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(54) **Title**: METHODS AND SYSTEMS FOR RETRIEVAL OF EXPERTS BASED ON USER CUSTOMIZABLE SEARCH AND RANKING PARAMETERS

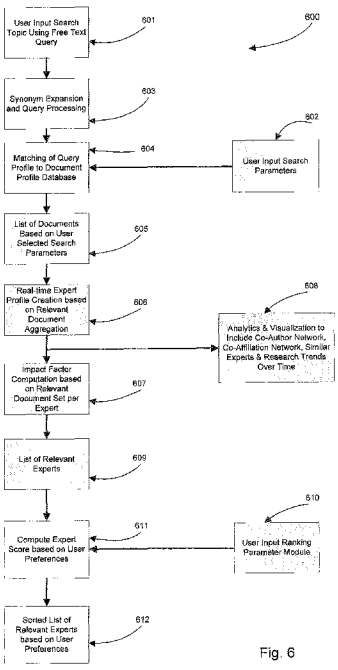

Fig. 6

(57) **Abstract**: Methods and systems for finding experts based upon user customizable search and ranking criteria, and providing the search results at a person or expert level are disclosed. The methods generally entail cataloging data within one or more document databases, and includes the steps of (a) inputting disparate data sources which may include publications, awarded grants, clinical trials, and/or patents; (b) processing the data within each document in the document database(s); (c) creating a document profile for each document using relevant keywords; (d) assigning weighting factors to the relevant keywords based upon selected attributes; (e) assigning an identifier to each document and document author; (f) removing duplicate document data using a disambiguation algorithm; (g) extracting author level attributes from the retrieved documents; and (h) creating or updating each document profile. The method steps may be implemented using a system of computer servers communicatively linked to a plurality of clients via a global network.

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METHODS AND SYSTEMS FOR RETRIEVAL OF EXPERTS BASED ON USER CUSTOMIZABLE SEARCH AND RANKING PARAMETERS

Field of the Invention

[0001] The present invention relates generally to the field of search engines and, in more particularity, to a search engine for finding experts or particular expertise in a given field. More specifically, in preferred embodiments, the present invention relates to methods and systems for identifying and finding, or retrieving, expertise based on user customizable search and ranking parameters.

Background of the Invention

[0002] Search engines are software programs designed to search for electronic information based on user queries and to then return results of the search to the user. Today, web or internet search engines are widely used to search for information on the world wide web (the "Web"), FTP servers, or the internet. Several commonly used web search engines include Google™, Bing, Yahoo!, Baidu, and Yandex. Web search engines work by storing information on numerous web pages, which are then retrieved by a web crawler. The contents of each web page are analyzed, indexed and data relating to the web pages are stored in a database for later use. When a user enters a query in a web search engine using a browser (such as Internet Explorer, Firefox, Safari, Chrome, or the like), the engine examines its index and returns a list of "relevant" web pages.

[0003] Examples exist of various web searching systems and methods. Systems and methods for searching and retrieving information are described, for example, in U.S. Patent Nos. 7,395,222 and 7,617,193, and U.S. Published Application No. 2011/0022549. In general, these methods involve search engines which receive user queries, search for relevant

articles based on the query, calculate a score for one or more parameters, rank and display the search results.

[0004] Many of the existing search and retrieval systems return search results at a document level rather than at a person level. A few existing systems find expertise at the people level based on "ask the experts" model or by mining published documents. These systems, however, do not provide the users with an option to either select the data sources or weigh or rank search parameters in real time. Users are accordingly required to search multiple data sources, conduct multiple searches, retrieve the several search results, and then compile and aggregate the various results in order to determine the most relevant or best results for the search parameters selected.

[0005] Accordingly, the need exists for a method for producing search results, and a system for implementing the method, based on user customizable search and ranking parameters.

Summary of the Invention

[0006] The present invention overcomes the disadvantages of the prior art and fulfills the needs described above by providing a method for finding expertise based on user customizable search and ranking parameters, and providing the search results at a person or expert level.

[0007] More specifically, a preferred embodiment of the present invention is a method for cataloging a data set using a computer processor, the method comprising the steps of (a) accessing a plurality of documents stored in the data set; (b) processing the data and text and content of each of the plurality of documents; (c) creating a document profile for each of the plurality of documents processed, using relevant document metrics; (d) assigning

weighting coefficients to each of the relevant document metrics based upon a plurality of data set attributes; (e) assigning a unique identifier to each of the plurality of documents processed; (f) mapping the document profile data using standardization algorithms; (g) removing duplicate documents based upon the mapped document profiles; (h) integrating the document profile data for consistency using the plurality of data set attributes; (i) creating a document profile database using the plurality of data set attributes; (j) indexing said document profile database; and (k) updating said document profile database periodically to incorporate new data set data.

[0008] Another preferred embodiment of the present invention is a method for identifying expertise data within one or more document databases using a computer processor, the method comprising the steps of (a) inputting into a computer processor a plurality of data sources, said data sources having respective expertise data and expertise content; (b) processing the expertise data and expertise content of each document within the document database; (c) creating a document profile for each document using document relevant metrics; (d) assigning weighting factors to the document relevant metrics based upon certain attributes; (e) assigning a unique identifier to each document; (f) implementing a disambiguation algorithm on each of the created document profiles; (g) removing duplicate documents based upon implementation of the disambiguation algorithm; (h) extracting expert level attributes from the processed documents; (i) creating a document profile database; and (j) updating said document profile database.

[0009] Still another preferred embodiment of the present invention is a method for cataloging an expert data set using a computer processor, the method comprising the steps of (a) accessing a plurality of documents stored in the data set, said documents each having expert information and data; (b) processing the expert information and data of each of the

plurality of documents; (c) creating a document profile for each of the plurality of documents processed, using document relevant metrics; (d) assigning weighting coefficients to each of the document relevant metrics based upon a plurality of data set attributes; (e) assigning a unique identifier to each of the plurality of documents processed; (f) mapping the document profile data using standardization algorithms; (g) removing duplicate documents based upon the mapped document profiles; (h) integrating the document profile data for consistency using the plurality of data set attributes; (i) creating a document profile database using the plurality of data set attributes; (j) indexing said document profile database; and (k) updating said document profile database periodically to incorporate new data set information.

[0010] A further preferred embodiment of the present invention also includes a method of finding expertise based on user customizable search and ranking parameters, and providing the search results at a person or expert level. This method includes the steps of inputting a search topic query by a user; inputting search and ranking parameters by a user; processing the search topic query and optionally reformulating the query using techniques such as synonym expansion, spelling correction, morphological processing, adding or removing related items, and similar techniques; matching the search query profile to the document profile; assigning a relevance score to each document based on a plurality of criteria; computing a relevance score based on user customized ranking parameters; creating expert profile by aggregating relevant document profile for each expert; computing impact factor based on the relevant document set; and providing a list of relevant experts. The method may include an additional step of providing analytic and interactive visualization capabilities to aid in finding an expert based on additional criteria such as co-author network, affiliation network, and other research trends.

[0011] Another preferred embodiment of the present invention is a computerized system for electronically cataloging an expert data set, comprising a plurality of computer processors communicatively linked to a plurality of users, wherein the plurality of computer processors implement the method steps of (a) accessing a plurality of documents stored in the data set, said documents each having expert information and data; (b) processing the expert information and data of each of the plurality of documents; (c) creating a document profile for each of the plurality of documents processed, using document relevant metrics; (d) assigning weighting coefficients to each of the document relevant metrics based upon a plurality of data set attributes; (e) assigning a unique identifier to each of the plurality of documents processed; (f) mapping the document profile data using standardization algorithms; (g) removing duplicate documents based upon the mapped document profiles; (h) integrating the document profile data for consistency using the plurality of data set attributes; (i) creating a document profile database using the plurality of data set attributes; (j) indexing said document profile database; and (k) updating said document profile database periodically to incorporate new data set information.

[0012] Moreover, the present invention also includes a system for implementing the above methods in a computer system. In this system, the computer contains a computer-readable storage medium in which the software implementing the above methods are stored and executed. The system includes, among others, a network controller that is communicatively linked to a network such as a Local Area Network, Wide Area Network, Internet, or the like.

[0013] The present invention further includes a system for implementing the above methods in a client-server architecture by providing a plurality of servers that are communicatively linked to a plurality of clients via a network. The software implementing

the above methods is stored in a computer-readable storage medium provided in the plurality of servers.

[0014] In a particular preferred embodiment, the present invention includes a system for implementing the above methods using a cloud computing architecture. The software implementing the methods is stored in an application server in the cloud, and a plurality of clients and data sources are communicatively linked to the cloud.

[0015] Other features and advantages of the present invention are provided in the following detailed description of the invention, which refers to the accompanying drawings.

Brief Description of the Drawings

[0016] FIG. 1 illustrates a computing system in which methods according to various embodiments of the invention may be implemented;

[0017] FIG. 2 is a schematic diagram of an exemplary embodiment of a system in which the methods according to preferred embodiments may be implemented;

[0018] FIG. 3 is another schematic diagram of an exemplary embodiment of a system in which the methods according to preferred embodiments may be implemented;

[0019] FIG. 4 is a schematic diagram of an exemplary embodiment of a system in which the methods according to preferred embodiments may be implemented;

[0020] FIG. 5 illustrates a block diagram of an exemplary implementation of an embodiment of the present inventive method showing connections with the data sources and creation of a document profile database;

[0021] FIG. 6 illustrates a block diagram of an exemplary embodiment of the present inventive method showing the basis method steps;

[0022] FIG. 7A illustrates an exemplary embodiment of a search page interface that may be used with the present invention;

[0023] FIG. 7B illustrates another exemplary embodiment of a search page interface that may be used with the present invention;

[0024] FIG. 7C illustrates an exemplary embodiment of a search page interface section showing a user input ranking parameter module that may be used with the present invention;

[0025] FIG. 8A illustrates an exemplary embodiment of a search results page interface that may be used with the present invention;

[0026] FIG. 8B illustrates another exemplary embodiment of a search results page interface, in a collapsed view, that may be used with the present invention;

[0027] FIG. 8C illustrates another exemplary embodiment of a search results page interface, showing an expanded view with contextual text, that may be used with the present invention;

[0028] FIG. 9A illustrates an exemplary embodiment of a second search results page interface that may be used with the present invention;

[0029] FIG. 9B illustrates another exemplary embodiment of a second search results page interface, showing the ability to sort by different expert metrics, that may be used with the present invention;

[0030] FIG. 9C illustrates another exemplary embodiment of a second search results page interface, showing use of a ranking metric, that may be used with the present invention;

[0031] FIG. 9D illustrates a further exemplary embodiment of a second search results page interface, showing use of a ranking metric and the flexibility of user-selected weighting of the metrics, that may be used with the present invention;

[0032] FIG. 10A illustrates an exemplary embodiment of an expert profile page interface that may be used with the present invention;

[0033] FIG. 10B illustrates another exemplary embodiment of an expert profile page interface that may be used with the present invention;

[0034] FIG. 10C illustrates an exemplary embodiment of an expert profile page interface, showing specific query relevant expert publications, that may be used with the present invention; and

[0035] FIG. 11 illustrates an exemplary embodiment of a co-author network display page interface that may be used with the present invention.

Detailed Description of Preferred Embodiments

[0036] The disclosed embodiments relate to methods for finding expertise in a selected field, and to the systems for implementing the methods. The following terms as may be used in this specification are defined for convenience, and are not to be viewed as improperly or inappropriately limited the meaning of particular terms.

[0037] The term "relevance" or "relevant" is defined as how good a retrieved result meets the information need of the user.

[0038] The term "mobile device" also referred to as a handheld device, handheld or handheld computer is intended to include any computing device that may be held in a hand. These devices include, but not limited to, personal digital assistants (PDA); smartphones such as Apple's iPhone, Samsung's Droid and Blackberry Storm; tablet computers such as Apple's iPad, Motorola's Xoom and Samsung's Galaxy Tab; mobile internet device (MID) such as Lenovo's Ideapad, and Nokia's N810; and cellular phones.

[0039] The term "cloud computing" is defined as a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (such as networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

[0040] The term "computer-readable storage medium" or "computer-readable storage media" is intended to include any medium or media capable of storing data in a machine-readable format that can be accessed by a sensing device and capable of converting the data into binary format. Examples include, but not limited to, floppy disk, hard drive, zip disk, tape drive, CD-ROM, CD-R, CD-RW, DVD-ROM, DVD-RW, blu-ray disc, USB flash drive, RAM, ROM, solid state drive, memory stick, multimedia card, CompactFlash, holographic data storage devices, minidisc, semiconductor memory or storage device, or the like.

[0041] The elements and architecture of preferred embodiments of computer systems, that may implement preferred embodiments of the inventive methods for searching for expert data, are first described.

[0042] Referring now to the attached drawings, where like elements are designated by like reference numerals, **FIG. 1** illustrates a computer system **100** for implementing the methods in accordance with various embodiments of the invention. The system **100** includes one or more processors (or central processing units (CPUs)) **101** coupled to a local bus **104**. A memory controller **102** and a primary bus bridge **103** are coupled to the local bus **104**. The computer system **100** may include multiple memory controllers **102** and multiple primary bus bridges **103**. The memory controller **102** may also be coupled to a Read-Only Memory (ROM) **106**, a Random-Access Memory (RAM) **107**, and a cache memory **105**, which may be the only cache memory in the computer system **100**. Alternatively, CPUs **101** may also include cache memories, which may form a cache hierarchy with cache memory **105**.

[0043] The primary bus bridge **103** is coupled to at least one peripheral bus **112**. Various devices, such as peripherals or additional bus bridges may be coupled to the peripheral bus **112**. These devices may include a storage controller **110**, an I/O controller **116**, and a network controller **114**. The primary bus bridge **112** may also be coupled to one or more ports **111** including, but not limited to, parallel communication port, serial communication port, universal serial bus, or special purpose high-speed ports. In a personal computer, for example, the special purpose port might be an Accelerated Graphics Port (AGP), used to couple a high performance video card to the computer system **100**.

[0044] Storage devices **109** may be coupled to a storage bus **108** which in turn may be coupled to a storage controller **110**. Storage devices **109** may be internal or external to the computer system **100** and may include, but not be limited to, hard disk drives, floppy disk drives (FDD), universal serial bus (USB) flash drives, memory cards, magnetic tapes, CD-ROM, BD-ROM, CD-R, DVD-R, BD-R, CD-RW, DVD-RW, DVD+RW, DVD-RAM, or BD-RE. I/O device **114** may be coupled to an I/O controller **114** which in turn may be

coupled to the peripheral bus **112**. The I/O device **114** may be external or internal to the computer system **100** and may include, but not be limited to (i) input devices such as keyboards, mouse, trackballs, touch pads, touch screens, pens, joy sticks, microphones, and webcams; and (ii) output devices such as monitors, speakers, and printers.

