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- (54) Title: SOCIAL MEDIA MONITORING

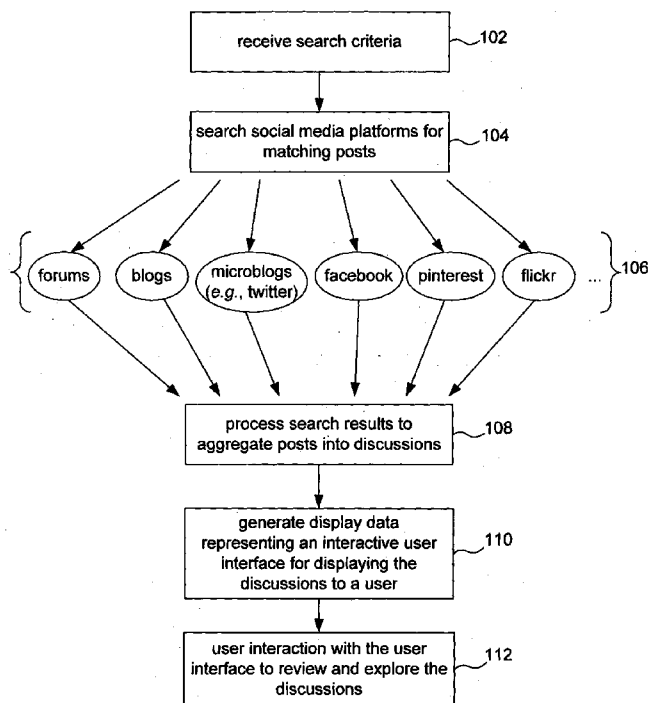


Figure 1

(57) Abstract: A social media search process, including: receiving search data representing one or more search criteria; retrieving, from one or more social media platforms over a communications network, social media data representing posts submitted to the social media platforms by users of the social media platforms, the posts including at least one first post corresponding to the search criteria; processing the social media data to determine, for each the first post, one or more corresponding second posts related to the first post; generating discussion data representing one or more groups of the posts, each the group including at least one of the first posts and the one or more corresponding second posts related to the first post; and processing the discussion data to generate display data representing the groups of posts in an interactive user interface for display to a user.



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SOCIAL MEDIA MONITORING

TECHNICAL FIELD

5 The present invention relates to a social media search process and system, including methods, systems and computer readable media for retrieving and displaying information retrieved from one or more sources accessible through a data network (for example, social media sites or feeds accessible through the Internet) in response to the reception of a set of search criteria.

10

BACKGROUND

The Internet, and more particularly the World Wide Web, is increasingly used as a mechanism for people to express their opinion and views, and to provide information.

15 Conventionally, sites on the World Wide Web were created by technically proficient individuals, or businesses, and users of the World Wide Web were able to visit those sites to obtain information or contact or conduct commerce with the individuals or businesses to which the sites related.

20 However, the development of web logging ("blogging") and discussion forum platforms has facilitated the generation of hosted content by individual (and not necessarily technically proficient) web users. Content generation by individuals has also increased with the increased use of social networking sites such as Facebook and LinkedIn, and microblogging platforms such as Twitter. Such platforms and sites are generally
25 collectively known as "social media", a key characteristic of which is that ordinary users of the Internet are not just consumers but also producers of information.

The information provided by such consumers can take a variety of forms, including non-textual data such as videos and geographical location information, and meta-data related to
30 existing data or resources. However, for convenience of reference, the term "post" as used in this specification, including the description and claims, refers to any form of user

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submission (which may include one or more non-textual resources, such as images, videos, and/or other media files and the like, and/or links to such non-textual resources), including a conventional "post" such as an entry in/submission to a discussion forum, bulletin board, or blog, or a social media site such as facebook, myspace, Foursquare and the like, and
5 also a microblog entry (e.g., a 'tweet'), an entry in a collaborative website (such as a *wiki*), and the like, a submission to an imaging sharing social media platform such as Pinterest, Flickr, instagram, Posterous, and tumblr, and/or a submission to any other form of social media platform. Thus any such submission submitted by a user of a communications network is considered to be a "post". The textual content of such submissions can include
10 metadata of the post, whether provided by the user or otherwise, and in some instances (particularly where the submission content itself is non-textual (e.g., a submission to an image sharing site where the user might not provide any textual content), the metadata may be the only textual content of a post.

