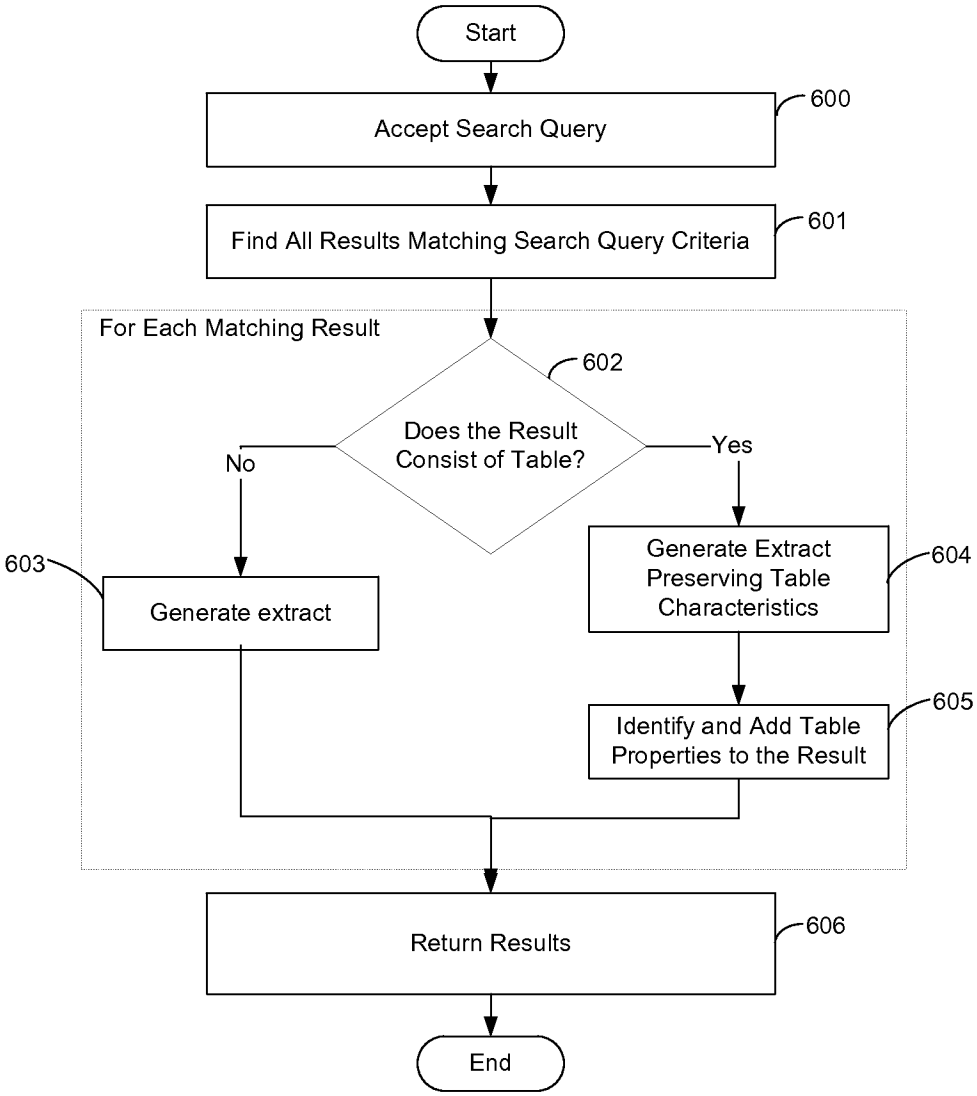

Start
Accept Search Query
600
Find All Results Matching Search Query Criteria
601
For Each Matching Result
602
Does the Result Consist of Table?
No
Yes
603
Generate extract
Generate Extract Preserving Table Characteristics
604
Identify and Add Table Properties to the Result
605
Return Results
606
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FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 15/33064

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G06F 7/00 (2015.01)
CPC - G06F 17/30864
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)
IPC(8): G06F 7/00 (2015.01)
CPC: G06F 17/30864

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
IPC(8):G06F 7/00 (2015.01) ; CPC: G06F 17/30864; G06F 17/30867; G06F 17/30067; G06Q 30/02; G06F 17/30011; USPC: 707/705; 707/752; 707/736 (keyword limited; terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PatBase; Google(Web); Search terms used: display results table search source relevant portion component extract header footer semantic

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X -- Y	US 2003/0229854 A1 (Lemay) 11 December 2003 (11.12.2003), entire document especially abstract; para [0002], [0042]-[0049], [0057]-[0062], [0073]-[0078], [0102], [0105]	1-8, 10-17 ---------- 9, 18
Y	US 2007/0067267 A1 (Ives) 22 March 2007 (22.03.2007), entire document especially para [0031], [0056], [0132], [0327]	9, 18

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

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
31 July 2015 (31.07.2015)	03 SEP 2015
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

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