[0045] While **FIG. 1** illustrates an architecture especially suitable for a general-purpose computer, such as a personal computer or a workstation, it should be recognized that well known modifications can be made to configure the computer system **100** to become more suitable for use in a variety of applications. The modifications may include, for example, elimination of unnecessary components, addition of specialized devices or circuits, and integration of a plurality of devices.

[0046] Computer system **100** may be coupled via a network controller **114** to a network **115**, for example, a Local Area Network (LAN) **203** (**FIG. 2**), Wide Area Network (WAN) **202** (**FIG. 2**), Internet **201** (**FIG. 2**), Metropolitan Area Network (MAN), Wireless Local Area Network (WLAN), Storage Area Network/System Area Network (SAN), Campus Area Network (CAN) or any other network to receive or send information. Computer system **100** may communicate with network **115** using connectionless packet switching including, but not limited to, Ethernet, Internet Protocol (IP) and User Datagram Protocol (UDP) or connection oriented packet switching including, but not limited to, X.25, Frame Relay, Asynchronous Transfer Mode (ATM), and Multiprotocol Label Switching (MPLS).

[0047] **FIG. 2** illustrates a distributed architecture in which methods according to various embodiments of the invention may be implemented. It should be recognized that well-known modifications can be made to system **200** to become more suitable for use in a variety of applications. For example, the distributed architecture may include, but not be limited to, client-server, 3-tier architecture, n-tier architecture, peer-to-peer, or clustered

architecture. Referring to **FIG. 2**, a plurality of servers **212a, 212b, 212c** may be communicatively linked to a plurality of clients **220, 221, 214, 215, 216**. The plurality of servers **212a, 212b, 212c** and the plurality of clients **220, 221, 214, 215, 216** may each be communicatively linked to a network such as LAN **203** or WLAN **204**. Further, LAN **203** may be communicatively linked to a plurality of offices at remote locations—remote office 1 **206**, remote office 2 **207**—via WAN **202**; or to a plurality of remote users **210** or a plurality of mobile devices **214, 215, 217, 218, 222** via the Internet **201**.

[0048] In a preferred embodiment, the plurality of servers may include, but not be limited to, an application server **212b**, database server **212c**, web server **212a**, print server, mail server, message server, domain name system (DNS) server, or file server. The hardware and software requirements of the plurality of servers vary depending on the server application and a person of ordinary skill in the art would know how to communicatively link the plurality of servers to the plurality of clients via the network.

[0049] Application server **212b** may contain computer hardware including computer-readable storage medium and software framework to provide an environment in which applications may be executed. Application server **212b** may host applications such as Microsoft Office, Visual Studio, and Visio. Further, software implementing particular embodiments of the invention may be stored in the computer-readable storage medium of the application server **212b** for execution.

[0050] Database server **212c** may be coupled to databases **213a, 213b** that may be hierarchical, relational, distributed or object-oriented database management systems. Some examples of database servers may be Oracle, DB2, Informix, Ingris, SQL server, Solr, MongoDB and Berkley DB.

[0051] Web server **212a** may contain computer hardware and/or software to help deliver content that may be accessed through the Internet **201**. Web server **212a** may respond to a client's **214, 215, 217, 218, 222** hypertext transfer protocol (HTTP) request and deliver hypertext markup language (HTML) documents including, but not limited to, style sheets and JavaScripts. Some examples of web server products include, but not limited to, Apache, internet information services (IIS), Google web server (GWS), IBM HTTP server, and these web servers may contain web applications such as Java Development Kit (JDK), .NET, WebSphere, or the like.

[0052] In a client-server architecture, as shown in **FIG. 2**, a plurality of servers are communicatively linked to a plurality of clients. Clients may be mobile devices, or a personal computer such as a desktop computer **221**, a workstation **220**, a laptop **216**, a netbook **222**, a nettop (not shown), or the like. Clients may be a thick client providing rich functionality independent of a server or a thin client that depends heavily on a server for computational needs. Each of the clients may have applications such as a virtual private network (VPN) **209** that enables secure connection of a remote user **210** to LAN **203**, or a web browser such as Internet Explorer, Firefox, Safari, Chrome, or the like to connect to the Internet **201**.

[0053] The various networks (LAN **203**, WLAN **204**, WAN **202**) may have one of several topologies including, but not limited to, point-to-point, bus, star, ring, tree, mesh and hybrid. The plurality of servers **212a, 212b, 212c**, the plurality of clients **220, 221** and/or the plurality of networks **201, 202, 203, 204** may be communicatively linked using 100Base-T Ethernet, digital subscriber line (DSL), integrated service digital network (ISDN), DS lines, dedicated T1/T3 lines, fiber-optic cables, satellite dish or the like.

[0054] Referring to **FIG. 3**, a system **300** includes a television **301** communicatively linked to the Internet **201**. In a preferred embodiment, the television **301** may be coupled to a plurality of devices including, but not limited to, a laptop **216**, smart TV device **302**, game console **303**, and set-top box **304**. Smart TV device **302** provides users with content from TV providers as well as user-generated content using internet applications. Smart TV products currently in the market may include Google TV, Samsung Smart TV, Yahoo! Connected TV, or the like. Set-top box (STB) **304** and game console **303** may be devices that connect to television **301** and a source of signal enabling display of content on the television screen. For example, game consoles may include, but not be limited to, Nintendo's Wii, Microsoft's Xbox or Sony's PlayStation and set-top boxes may include, but not be limited to, Nokia's Mediamaster, or Motorola's DCT700. While **FIG. 3** illustrates a general purpose television, it should be recognized that well known modifications can be made to make it function as an internet TV, web TV, connected TV, smart TV, interactive TV, internet protocol TV, or the like in which methods according to various embodiments of the invention may be implemented.

[0055] **FIG. 4** illustrates a cloud computing architecture in which methods according to various embodiments of the invention may be implemented. Referring to **FIG. 4**, mobile devices **402**, clients (such as netbook **222**, laptop **216**, and desktop **221**), databases **213b**, and data sources (not shown) may be communicatively linked to the cloud **401**. Preferred embodiments of the search engine methods **001**, may be hosted on the cloud **401**.

[0056] The cloud **401** may be a private cloud, community cloud, combined cloud, hybrid cloud, or any other cloud model. The cloud **401** may have services such as Software as a Service (SaaS), which eliminates the need to install and run an application on a client machine; Platform as a Service (PaaS), which facilitates a computing platform in the cloud;

and Infrastructure as a Service (IaaS), which delivers computer infrastructure such as servers, storage and network equipment on the cloud.

[0057] The inventive methods **001** are a software application, implemented on one or more computer processors, that may be written in a procedural or object-oriented language. In a preferred embodiment, the inventive method **001** is an interactive web application that retrieves, processes, and displays data from a search server such as Solr or a database such as MySQL in response to user actions.

[0058] In a preferred embodiment of the present invention, as shown in **FIG. 5**, a method of cataloging a document set is shown. In step **501**, a plurality of disparate data sources **501a**, **501b**, **501c** are accessed for information such as, but not limited to, publications, conference proceedings, clinical trials, awarded grants, standards, guidelines, patent applications and patents. Data from a plurality of such sources are stored in databases in **213a**, **213b**. The plurality of and disparate data sources **501a**, **501b**, **501c** may include, but not be limited to, publications and guidelines available on the National Library of Medicine's (NLM) Medline®, the National Institute of Health and Sciences (NIH)'s awarded grants, and the American Association of Cancer Research's (AACR) conference proceedings.

[0059] In step **502**, the text and data processing module **502a** processes the data and text of each of the plurality of documents received from the plurality of disparate data sources **501a**, **501b**, **501c**. Document profiles for the plurality of documents are created from the processing of the data and text, using keywords or concepts. Different methods for extracting keywords or concepts are known, and include methods such as simple keyword indexing, noun phrase extraction, or use of a controlled vocabulary, for example, NLM's Medical Subject Headings (MeSH) thesaurus. The keywords or concepts are then assigned weights based on a plurality of attributes including, but not limited to, frequency, specificity,

and location. By way of example, keywords or concepts that are found in a document's title may be assigned higher weight than those in the body of the document. Similarly, keywords, concepts, or metrics that are found repeated times within a document may result in a higher weighting.

[0060] The data in the plurality of the documents is then mapped / normalized using the data mapping / normalization module **502b**. This module ensures that there is standardization among different data sets. For example, standardizing variants like "January 06, 2009" vs. "6 January 2009" or "3/9/2010" (U.S. date format) vs. "9/3/2010" (European date format) are common among different databases. The standardizing of and the correct mapping of these different date formats are critical to temporal analyses of the documents. A unique identifier is then assigned to each document and document author.

[0061] Similar to the need to standardize date formats, author ambiguity is a similar and known problem. More specifically, authors may use, or publications may use different versions of an author's name in different publications. For example, an author John Smith may indicate his name as John A. Smith, JA Smith, or John Adam Smith in different publications. The author name disambiguation module **502c** disambiguates the normalized data received from the data normalization module **502b**. In a preferred embodiment of the present invention, the disambiguation module **502c** may use a plurality of metadata information such as coauthors, affiliations, scientific profile, or contact information as a means to resolve any author ambiguity problem.

[0062] In addition to author ambiguity problem, data or document duplication may be encountered when data from disparate data sources are aggregated or combined. The inventive method uses a data de-duplication module **502d** to remove identified duplicated data. The de-duplication module and process may be implemented, in a preferred

embodiment by matching a plurality of metadata information including comparing the titles and abstracts of the documents.

[0063] In step **503**, the data integration module facilitates integration of data from multiple data sources to provide users with a uniform data view. For example, different databases use different naming schemes, which means that the same record can exist in multiple databases but is labeled differently. By way of one example, an "Author" in Medline may correspond to, or be called a "Scientific Investigator" in clinicaltrials.gov, and still further be identified as an "Inventor" in a patent database. Through the data integration step **503** of the present invention, users need not have to address or be concerned about such variations when searching for an expert. The data integration of the present invention facilitates identifying experts with multiple attributes across different document sources, including, for example, sources such as the number of publications, number of grants, or number of proceedings.

[0064] A document profile database **504a** is then created as shown in step **504**. In a preferred embodiment, the document profile database may be periodically updated, such as on daily, weekly or other time interval. The document profile database **504a** is indexed to allow for quick response to user queries, and may be created in databases **213a**, **213b** as shown in **FIG. 2**.

[0065] In further detail of the method steps of a preferred embodiment, as shown in **FIG. 6**, a user inputs a search topic using free text query in a search query textbox **701** (shown in **FIG. 7A**) in step **601**. The user also enters search parameters in step **602**. The search parameters may include, but are not limited to, (i) Document Types **702** comprising of publication **702a** (**FIG. 7A**), grant **702b** (not shown), proceeding **702c** (**FIG. 7A**), guideline **702d** (not shown), clinical trial **702e** (not shown), and patents **702f** (not shown); (ii)

Document Sections **703** (**FIG. 7A**) comprising of title **703a** (not shown), and abstract **703b** (not shown); (iii) Bibliographic **704** (**FIG. 7A**) comprising of recent documents **704a** (not shown), date range **704b** (not shown), first author **704c** (not shown), last author **704d** (**FIG. 7A**), and h-index **704e** (not shown); and (iv) People **705** (**FIG. 7A**) comprising of clinical experience **705a** (**FIG. 7A**), email address **705b** (not shown), affiliation **705c** (not shown), name **705d** (not shown), country **705e** (not shown), and language **705f** (not shown). The user may also select a ranking, along a scale from low to high, for each of the parameters on a sliding scale **702a1**, **702c1**, **704d1**, **705a1** (**FIG. 7A**) corresponding to each of the respective parameters.

[0066] **FIG. 7B** illustrates another example or embodiment of a search settings page, including a similar search query textbox **701**. The search parameters shown in **FIG. 7B** include content **707**, bibliographic information **708** (which includes by way of example, identification of the first authors only, or identification of the last authors only, a date range, the journal publication country, or the journal publication language), and people **709** (which includes name, affiliation, and country).

[0067] In a different preferred embodiment for permitting the user to rank each of the parameters, **FIG. 7C** shows a graduated scale **710** for each of several parameters (e.g., publication count, grant count, conference count, patent count, and an average journal ranking) that may be individually selected or varied by the user to weight the search according to the user's intentions and needs.

[0068] In step **603**, the search query is processed, and keywords or concepts are extracted, removing any extraneous or irrelevant phrases from the search query. For example, "find me a ..." in a search query is a phrase that generally will not contribute to the description of the keyword and accordingly, may be removed from the query terms. In

addition, a synonym mapping is conducted to expand the search query terms. Such synonym mapping identifies synonyms for the keywords selected and broadens the search using those identified synonyms.

[0069] In step **604**, the search query profile is matched to the document profile in the document profile database **504a**. A relevance score is assigned to each document based on a plurality of criteria including, but not limited to, term frequency, inverse document frequency, degree of overlap between query terms and document terms, and the length of the document. In step **605**, a relevance score is computed for the documents based upon the user's selected search parameters.

[0070] Next, in step **606**, the method aggregates relevant document profiles for each expert and creates an expert profile. An impact factor, such as h-index or average journal ranking, is then computed **607** based on the relevant documents identified. As shown in step **609**, the method creates and provides a list of the relevant experts to the user. To provide the user with customization capability and flexibility, a user input ranking parameter module allows the user to assign **610** individual weighting to each ranking parameter using, for example a sliding or graduated scale **710** (**FIG. 7C**). With the user's selected ranking parameters and the user selected weightings, the method determines **611** an expert score for each expert. The method then provides a sorted listing **612** of the relevant experts based upon the user's selected preferences.

[0071] The user may also by provided with an analytic and interactive visualization capability, step **608**, to aid in finding an expert based on additional criteria such as co-author network, affiliation network, and research trends is also provided.

[0072] Referring again to **FIG. 7A**, a user may in one embodiment of the method, specify the search and ranking parameters together. For example, a user may choose, by

checking a box, Publication **702a** and Proceeding **702c** for Document Types **702**; Last Author **704d** for Bibliographic **704**; and Clinical Experience **705a** for People **705**, as shown in **FIG. 7**. The user may also choose the ranking for each of the above-mentioned parameters on a sliding scale **702a1**, **702c1**, **704d1**, **705a1** corresponding to the parameters. Subsequently, a user may input a search topic in the search query textbox **701**. As noted above, an alternative embodiment of the present invention, provides for the separate user input of search parameters **602** from the user input of ranking parameters **610**.