15 The analysis of posts can provide useful information. For example, posts (or other social media information) can enable an organisation to:

- i. Obtain an overview of social perspectives, including:
 - a. discovering general sentiment towards the organisation;
 - b. discovering emergent user perspectives; and
 - 20 c. discovering event-driven user perspectives;
- ii. gauge effectiveness of online information;
- iii. identify opportunities for further public relations and community engagement;
- iv. plan future online engagements; and
- v. generate reports.

25 Conventionally, tools used to analyse social media information operate like search engines. A specific social media platform (for example, Twitter) is selected. A search is then conducted on the selected platform, either using an Application Programming Interface or search tool provided by the platform, or through an external search facility. Posts relevant to the search query are identified, retrieved and presented to the user as respective search
30 results. Standard methods for identifying content relevant to a search query are known to

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persons of skill in the art, and will not be further described here. In any case, the displayed search results must be manually filtered to choose which content to analyse further. To remove irrelevant data, a user must manually sift through the displayed search results and discard irrelevant material. This is done by actively selecting individual posts and refining queries, processes which can be tedious and time consuming.

Additionally, many social media products are oriented towards specific tasks such as the retrieval of information on the web, or sentiment analysis, rather than directly supporting a more general social media monitoring activity.

10

It is desired, therefore, to provide a social media search process and system that address or ameliorate one or more shortcomings or disadvantages of the prior art, or at least provide a useful alternative.

15 SUMMARY

In accordance with some embodiments of the present invention, there is provided a social media search process, including:

receiving search data representing one or more search criteria;

retrieving, from one or more social media platforms over a communications network, social media data representing posts submitted to said social media platforms by users of said social media platforms, said posts including at least one first post corresponding to said search criteria;

processing the social media data to determine, for each said first post, one or more corresponding second posts related to said first post;

generating discussion data representing one or more groups of said posts, each said group including at least one of said first posts and the one or more corresponding second posts related to said first post; and

processing the discussion data to generate display data representing said groups of posts in an interactive user interface for display to a user.

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In some embodiments, said processing of said social media data includes parsing said social media data to identify at least one post that is responsive to the first post or to which the first post is responsive, the identified at least one post providing at least one of said corresponding second posts.

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In some embodiments, said processing of said social media data includes parsing said social media data to identify at least one post that includes a link to the first post or which is linked to by the first post, the identified at least one post providing at least one of said corresponding second posts.

10

In some embodiments, said processing of said social media data includes applying a clustering method to textual content of posts to identify at least one post that is related to the first post, the identified at least one post providing at least one of said corresponding second posts.

15

In some embodiments, said processing of said social media data includes comparing one or more tags associated with each first post to one or more tags associated with other posts to identify at least one post whose tags are related to the tags of the first post, the identified at least one post providing at least one of said corresponding second posts.

20

In some embodiments, said processing of said social media data includes identifying at least one post corresponding to said search criteria, the identified at least one post providing at least one of said corresponding second posts.

25

In some embodiments, said interactive user interface includes at least one interactive control that is selectable by a user to select one of a plurality of methods of ordering said groups in said interactive user interface.

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In some embodiments, said interactive user interface includes at least one interactive control that is selectable by a user to display or hide a corresponding first post of at least one of said groups.

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In some embodiments, said interactive user interface includes at least one interactive control that is selectable by a user to display or hide the one or more second posts of at least one of said groups.

5

In some embodiments, said interactive user interface includes at least one interactive control that is selectable by a user to display or hide the first and second posts of at least one of said groups.

10 In some embodiments, said interactive user interface includes information relating to the first post together with an indication that information relating to one or more secondary posts is available for display; and an interactive control that is selectable by a user to display or hide the information relating to the one or more secondary posts.

15 In some embodiments, said interactive user interface includes summary data for each displayed group, said summary data including, for each said group, a title, a text summary, and a time associated with the posts of the group.

In some embodiments, said summary data includes, for each said group, one or more
20 identifiers of respective social media platforms from which the posts of the group were retrieved.