[0073] **FIG. 8A** shows an example of a results page **800** is shown for the search topic "lung cancer" entered by a user in the search query textbox **701**. The results page **800** displays a results summary **801** on the right and a subset of search results for each expert **802a**, **802b**. For each expert **802a**, **802b**, a short, cited context of relevant documents is displayed with the search topic highlighted **803**. The user may access the relevant documents by clicking on the title link **804**. In this preferred embodiment, the experts are sorted based on document relevance **805**. An alternative embodiment of a results page is shown in **FIG. 8B**, showing the results table **809** for the search for "kidney disease" entered into the search query textbox **701**, and in a collapsed view, listing for each expert the respective parameters, including in this example, total score, being the summation of publications, grants, conferences, and patents. **FIG. 8C** shows a related view of the results for the same search of "kidney disease" but now providing the user with contextual information **807** for each expert.

[0074] A further preferred embodiment of the inventive method provides the user with the ability to sort the identified experts based on document count **901**, as shown in **FIG. 9A**. A different visual presentation, as shown in **FIG. 9B**, allows the user to sort by any of the parameters provided in the results table **809**. The table lists for each expert, in the illustrated example, the total score, publications, grants, conferences, and patents. In this

embodiment, the user has the flexibility of sorting the experts by any of these parameters. **FIG. 9B** shows a sorting according to the number of conferences.

[0075] In a further preferred embodiment, as illustrated in **FIG. 9C**, the results table **809** may include an impact factor, such as a journal ranking, or the SCImago Journal Rank **903**. Given the very broad customization capability of the inventive method, to allow the user to select ranking parameters, as well as weighting factors for those ranking parameters, the user has substantial flexibility to identify and rank experts based upon one or more parameter according to the user's preferences. **FIG. 9D** illustrates an example results table showing the top five experts based upon the user's selected preferences. Given changes or variations in the user's selection of ranking parameters, and associated weighting factors, the order, or even which, experts identified in the results table will vary.

[0076] In addition to the results table, the inventive method allows the user to drill down to the specific expert and profile information. An exemplary illustration of an expert profile, shown in **FIG. 10A**, provides the profile of an expert **1000** displayed for a particular search result, and which presents all different document types, relevant keywords found in the relevant documents, and a list of relevant documents. A different preferred embodiment of the expert profile page is shown in **FIGS. 10B** and **10C**, showing bar charts of the publication timeline **1003**, query-relevant publication timeline **1004**, the most descriptive keywords **1005**, and the most descriptive query-related keywords **1006**, along with the top 10 journals **1007**, and the query-relevant publications. This alternative expert profile page provides the user with ready access to more expert information.

[0077] As further information for the user resulting from the expert identification and retrieval method, in a preferred embodiment, the co-author network **1100** for a particular expert may be determined and provided. An example of a useful display of such a co-author

network is shown in **FIG. 11**. Further detail or strength of the co-author connections could be illustrated by a relativity of thickness of the lines connecting the co-authors or providing a number of publications with which the co-authors are associated.

[0078] While the preferred embodiments shown in **FIGS. 5** through **11** are specifically related to the life sciences or medical fields, it should be understood that the inventive searching and cataloging method **001** is equally applicable and useful in other fields including, but not limited to, engineering, legal, financial, and other related fields.

[0079] While the present invention is described herein with reference to illustrative embodiments for particular applications, it should be understood that the invention is not limited thereto. Those having ordinary skill in the art and access to the teachings provided herein will recognize additional modifications, applications, embodiments and substitution of equivalents all of which are within the scope of the invention. Accordingly, the invention is not to be considered as limited by the foregoing description.

What is claimed is:

1. A method for cataloging a data set using a computer processor, the method comprising the steps of:

(a) accessing a plurality of documents stored in the data set;

(b) processing the data and text and content of each of the plurality of documents;

(c) creating a document profile for each of the plurality of documents processed, using relevant document metrics;

(d) assigning weighting coefficients to each of the relevant document metrics based upon a plurality of data set attributes;

(e) assigning a unique identifier to each of the plurality of documents processed;

(f) mapping the document profile data using standardization algorithms;

(g) removing duplicate documents based upon the mapped document profiles;

(h) integrating the document profile data for consistency using the plurality of data set attributes;

(i) creating a document profile database using the plurality of data set attributes;

(j) indexing said document profile database; and

(k) updating said document profile database periodically to incorporate new data set data.

2. The method for cataloging a data set using a computer processor, as described in claim 1, further comprising the step of:

(e1) assigning a unique identifier to an author attribute for each of the plurality of documents processed.

3. The method for cataloging a data set using a computer processor, as described in claim 2, further comprising the step of:

(e2) assigning a unique identifier to each of the plurality of created document profiles.

4. The method for cataloging a data set using a computer processor, as described in claim 1, wherein the metrics of steps (c) and (d) consist of one or more of keywords or concepts.

5. The method for cataloging a data set using a computer processor, as described in claim 4, wherein the one or more keywords or concepts, consist of one or more of: publications, grants, proceedings, standards, guidelines, clinical trials, patent applications, or patents.

6. The method for cataloging a data set using a computer processor, as described in claim 4, wherein the one or more keywords or concepts, consist of one or more of: bibliographic information about publications, date range, first author, last author, or h-index.

7. The method for cataloging a data set using a computer processor, as described in claim 4, wherein the one or more keywords or concepts, consist of one or more of: an individual's attributes, name, clinical experience, language, country, affiliation, address, email address, or social media address.

8. The method for cataloging a data set using a computer processor, as described in claim 1, wherein the relevant document metrics of steps (c) and (d) are user-selected metrics.

9. A method for identifying expertise data within one or more document databases using a computer processor, the method comprising the steps of:

(a) inputting into a computer processor a plurality of data sources, said data sources having respective expertise data and expertise content;

(b) processing the expertise data and expertise content of each document within the document database;

(c) creating a document profile for each document using document relevant metrics;

(d) assigning weighting factors to the document relevant metrics based upon certain attributes;

(e) assigning a unique identifier to each document;

(f) implementing a disambiguation algorithm on each of the created document profiles;

(g) removing duplicate documents based upon implementation of the disambiguation algorithm;

(h) extracting expert level attributes from the processed documents;

(i) creating a document profile database; and

(j) updating said document profile database.

10. The method for identifying expertise data within one or more document databases using a computer processor, as described in claim 9, further comprising the step of:

(k) providing interactive analytic tools to locate particular experts based upon further expert level attributes.

11. The method for identifying expertise data within one or more document databases using a computer processor, as described in claim 9, wherein the respective expertise data and expertise content of step (a) consists of one or more of: publications, conference proceedings, awarded grants, clinical trials, standards, guidelines, patent applications and/or patents.

12. The method for identifying expertise data within one or more document databases using a computer processor, as described in claim 9, wherein the document relevant

metrics of step (c) consists of one or more of: bibliographic information about publications, date range, first author, last author, h-index, or journal ranking.

13. The method for identifying expertise data within one or more document databases using a computer processor, as described in claim 9, wherein the document relevant metrics of step (c) consists of one or more of: an individual's attributes, name, substantive expertise, language, country, affiliation, address, email address, or social media address.

14. The method for identifying expertise data within one or more document databases using a computer processor, as described in claim 9, further comprising the step of:

(e1) assigning a unique identifier to an author attribute for each of the documents processed.

15. The method for identifying expertise data within one or more document databases using a computer processor, as described in claim 9, further comprising the step of:

(e2) assigning a unique identifier to each of the document profiles created.

16. A method for cataloging an expert data set using a computer processor, the method comprising the steps of:

(a) accessing a plurality of documents stored in the data set, said documents each having expert information and data;

(b) processing the expert information and data of each of the plurality of documents;

(c) creating a document profile for each of the plurality of documents processed, using document relevant metrics;

(d) assigning weighting coefficients to each of the document relevant metrics based upon a plurality of data set attributes;

(e) assigning a unique identifier to each of the plurality of documents processed;

(f) mapping the document profile data using standardization algorithms;

(g) removing duplicate documents based upon the mapped document profiles;

(h) integrating the document profile data for consistency using the plurality of data set attributes;

(i) creating a document profile database using the plurality of data set attributes;

(j) indexing said document profile database; and

(k) updating said document profile database periodically to incorporate new data set information.

17. The method for cataloging an expert data set using a computer processor, as described in claim 16, further comprising the step of:

(e1) assigning a unique identifier to an author attribute for each of the plurality of documents processed.

18. The method for cataloging an expert data set using a computer processor, as described in claim 16, further comprising the step of:

(e2) assigning a unique identifier to each of the plurality of created document profiles.

19. The method for cataloging an expert data set using a computer processor, as described in claim 16, wherein the metrics of steps (c) and (d) consist of one or more of keywords or concepts.

20. The method for cataloging an expert data set using a computer processor, as described in claim 16, wherein the respective expert information and data of step (a) consists of one or more of: publications, conference proceedings, awarded grants, standards, guidelines, patent applications and/or patents.

21. The method for cataloging an expert data set using a computer processor, as described in claim 16, further comprising the step of:

(l) providing interactive analytic tools to locate particular experts based upon further expert level attributes.

22. A computerized system for electronically cataloging an expert data set, comprising:

- a plurality of computer processors communicatively linked to a plurality of users, wherein the plurality of computer processors implement the method steps of:

(a) accessing a plurality of documents stored in the data set, said documents each having expert information and data;

(b) processing the expert information and data of each of the plurality of documents;

(c) creating a document profile for each of the plurality of documents processed, using document relevant metrics;

(d) assigning weighting coefficients to each of the document relevant metrics based upon a plurality of data set attributes;

(e) assigning a unique identifier to each of the plurality of documents processed;

(f) mapping the document profile data using standardization algorithms;

(g) removing duplicate documents based upon the mapped document profiles;

(h) integrating the document profile data for consistency using the plurality of data set attributes;

(i) creating a document profile database using the plurality of data set attributes;

(j) indexing said document profile database; and

(k) updating said document profile database periodically to incorporate new data set information.

23. The computerized system for electronically cataloging an expert data set, as described in claim 22, wherein the plurality of computer processors are communicatively linked to a plurality of users, using the internet.

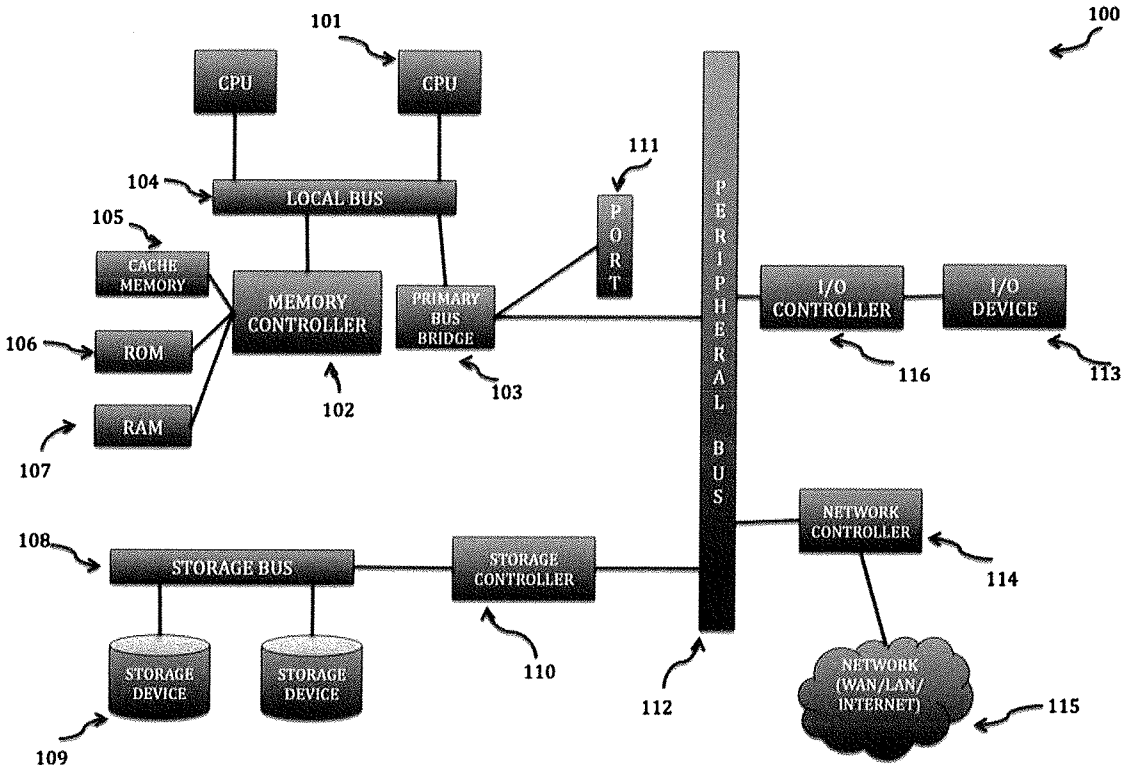

100
101
CPU
CPU
104
LOCAL BUS
105
CACHE MEMORY
MEMORY CONTROLLER
PRIMARY BUS BRIDGE
111
PORT
PERIPHERAL BUS
I/O CONTROLLER
I/O DEVICE
106
ROM
RAM
107
102
103
116
113
108
STORAGE BUS
STORAGE CONTROLLER
NETWORK CONTROLLER
114
STORAGE DEVICE
STORAGE DEVICE
110
112
NETWORK (WAN/LAN/ INTERNET)
115
109

FIG. 1

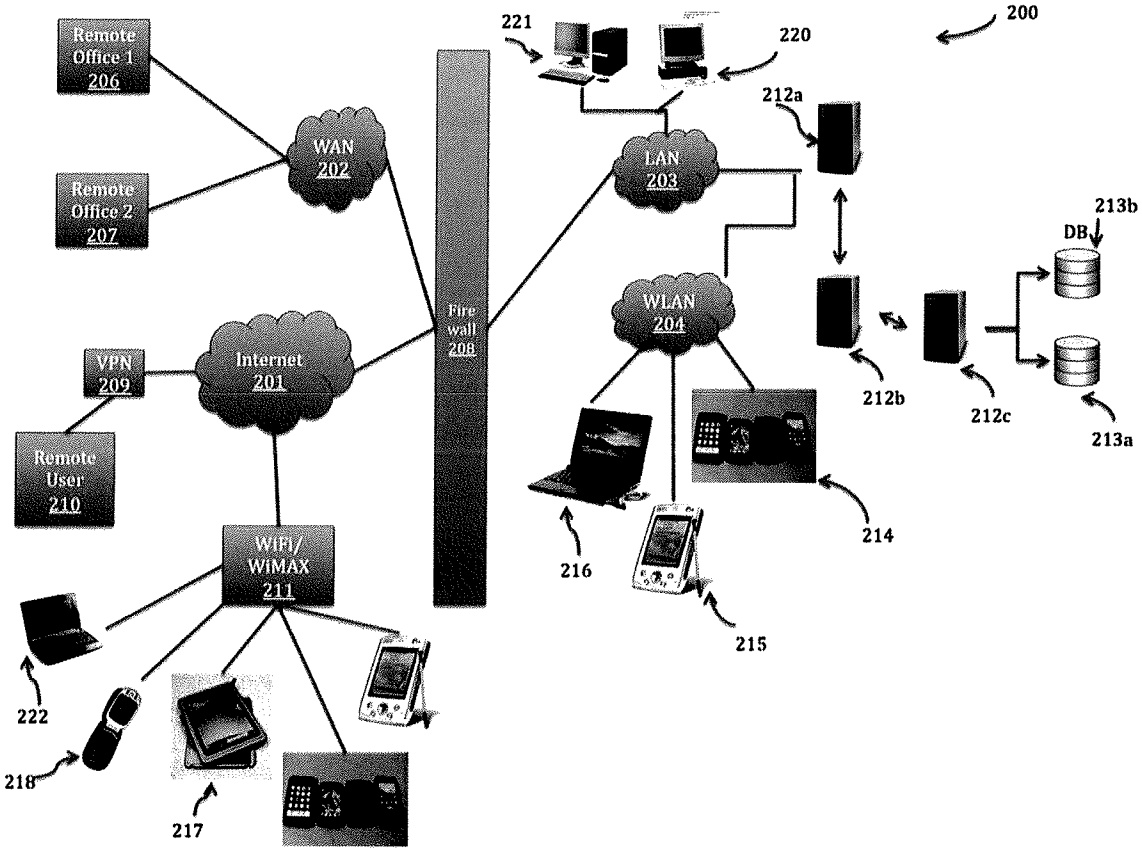

Remote Office 1 206
Remote Office 2 207
WAN 202
VPN 209
Internet 201
Remote User 210
WiFi/ WiMAX 211
Fire wall 208
LAN 203
WLAN 204
221
220
200
212a
213b
DB
212b
212c
213a
214
216
215
222
218
217

FIG. 2

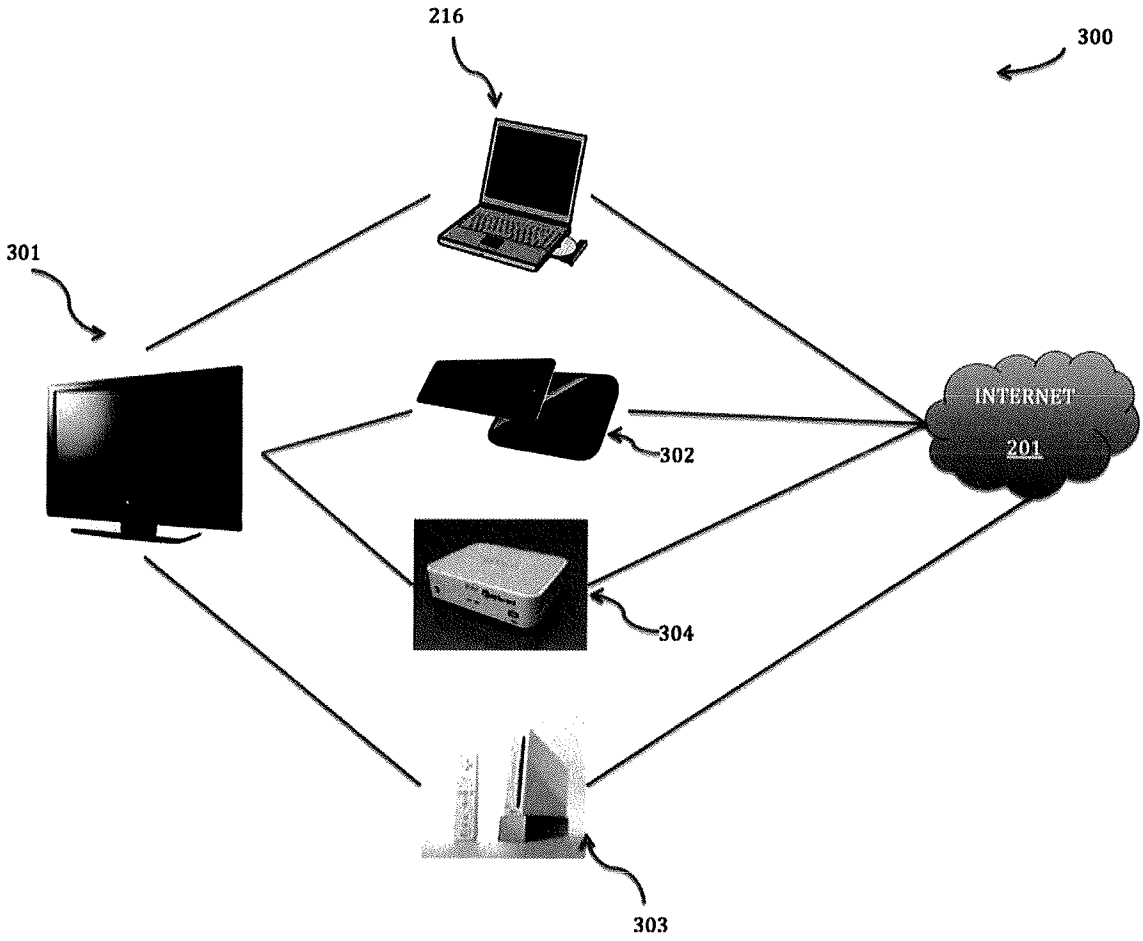


FIG. 3

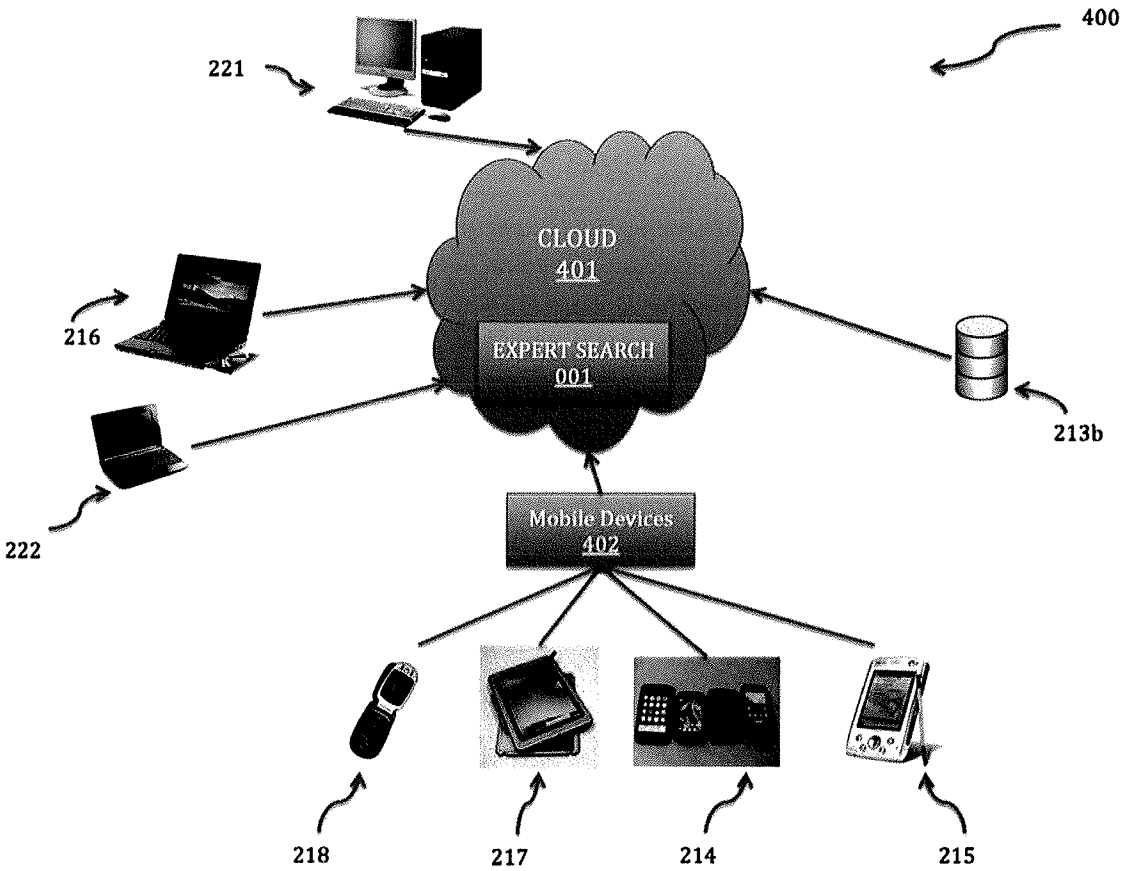

400
221
CLOUD
401
EXPERT SEARCH
001
216
213b
222
Mobile Devices
402
218
217
214
215

FIG. 4

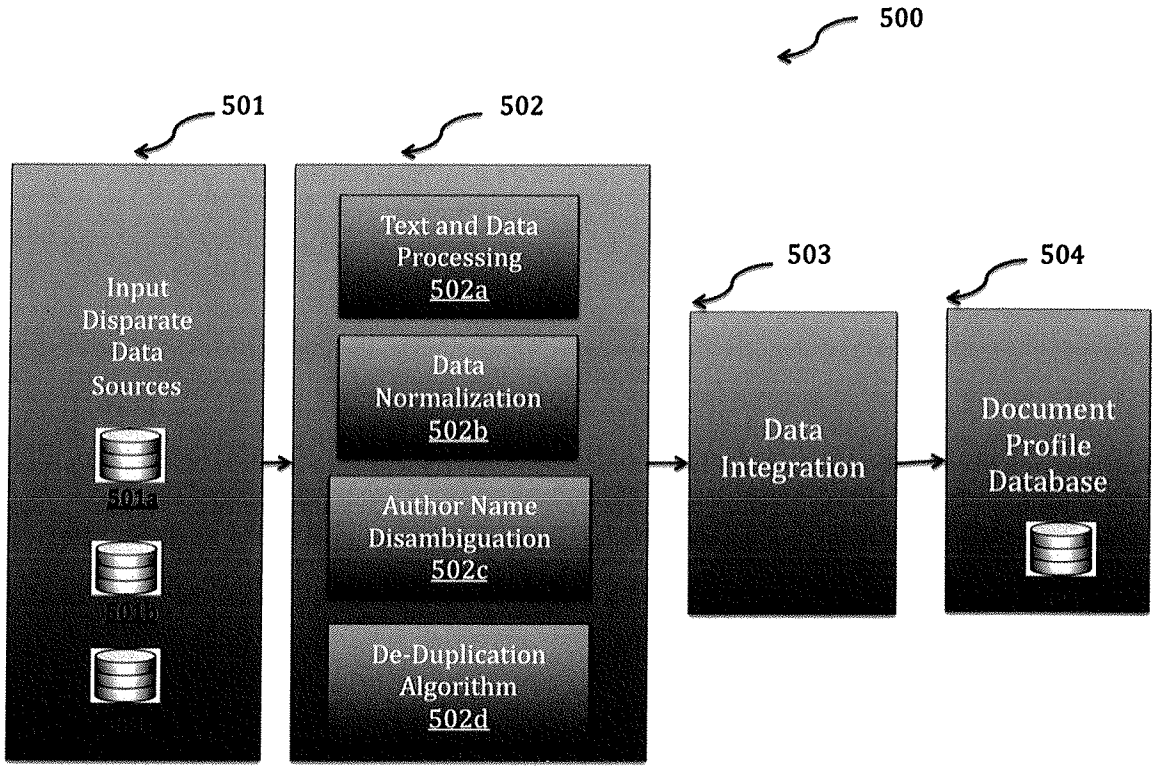

500
501
502
Input Disparate Data Sources
501a
501b
Text and Data Processing 502a
Data Normalization 502b
Author Name Disambiguation 502c
De-Duplication Algorithm 502d
503
Data Integration
504
Document Profile Database

FIG. 5

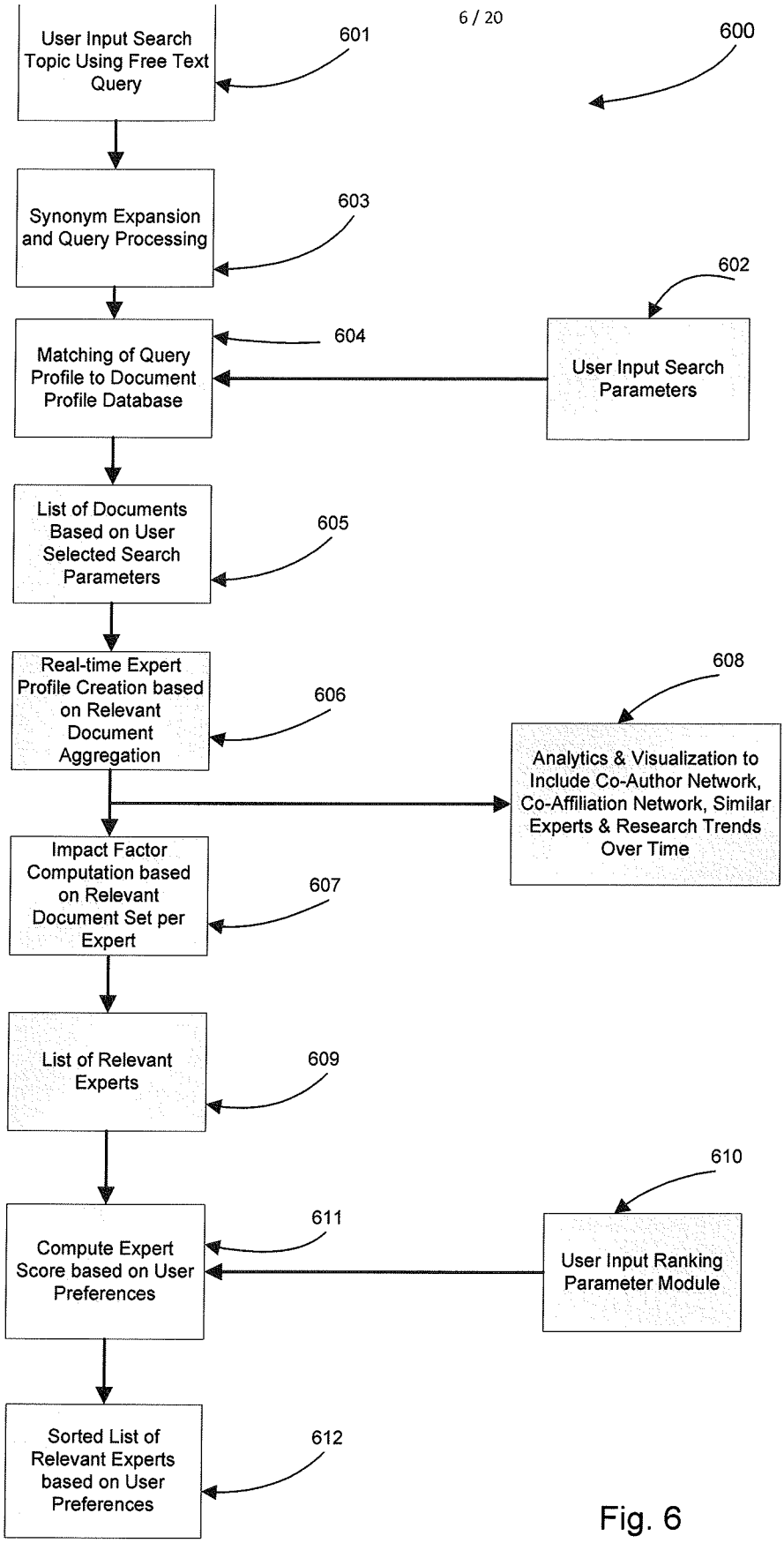

User Input Search Topic Using Free Text Query
601
600
Synonym Expansion and Query Processing
603
602
Matching of Query Profile to Document Profile Database
604
User Input Search Parameters
List of Documents Based on User Selected Search Parameters
605
Real-time Expert Profile Creation based on Relevant Document Aggregation
606
608
Analytics & Visualization to Include Co-Author Network, Co-Affiliation Network, Similar Experts & Research Trends Over Time
Impact Factor Computation based on Relevant Document Set per Expert
607
List of Relevant Experts
609
610
Compute Expert Score based on User Preferences
611
User Input Ranking Parameter Module
Sorted List of Relevant Experts based on User Preferences
612