In some embodiments, said interactive user interface is configured to display information relating to the first and secondary posts, including at least one of:

- 25 the content of the respective post;
 a date and/or time of generation of the respective post;
 an author of the respective post;
 a number of secondary posts responsive to the respective post;
 a number of times the respective post has been viewed;
30 an indication of a sentiment expressed in the content of the respective post.

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In some embodiments, said interactive user interface is configured to display information relating to the first post and the one or more secondary posts in a manner that indicates a relationship between the first post and the one or more secondary posts.

- 5 In some embodiments, said relationship is indicated by spatially positioning the second posts substantially adjacent to the first post.

In some embodiments, said relationship is indicated by displaying a graphical connector element indicating a connection between the first post and the second posts.

10

In some embodiments, said interactive user interface is configured to display, for each displayed post, an identifier of the corresponding social media platform from which the post was retrieved.

- 15 In some embodiments, said interactive user interface includes one or more interactive controls selectable by a user to initiate respective actions in relation to a corresponding post or group of posts.

In some embodiments, said actions include:

- 20 flagging a corresponding post or a group of posts as being of interest for later retrieval; and

forwarding a reference to a corresponding post or a group of posts to a message recipient.

- 25 In some embodiments, the at least one first post and the related one or more second posts were submitted to a plurality of social media platforms.

In accordance with some embodiments of the present invention, there is provided a social media search system, including one or more modules configured to perform any one of the

- 30 above processes.

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In accordance with some embodiments of the present invention, there is provided a computer-readable storage medium having stored thereon processor-executable instructions that, when executed by at least one processor, cause the processor to execute any one of the above processes.

5

Also described herein is a method for retrieving and displaying information accessible through a data network in response to a set of search criteria, the method including the steps of

retrieving a first data item having a first post including content which is relevant to
10 the set of search criteria;

parsing the first data item to identify one or more secondary posts including
content:

which is responsive to the content of the first post; or

to which the content of the first post is responsive;

15 retrieving the one or more secondary posts; and

displaying on a computer-driven display information relating to the first post and
the one or more secondary posts.

Each of the first post and the one or more secondary posts may be associated with times
20 indicating when the posts were generated, and the step of displaying information relating
to the first post and the one or more secondary posts may include the step of ordering
information for display in dependence upon the times.

The step of displaying information relating to the first post and the one or more secondary
25 posts may include the steps of:

displaying the information relating to the first post together with an indication that
information relating to one or more secondary posts are available for display; and

only displaying the information relating to one or more secondary posts in response
to a user-generated discussion expansion instruction.

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The information relating to the first post and the information relating to the one or more secondary posts may include at least one of:

- the content of the respective post;
- a date and/or time of generation of the respective post;
- 5 an author of the respective post;
- a number of secondary posts responsive to the respective post;
- a number of times the respective post has been viewed;
- an indication of a sentiment expressed in the content of the respective post.

- 10 The step of displaying information relating to the first post and the one or more secondary posts may include displaying the information in a manner which indicates a relationship between the first post and the one or more secondary posts.

- Also described herein is a method for retrieving and displaying information accessible
15 through a data network in response to the reception of a set of search criteria, the method including the steps of:

- retrieving from a first source a first post including content which is relevant to the set of search criteria;
- retrieving from the first source or a second source a second post including content
20 which refers to, or is referred to by, the first post;
- displaying the first post and the second post in a manner which indicates that the first post refers to, or is referred to by, the second post.

- The step of displaying the first post and the second post may include the step of spatially
25 positioning the second post substantially adjacent to the first post.

- The step of displaying the first post and the second post may include the step of displaying a graphical connector element indicating a connection between the first post and the second post.

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The step of displaying the first post and the second post may include the step of displaying an identification of the source from which the first post was retrieved, and an indication of the source from which the second post was retrieved.

- 5 Also described herein is a method for retrieving and displaying information from one or more sources accessible through a data network in response to the reception of a set of search criteria, the method including the steps of:

retrieving a first post including content which is relevant to the set of search criteria;

- 10 associating a first one or more tags with the first post;

retrieving a second post including content which is relevant to the set of search criteria;

associating a second one or more tags with the second post;

- 15 associating the first post with the second post if any of the first one or more tags corresponds with any of the second one or more tags;

displaying on a computer-driven display the first post and the second post in a manner which indicates whether the first post is associated with the second post.