Fig. 6

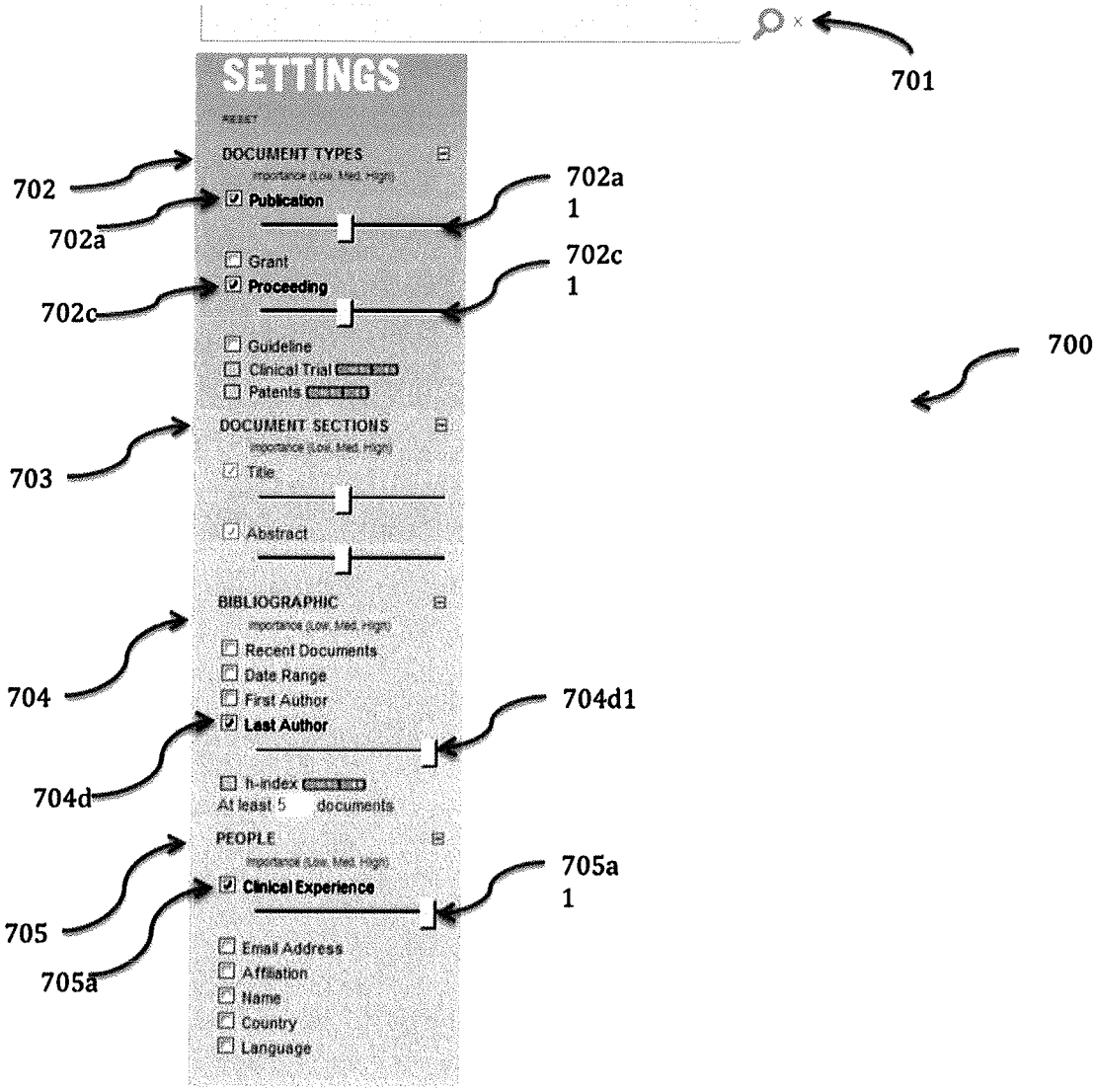

701
SETTINGS
RESET
DOCUMENT TYPES
Importance (Low, Med, High)
Publication
Grant
Proceeding
Guideline
Clinical Trial
Patents
DOCUMENT SECTIONS
Importance (Low, Med, High)
Title
Abstract
BIBLIOGRAPHIC
Importance (Low, Med, High)
Recent Documents
Date Range
First Author
Last Author
h-index
At least 5 documents
PEOPLE
Importance (Low, Med, High)
Clinical Experience
Email Address
Affiliation
Name
Country
Language
700
702
702a
702a1
702c
702c1
703
704
704d
704d1
705
705a
705a1

FIG. 7A

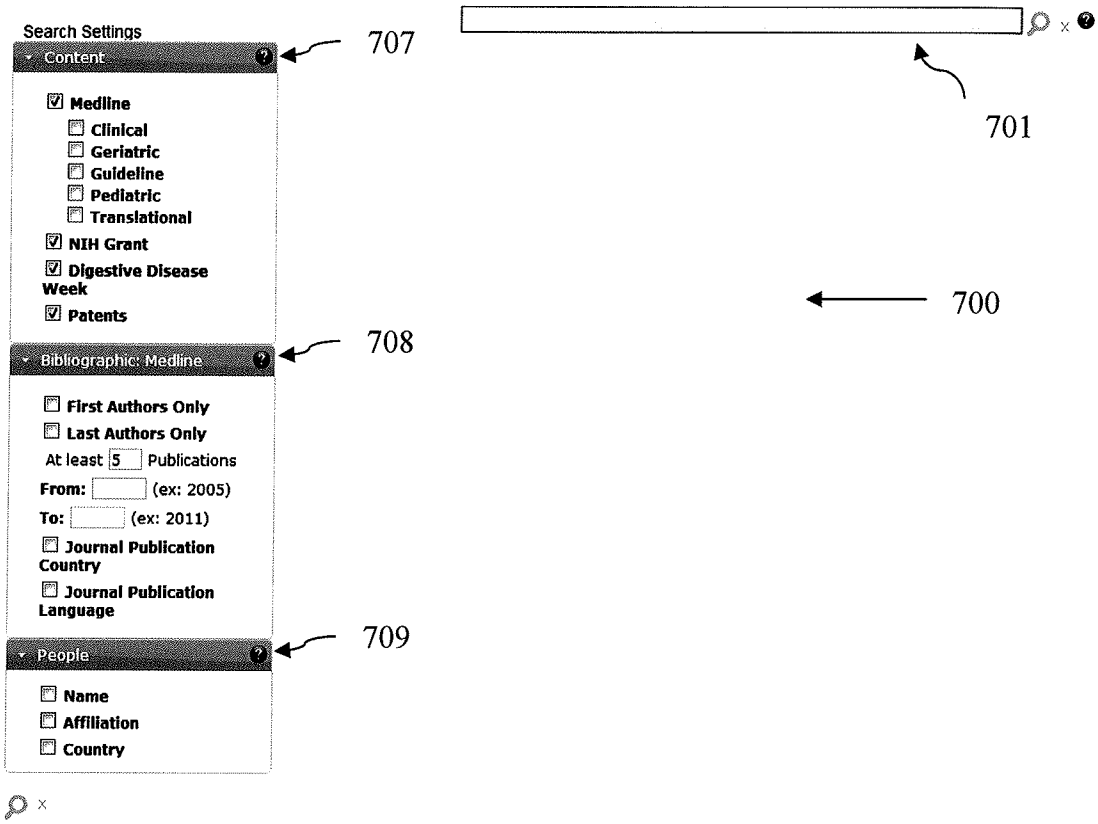

Search Settings
Content
Medline
Clinical
Geriatric
Guideline
Pediatric
Translational
NIH Grant
Digestive Disease Week
Patents
Bibliographic: Medline
First Authors Only
Last Authors Only
At least 5 Publications
From: (ex: 2005)
To: (ex: 2011)
Journal Publication Country
Journal Publication Language
People
Name
Affiliation
Country
707
708
709
701
700

FIG. 7B

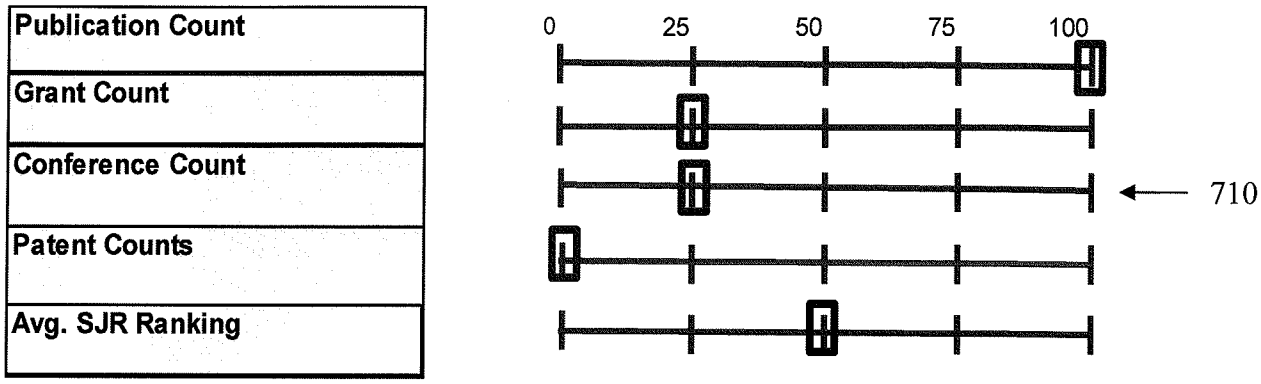

Publication Count
Grant Count
Conference Count
Patent Counts
Avg. SJR Ranking
0
25
50
75
100
710

FIG. 7C

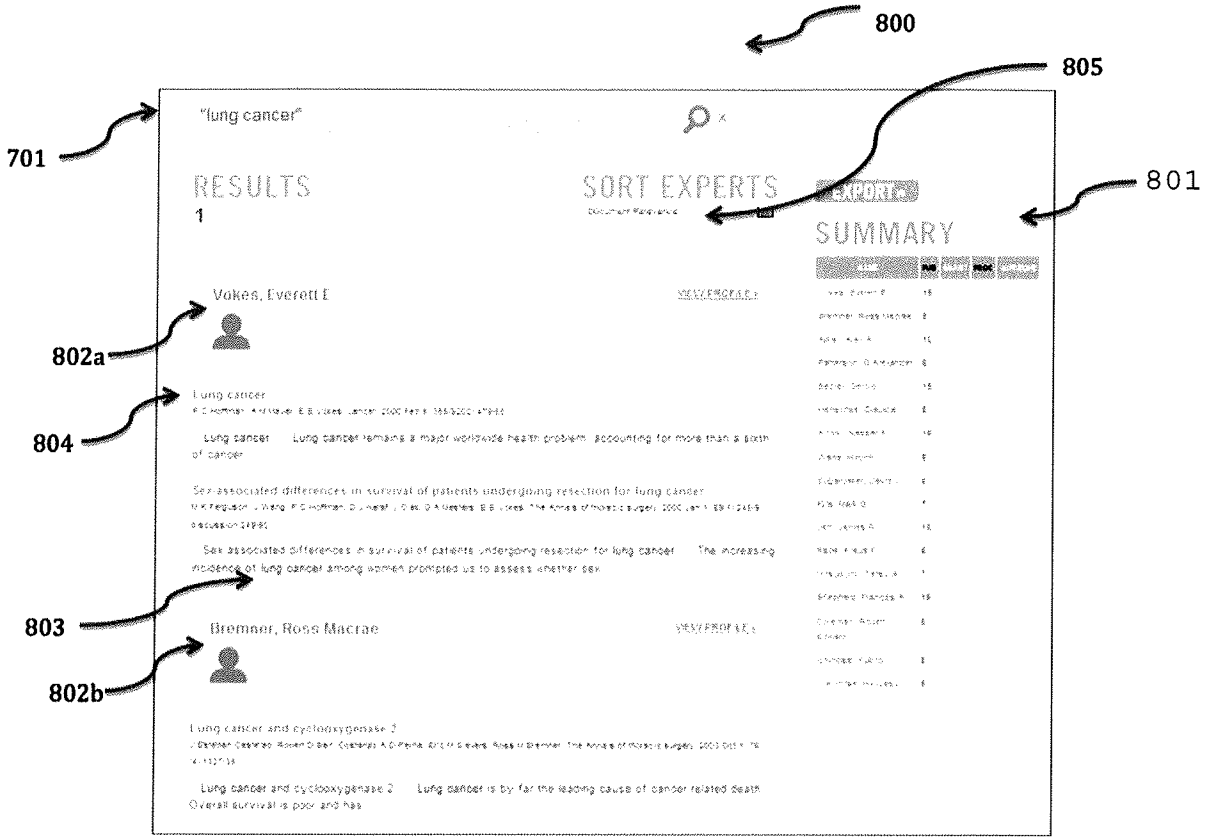

800
805
701
"lung cancer"
RESULTS
1
SORT EXPERTS
801
SUMMARY
Vokes, Everett E
802a
804
Lung cancer
Lung cancer remains a major worldwide health problem, accounting for more than a fifth of cancer
Sex-associated differences in survival of patients undergoing resection for lung cancer
Sex associated differences in survival of patients undergoing resection for lung cancer. The increasing
803
Bremner, Ross Macrae
802b
Lung cancer and cyclooxygenase 2
Lung cancer and cyclooxygenase 2. Lung cancer is by far the leading cause of cancer related death.
Overall survival is poor and has

FIG. 8A

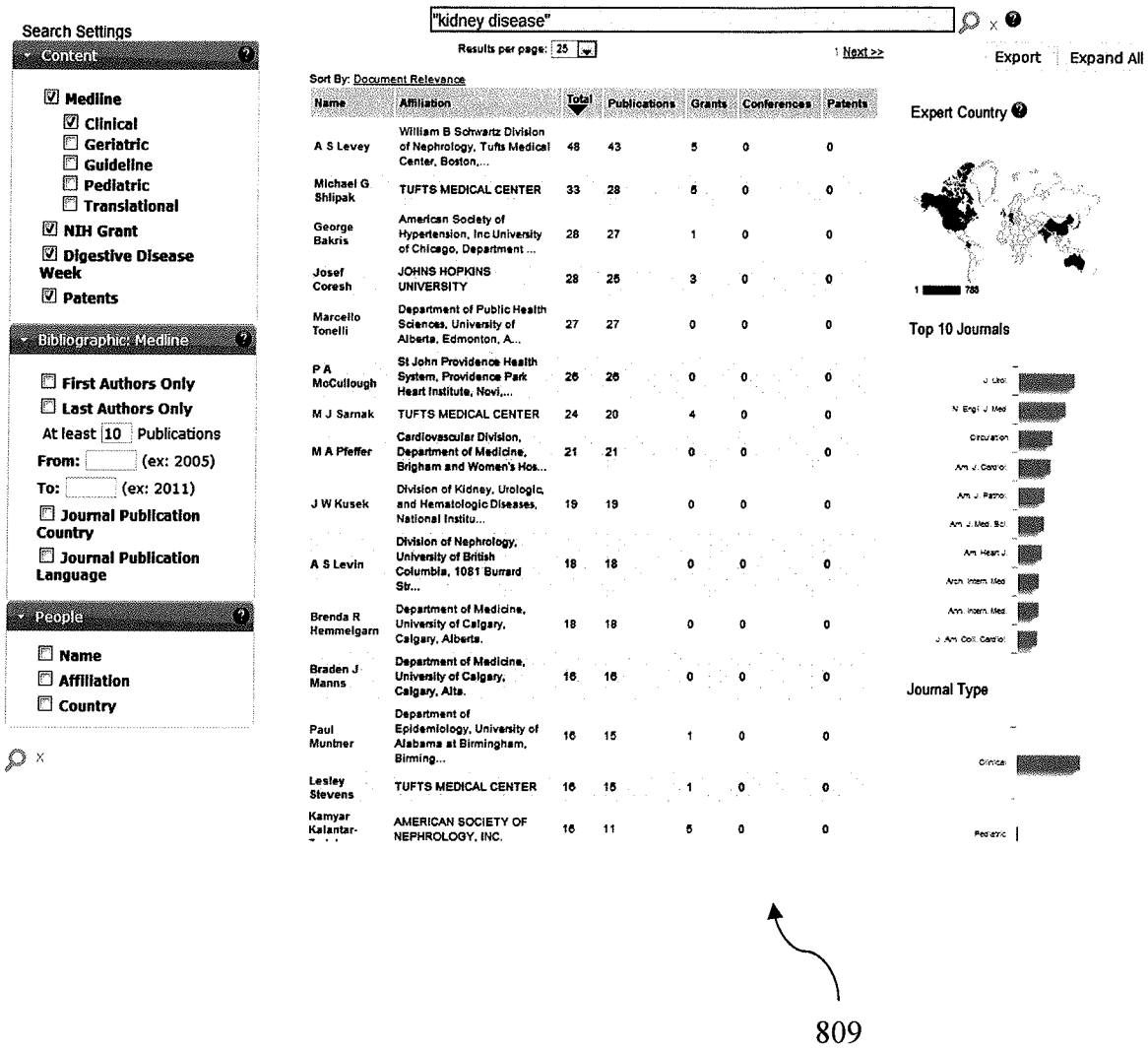

Search Settings
Content
Medline
Clinical
Geriatric
Guideline
Pediatric
Translational
NIH Grant
Digestive Disease Week
Patents
Bibliographic: Medline
First Authors Only
Last Authors Only
At least 10 Publications
From: (ex: 2005)
To: (ex: 2011)
Journal Publication Country
Journal Publication Language
People
Name
Affiliation
Country
"kidney disease"
Results per page: 25
1 Next >>
Export
Expand All
Sort By: Document Relevance
Name
Affiliation
Total
Publications
Grants
Conferences
Patents
A S Levey
William B Schwartz Division of Nephrology, Tufts Medical Center, Boston,...
48
43
5
0
0
Michael G Shlipak
TUFTS MEDICAL CENTER
33
28
5
0
0
George Bakris
American Society of Hypertension, Inc University of Chicago, Department ...
28
27
1
0
0
Josef Coresh
JOHNS HOPKINS UNIVERSITY
28
25
3
0
0
Marcello Tonelli
Department of Public Health Sciences, University of Alberta, Edmonton, A...
27
27
0
0
0
P A McCullough
St John Providence Health System, Providence Park Heart Institute, Novi,...
26
26
0
0
0
M J Sarnak
TUFTS MEDICAL CENTER
24
20
4
0
0
M A Pfeffer
Cardiovascular Division, Department of Medicine, Brigham and Women's Hos...
21
21
0
0
0
J W Kusek
Division of Kidney, Urologic, and Hematologic Diseases, National Institu...
19
19
0
0
0
A S Levin
Division of Nephrology, University of British Columbia, 1081 Burrard Str...
18
18
0
0
0
Brenda R Hemmelgarn
Department of Medicine, University of Calgary, Calgary, Alberta.
18
18
0
0
0
Braden J Manns
Department of Medicine, University of Calgary, Calgary, Alta.
16
16
0
0
0
Paul Muntner
Department of Epidemiology, University of Alabama at Birmingham, Birming...
16
15
1
0
0
Lesley Stevens
TUFTS MEDICAL CENTER
16
15
1
0
0
Kamyar Kalantar-
AMERICAN SOCIETY OF NEPHROLOGY, INC.
16
11
5
0
0
Expert Country
1
788
Top 10 Journals
J Urol
N Engl J Med
Circulation
Am J Cardiol
Am J Pathol
Am J Med Sci
Am Heart J
Arch Intern Med
Ann Intern Med
J Am Coll Cardiol
Journal Type
Clinical
Pediatric
809

FIG. 8B

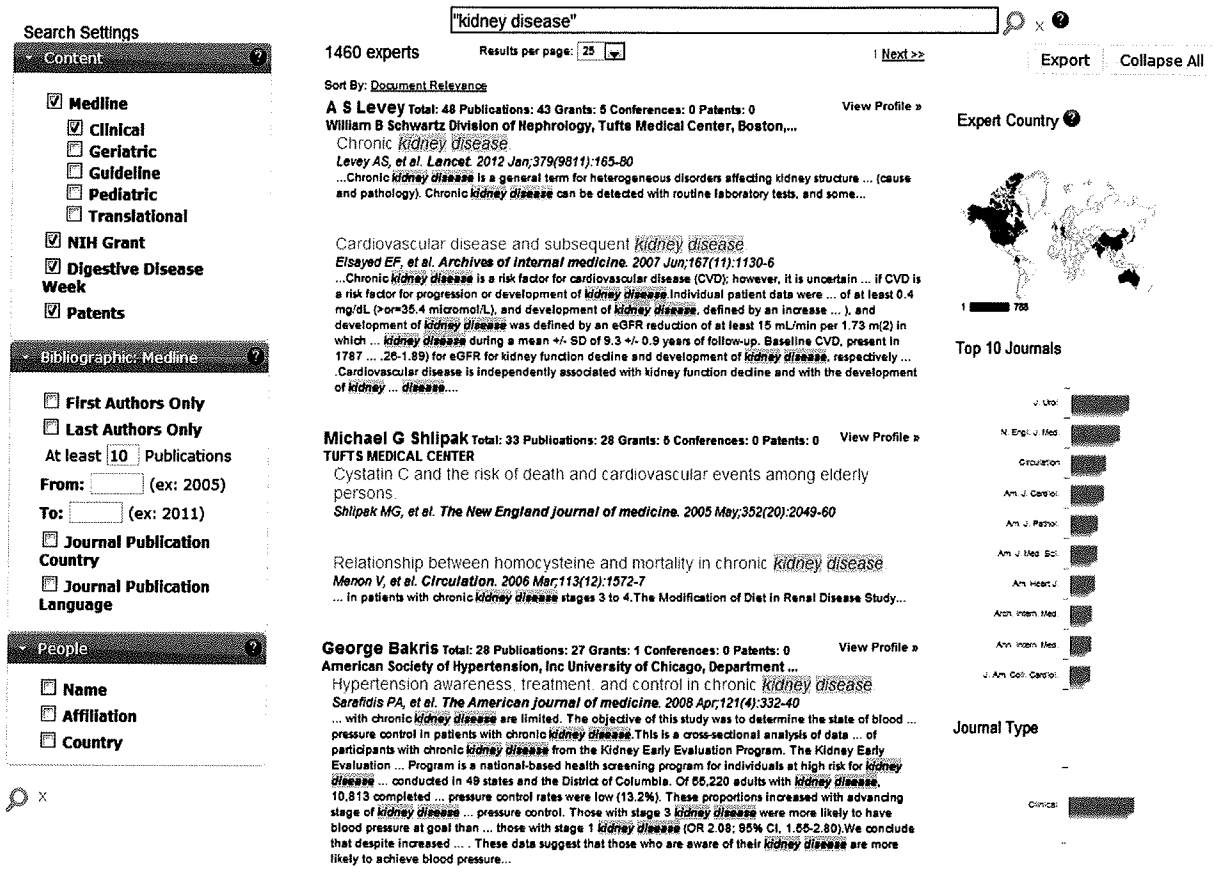

Search Settings
Content
Medline
Clinical
Geriatric
Guideline
Pediatric
Translational
NIH Grant
Digestive Disease Week
Patents
Bibliographic: Medline
First Authors Only
Last Authors Only
At least 10 Publications
From: (ex: 2005)
To: (ex: 2011)
Journal Publication Country
Journal Publication Language
People
Name
Affiliation
Country
"kidney disease"
1460 experts
Results per page: 25
Next >>
Export
Collapse All
Sort By: Document Relevance
A S Levey Total: 48 Publications: 43 Grants: 5 Conferences: 0 Patents: 0
View Profile »
William B Schwartz Division of Nephrology, Tufts Medical Center, Boston,...
Chronic kidney disease
Levey AS, et al. Lancet. 2012 Jan;379(9811):165-80
...Chronic kidney disease is a general term for heterogeneous disorders affecting kidney structure ... (cause and pathology). Chronic kidney disease can be detected with routine laboratory tests, and some...
Cardiovascular disease and subsequent kidney disease
Elsayed EF, et al. Archives of internal medicine. 2007 Jun;167(11):1130-6
...Chronic kidney disease is a risk factor for cardiovascular disease (CVD); however, it is uncertain ... if CVD is a risk factor for progression or development of kidney disease.Individual patient data were ... of at least 0.4 mg/dL (>or=35.4 micromol/L), and development of kidney disease, defined by an increase ...), and development of kidney disease was defined by an eGFR reduction of at least 15 mL/min per 1.73 m(2) in which ... kidney disease during a mean +/- SD of 9.3 +/- 0.9 years of follow-up. Baseline CVD, present in 1787 ... .26-1.89) for eGFR for kidney function decline and development of kidney disease, respectively ... .Cardiovascular disease is independently associated with kidney function decline and with the development of kidney ... disease....
Michael G Shlipak Total: 33 Publications: 28 Grants: 5 Conferences: 0 Patents: 0
View Profile »
TUFTS MEDICAL CENTER
Cystatin C and the risk of death and cardiovascular events among elderly persons.
Shlipak MG, et al. The New England journal of medicine. 2005 May;352(20):2049-60
Relationship between homocysteine and mortality in chronic kidney disease
Menon V, et al. Circulation. 2006 Mar;113(12):1572-7
... in patients with chronic kidney disease stages 3 to 4.The Modification of Diet in Renal Disease Study...
George Bakris Total: 28 Publications: 27 Grants: 1 Conferences: 0 Patents: 0
View Profile »
American Society of Hypertension, Inc University of Chicago, Department ...
Hypertension awareness, treatment, and control in chronic kidney disease
Sarafidis PA, et al. The American journal of medicine. 2008 Apr;121(4):332-40
... with chronic kidney disease are limited. The objective of this study was to determine the state of blood ... pressure control in patients with chronic kidney disease.This is a cross-sectional analysis of data ... of participants with chronic kidney disease from the Kidney Early Evaluation Program. The Kidney Early Evaluation ... Program is a national-based health screening program for individuals at high risk for kidney disease ... conducted in 49 states and the District of Columbia. Of 65,220 adults with kidney disease, 10,813 completed ... pressure control rates were low (13.2%). These proportions increased with advancing stage of kidney disease ... pressure control. Those with stage 3 kidney disease were more likely to have blood pressure at goal than ... those with stage 1 kidney disease (OR 2.08; 95% CI, 1.65-2.80).We conclude that despite increased ... . These data suggest that those who are aware of their kidney disease are more likely to achieve blood pressure...
Expert Country
1
788
Top 10 Journals
J. Urol.
N. Engl. J. Med.
Circulation
Am. J. Cardiol.
Am. J. Pathol.
Am. J. Med. Sci.
Am. Heart J.
Arch. Intern. Med.
Ann. Intern. Med.
J. Am. Coll. Cardiol.
Journal Type
Clinical
807

FIG. 8C

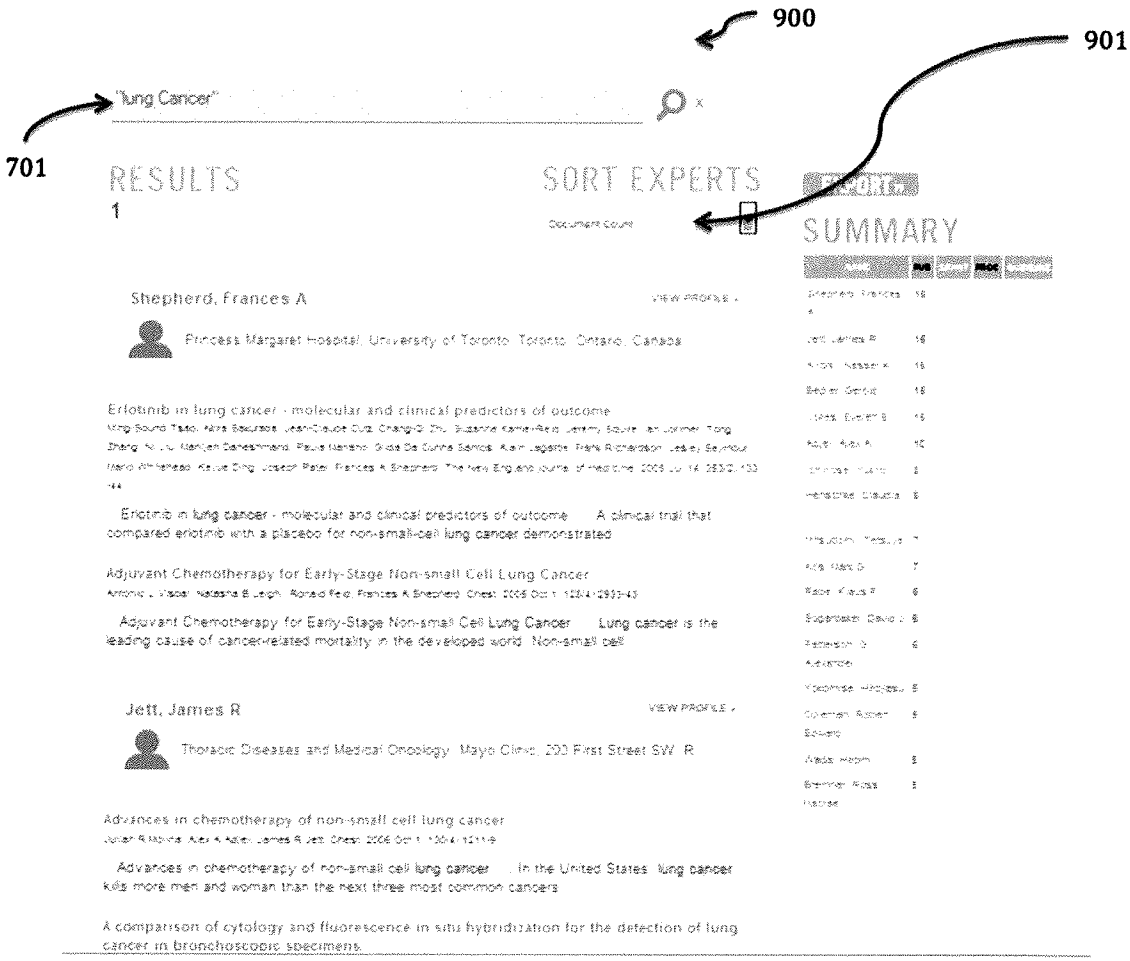

900
901
701
"lung Cancer"
RESULTS
1
SORT EXPERTS
Document count
SUMMARY
Shepherd, Frances A
VIEW PROFILE
Princess Margaret Hospital, University of Toronto, Toronto, Ontario, Canada
Erlotinib in lung cancer - molecular and clinical predictors of outcome
Erlotinib in lung cancer - molecular and clinical predictors of outcome A clinical trial that compared erlotinib with a placebo for non-small-cell lung cancer demonstrated
Adjuvant Chemotherapy for Early-Stage Non-small Cell Lung Cancer
Adjuvant Chemotherapy for Early-Stage Non-small Cell Lung Cancer Lung cancer is the leading cause of cancer-related mortality in the developed world. Non-small cell
Jett, James R
VIEW PROFILE
Thoracic Diseases and Medical Oncology, Mayo Clinic, 200 First Street SW, R
Advances in chemotherapy of non-small cell lung cancer
Advances in chemotherapy of non-small cell lung cancer . In the United States, lung cancer kills more men and woman than the next three most common cancers
A comparison of cytology and fluorescence in situ hybridization for the detection of lung cancer in bronchoscopic specimens

FIG. 9A

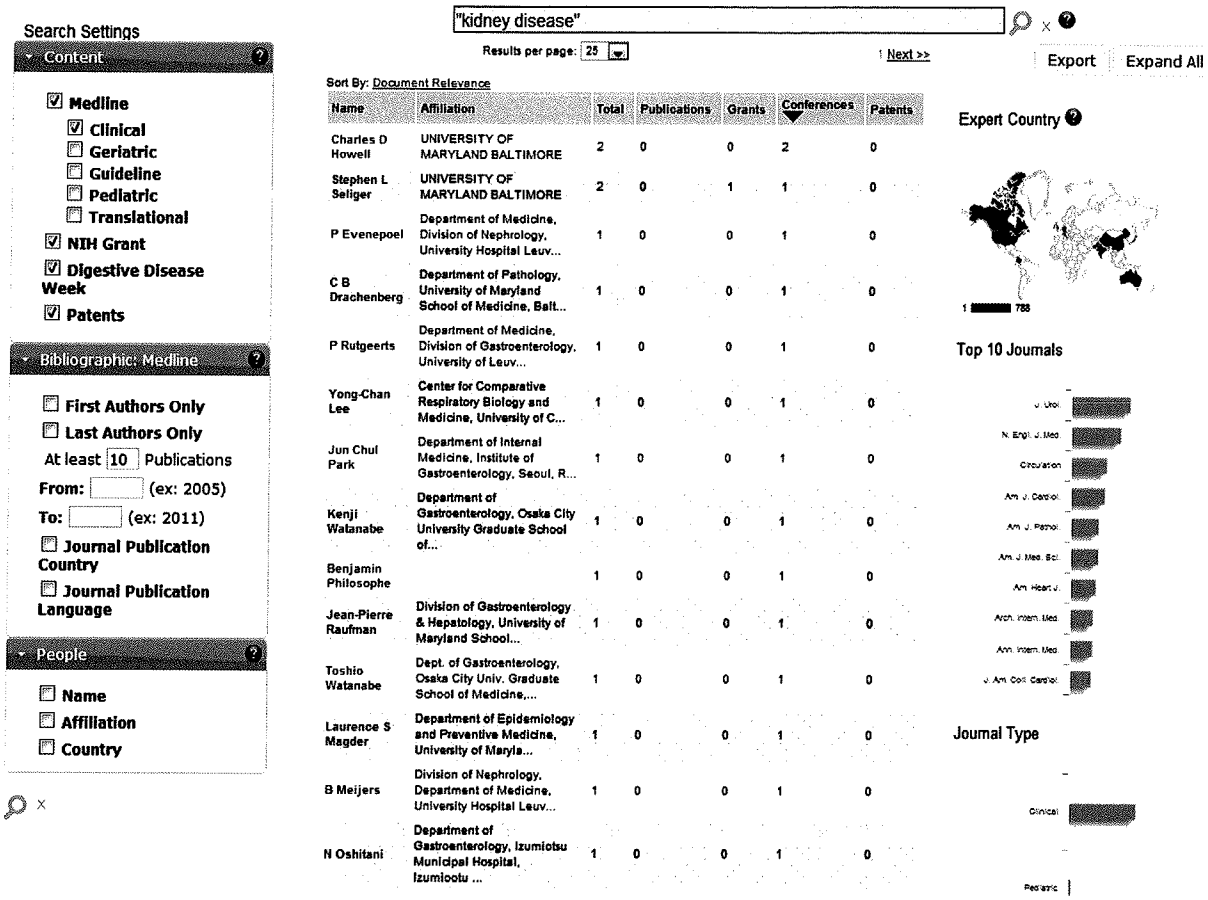

Search Settings
Content
Medline
Clinical
Geriatric
Guideline
Pediatric
Translational
NIH Grant
Digestive Disease Week
Patents
Bibliographic: Medline
First Authors Only
Last Authors Only
At least 10 Publications
From: (ex: 2005)
To: (ex: 2011)
Journal Publication Country
Journal Publication Language
People
Name
Affiliation
Country
"kidney disease"
Results per page: 25
1 Next >>
Export
Expand All
Sort By: Document Relevance
Name | Affiliation | Total | Publications | Grants | Conferences | Patents
Charles D Howell | UNIVERSITY OF MARYLAND BALTIMORE | 2 | 0 | 0 | 2 | 0
Stephen L Seliger | UNIVERSITY OF MARYLAND BALTIMORE | 2 | 0 | 1 | 1 | 0
P Evenepoel | Department of Medicine, Division of Nephrology, University Hospital Leuv... | 1 | 0 | 0 | 1 | 0
C B Drachenberg | Department of Pathology, University of Maryland School of Medicine, Balt... | 1 | 0 | 0 | 1 | 0
P Rutgeerts | Department of Medicine, Division of Gastroenterology, University of Leuv... | 1 | 0 | 0 | 1 | 0
Yong-Chan Lee | Center for Comparative Respiratory Biology and Medicine, University of C... | 1 | 0 | 0 | 1 | 0
Jun Chul Park | Department of Internal Medicine, Institute of Gastroenterology, Seoul, R... | 1 | 0 | 0 | 1 | 0
Kenji Watanabe | Department of Gastroenterology, Osaka City University Graduate School of... | 1 | 0 | 0 | 1 | 0
Benjamin Philosophe | | 1 | 0 | 0 | 1 | 0
Jean-Pierre Raufman | Division of Gastroenterology & Hepatology, University of Maryland School... | 1 | 0 | 0 | 1 | 0
Toshio Watanabe | Dept. of Gastroenterology, Osaka City Univ. Graduate School of Medicine,... | 1 | 0 | 0 | 1 | 0
Laurence S Magder | Department of Epidemiology and Preventive Medicine, University of Maryla... | 1 | 0 | 0 | 1 | 0
B Meijers | Division of Nephrology, Department of Medicine, University Hospital Leuv... | 1 | 0 | 0 | 1 | 0
N Oshitani | Department of Gastroenterology, Izumiotsu Municipal Hospital, Izumiootu ... | 1 | 0 | 0 | 1 | 0
Expert Country
1
788
Top 10 Journals
J. Urol.
N. Engl. J. Med.
Circulation
Am. J. Cardiol.
Am. J. Pathol.
Am. J. Med. Sci.
Am. Heart J.
Arch. Intern. Med.
Ann. Intern. Med.
J. Am. Coll. Cardiol.
Journal Type
Clinical
Pediatric
809

FIG. 9B

903

Name	Affiliation	Total	Publications	Grants	Conferences	Patents	Average SJR
A S Levey	William B Schwartz Division of Nephrology, Tufts Medical Center, Boston,...	48	43	5	0	0	1.38
Michael G Shlipak	TUFTS MEDICAL CENTER	33	28	5	0	0	1.14
George Bakris	American Society of Hypertension, Inc University of Chicago, Department ...	28	27	1	0	0	1.01
Josef Coresh	JOHNS HOPKINS UNIVERSITY	28	25	3	0	0	1.16
Marcello Tonelli	Department of Public Health Sciences, University of Alberta, Edmonton, A...	27	27	0	0	0	0.82
P A McCullough	St John Providence Health System, Providence Park Heart Institute, Novi,...	26	26	0	0	0	1.01
M J Samak	TUFTS MEDICAL CENTER	24	20	4	0	0	1.11
M A Pfeffer	Cardiovascular Division, Department of Medicine, Brigham and Women's Hos...	21	21	0	0	0	1.52
J W Kusek	Division of Kidney, Urologic, and Hematologic Diseases, National Institu...	19	19	0	0	0	1.15
A S Levin	Division of Nephrology, University of British Columbia, 1081 Burrard Str...	18	18	0	0	0	0.59
Brenda R Hemmelgarn	Department of Medicine, University of Calgary, Calgary, Alberta.	18	18	0	0	0	0.90
Braden J Manns	Department of Medicine, University of Calgary, Calgary, Alta.	16	16	0	0	0	1.01
Paul Muntner	Department of Epidemiology, University of Alabama at Birmingham, Birming...	16	15	1	0	0	0.83
Lesley Stevens	TUFTS MEDICAL CENTER	16	15	1	0	0	1.39

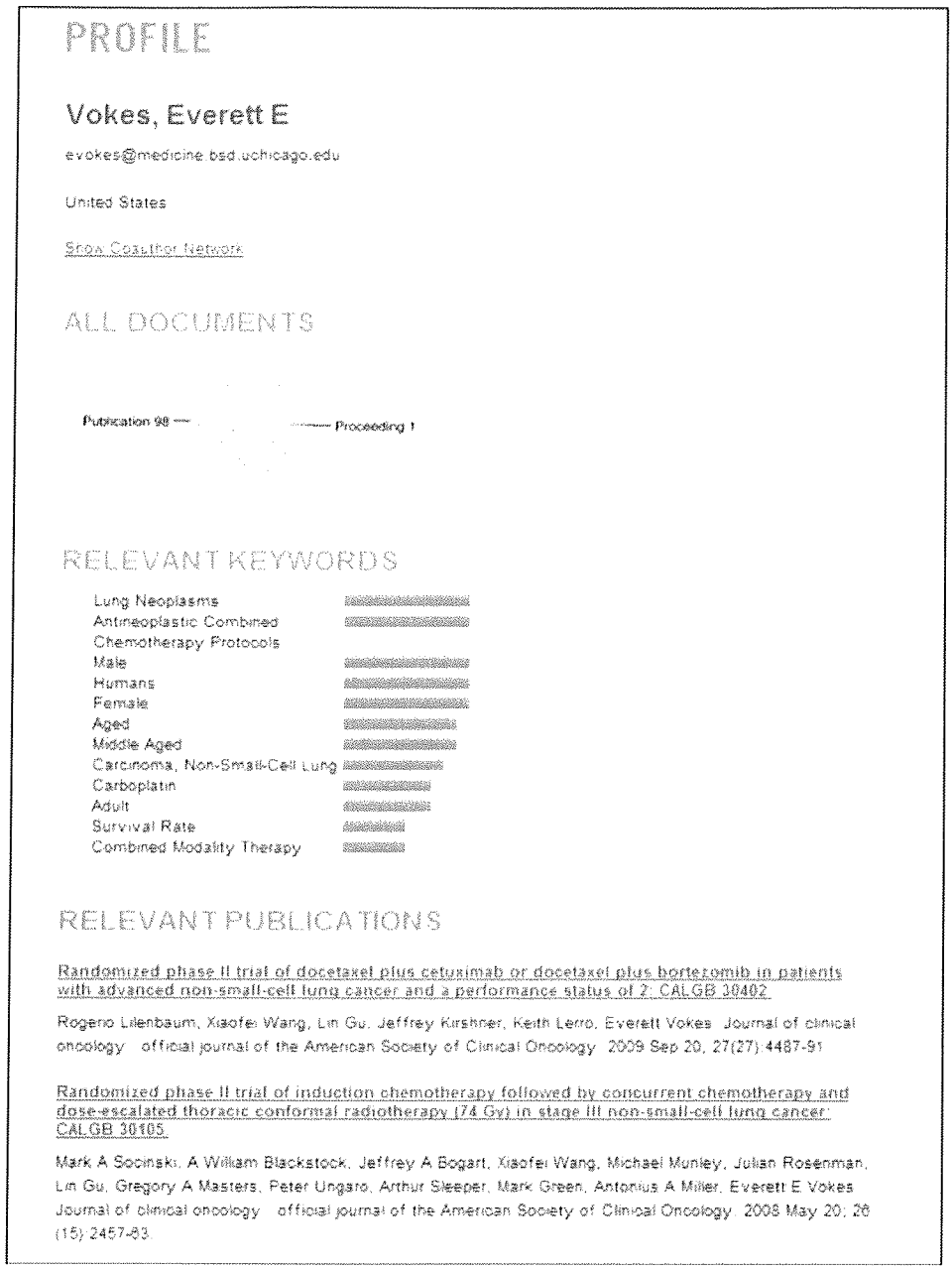
809

FIG. 9C

903

Name	Affiliation	Total	Publications	Grants	Conferences	Patents	Average SJR
A S Levey	William B Schwartz Division of Nephrology, Tufts Medical Center, Boston,...	48	43	5	0	0	1.38
Michael G Shlipak	TUFTS MEDICAL CENTER	33	28	5	0	0	1.14
Josef Coresh	JOHNS HOPKINS UNIVERSITY	28	25	3	0	0	1.16
George Bakris	American Society of Hypertension, Inc University of Chicago, Department ...	28	27	1	0	0	1.01
Marcello Tonelli	Department of Public Health Sciences, University of Alberta, Edmonton, A...	27	27	0	0	0	0.82

FIG. 9D


PROFILE
Vokes, Everett E
evokes@medicine.bsd.uchicago.edu
United States
Show Coauthor Network
ALL DOCUMENTS
Publication 98
Proceeding 1
RELEVANT KEYWORDS
Lung Neoplasms
Antineoplastic Combined Chemotherapy Protocols
Male
Humans
Female
Aged
Middle Aged
Carcinoma, Non-Small-Cell Lung
Carboplatin
Adult
Survival Rate
Combined Modality Therapy
RELEVANT PUBLICATIONS
Randomized phase II trial of docetaxel plus cetuximab or docetaxel plus bortezomib in patients with advanced non-small-cell lung cancer and a performance status of 2: CALGB 30402
Rogerio Lilenbaum, Xiaofei Wang, Lin Gu, Jeffrey Kirshner, Keith Lerro, Everett Vokes Journal of clinical oncology : official journal of the American Society of Clinical Oncology 2009 Sep 20; 27(27): 4487-91
Randomized phase II trial of induction chemotherapy followed by concurrent chemotherapy and dose-escalated thoracic conformal radiotherapy (74 Gy) in stage III non-small-cell lung cancer: CALGB 30105
Mark A Socinski, A William Blackstock, Jeffrey A Bogart, Xiaofei Wang, Michael Munley, Julian Rosenman, Lin Gu, Gregory A Masters, Peter Ungaro, Arthur Sleeper, Mark Green, Antonius A Miller, Everett E Vokes Journal of clinical oncology : official journal of the American Society of Clinical Oncology 2008 May 20; 26 (15): 2457-63

1000

FIG. 10A

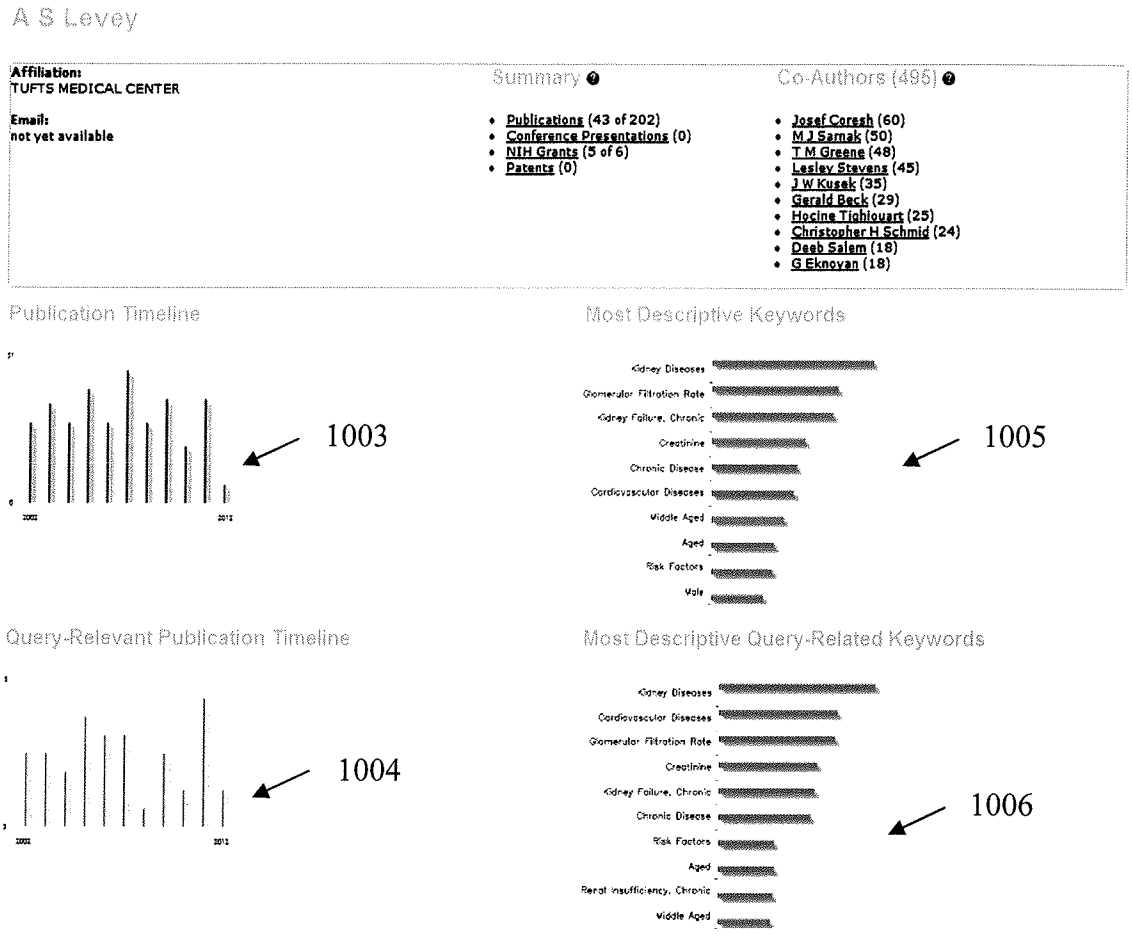
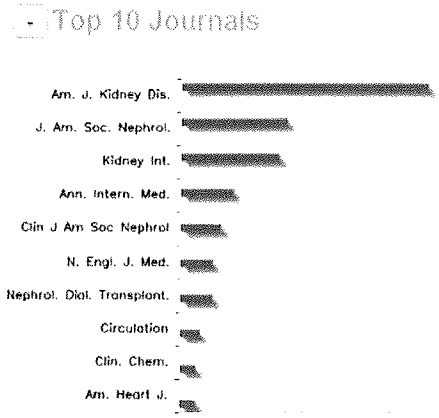

A S Levey
Affiliation:
TUFTS MEDICAL CENTER
Email:
not yet available
Summary
Publications (43 of 202)
Conference Presentations (0)
NIH Grants (5 of 6)
Patents (0)
Co-Authors (495)
Josef Coresh (60)
M J Sarnak (50)
T M Greene (48)
Lesley Stevens (45)
J W Kusek (35)
Gerald Beck (29)
Hocine Tighiouart (25)
Christopher H Schmid (24)
Deeb Salem (18)
G Eknoyan (18)
Publication Timeline
1003
Most Descriptive Keywords
Kidney Diseases
Glomerular Filtration Rate
Kidney Failure, Chronic
Creatinine
Chronic Disease
Cardiovascular Diseases
Middle Aged
Aged
Risk Factors
Male
1005
Query-Relevant Publication Timeline
1004
Most Descriptive Query-Related Keywords
Kidney Diseases
Cardiovascular Diseases
Glomerular Filtration Rate
Creatinine
Kidney Failure, Chronic
Chronic Disease
Risk Factors
Aged
Renal Insufficiency, Chronic
Middle Aged
1006

FIG. 10B



- Query-Relevant Publications (43)

Comparison of risk prediction using the CKD-EPI equation and the MDRD study equation for estimated glomerular filtration rate.
Matsushita K, et al. JAMA : the journal of the American Medical Association. 2012 May;307(18):1941-51

Chronic kidney disease.
Levey AS, et al. Lancet. 2012 Jan;379(9811):165-80

Bardoxolone methyl, chronic kidney disease, and type 2 diabetes.
Upadhyay A, et al. The New England journal of medicine. 2011 Nov;365(18):1746; author reply 1746-7

Predictors of fatal and nonfatal cardiovascular events in patients with type 2 diabetes mellitus, chronic kidney disease, and anemia: an analysis of the Trial to Reduce cardiovascular Events with Aranesp (darbepoetin-alfa) Therapy (TREAT).
McMurray JJ, et al. American heart journal. 2011 Oct;162(4):748-755.e3

Prognostic assessment of estimated glomerular filtration rate by the new Chronic Kidney Disease Epidemiology Collaboration equation in comparison with the Modification of Diet in Renal Disease Study equation.
Skali H, et al. American heart journal. 2011 Sep;162(3):548-54

A predictive model for progression of chronic kidney disease to kidney failure.
Tangri N, et al. JAMA : the journal of the American Medical Association. 2011 Apr;305(15):1553-9

FIG. 10C

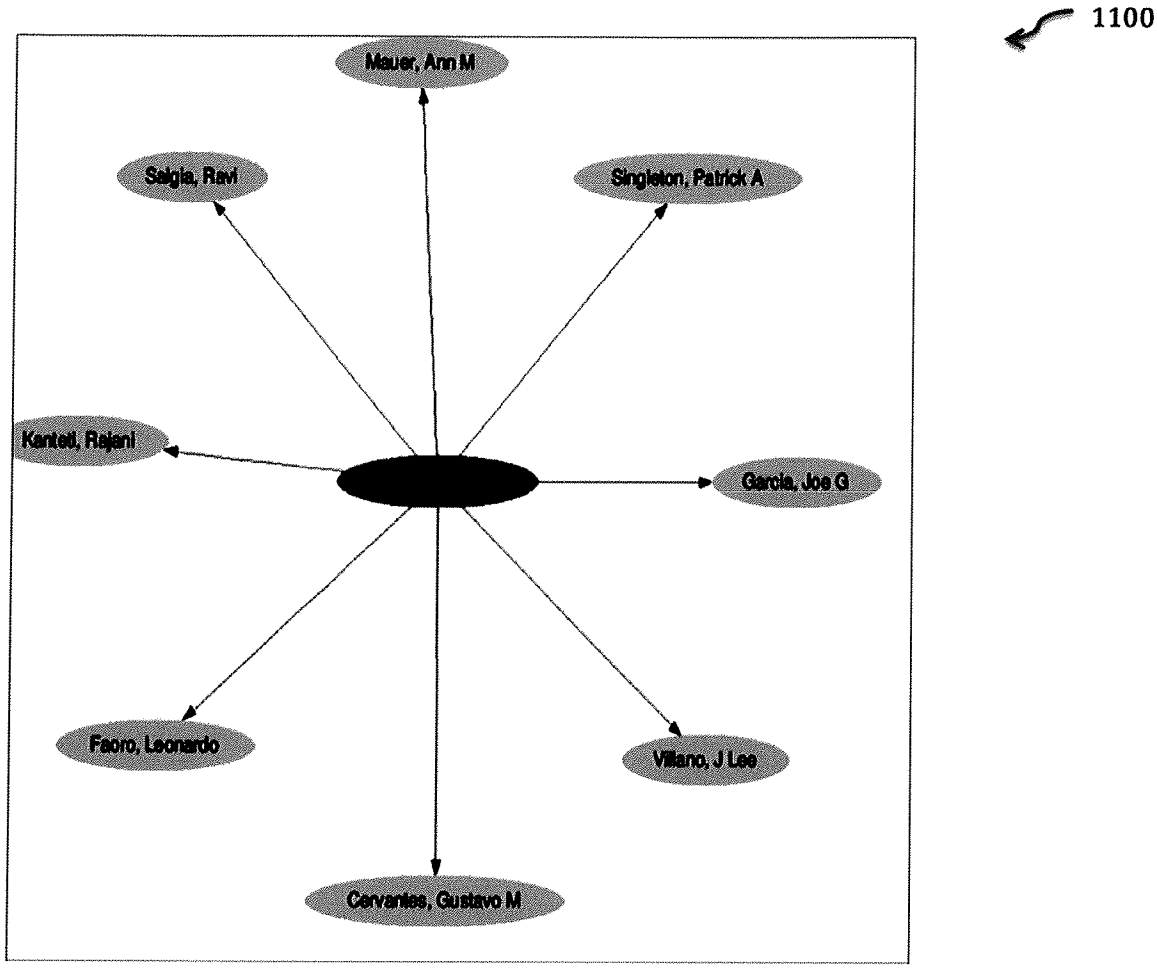

1100
Mauer, Ann M
Salgia, Ravi
Singleton, Patrick A
Kantet, Rajani
Garcia, Joe G
Faoro, Leonardo
Villano, J Lee
Cervantes, Gustavo M

FIG. 11

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/043970

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G06F 17/30 (2012.01)
USPC - 707/999.003
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, 17/00, 17/30 (2012.01)
USPC - 707/941, 999.003, E17.06

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)
MicroPatent, Google Patents, Google Scholar

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2007/0118515 A1 (DEHLINGER) 24 May 2007 (24.05.2007) entire document	1-23
Y	US 7,376,635 B1 (PORCARI et al) 20 May 2008 (20.05.2008) entire document	1-23
Y	US 7,899,825 B2 (DAVIS et al) 01 March 2011 (01.03.2011) entire document	1-23
A	US 2003/0140037 A1 (DEH-LEE) 24 July 2003 (24.07.2003) entire document	1-23
A	US 2008/0301105 A1 (CHEN et al) 04 December 2008 (04.12.2008) entire document	1-23
A	US 7,499,591 B2 (SIMSKE et al) 03 March 2009 (03.03.2009) entire document	1-23
A	US 2009/0171894 A1 (SCHACHTER) 02 July 2009 (02.07.2009) entire document	1-23

☐ 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 August 2012	14 SEP 2012
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. 571-273-3201	Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)