- 20 The steps of associating a first one or more tags with the first post and associating a second one or more tags with the second post may include the steps of parsing the first post and the second post and automatically associating one or more tags with the first post based on the content of the first post, and automatically associating one or more tags with the second post based on the content of the second post.

- 25 The steps of associating a first one or more tags with the first post and associating a second one or more tags with the second post may be executed in accordance with user-generated instructions.

- 30 The first post may be retrieved from a first source and the second post may be retrieved from a second source, and the first source may be different from the second source.

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The step of displaying the first post and the second post may include the step of spatially positioning the first post substantially adjacent to the second post.

5 The step of displaying the first post and the second post may include the step of displaying a graphical connector element indicating a connection between the first post and the second post.

Each of the first post and second post may be associated with a source, and the step of displaying the first post and the second post may include the step of displaying an
10 identification of the source associated with each of the first post and the second post.

The method may further include the steps of:

displaying on the display one or more selectable action controls, each of the one or more action controls corresponding to an action that may be taken in relation to a post or
15 group of posts;
receiving a selection of one of the selectable action controls; and
executing the action associated with the selectable action control.

The one or selectable action controls may correspond to one or more of:
20 flagging a post or a group of posts as being of interest for later retrieval; and
forwarding a reference to a post or a group of posts to a message recipient.

Also described herein is a system for retrieving and displaying information from one or more sources accessible through a data network in response to the reception of a set of
25 search criteria, the system including means for executing the steps recited in any one of the preceding claims.

BRIEF DESCRIPTION OF THE DRAWINGS

Some embodiments of the present invention are hereinafter described, by way of example only, with reference to the accompanying drawings, wherein:

5 Figure 1 is a flow diagram of a social media search process in accordance with some embodiments of the present invention;

 Figure 2 is a block diagram of a social media search system that executes the social media search process;

 Figure 3 is an illustration of an interactive user interface generated by the social
10 media search process, and in which a user can alter the sort order of discussions and posts displayed in response to a search query;

 Figure 4 is a further illustration of the interface of Figure 3, illustrating a connection between a post and a discussion; and

 Figure 5 is a further illustration of the interface of Figure 3, illustrating the use of
15 tags and action items with posts and discussions.

DETAILED DESCRIPTION

As described above, textual content is generated by users of the Internet by means of
20 "posts" on social media platforms. Where posts respond to other posts (as in the case of discussion forums and some bulletin boards), a collection of related posts is often referred to as a "thread". However, a "thread" is often a construct of the underlying platform, and a single "thread" may contain posts on divergent subjects. For example, an initial post relating to the computer hardware and software manufacturer Apple, Inc. may spark a
25 thread of responses, some of which relate to Apple products, others of which may relate to Apple's business practices. Although all of these responses are considered to be (and are represented as being) part of the same single thread by the social media platform, the content of the posts may relate to divergent topics of limited (and sometimes no) relevance to one other.

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Posts that relate to the same or similar subject matter and are posted as replies to an originating post (that is, the posts have a common origin in the thread) can be considered to constitute a "discussion".

- 5 The described embodiments of the present invention include a process and system that identify social media platform posts that are either directly relevant to one or more user-supplied search criteria and/or are associated with at least one post that is directly relevant to those criteria. These posts are then aggregated into discussions and displayed to the user in an intuitive and easy to use interactive user interface that allows users to review and
- 10 explore the resulting discussions. In some embodiments, a discussion can include posts that relate to the same subject matter, and/or are responsive to each other, regardless of whether the posts are in a single social media site or platform, or disparate sites or platforms.
- 15 As shown in Figure 1, the described embodiments include a process for retrieving and displaying information from one or more sources, such as social media platforms, accessible through a communications network, in a manner which allows the user of the present invention to have a discussion-based view of relevant social-media information, and not simply an isolated post-based view. The process includes receiving one or more
- 20 search criteria from a user at step 102. At step 104, the search criteria are applied to one or more social media platforms 106 to identify at least one 'post' including content relevant to the search criteria. The search criteria may include one or more search terms and may also include one or more criteria not related to the content of posts, such as the time of creation (*e.g.*, within the last 12 hours) and/or limiting the number of results (*e.g.*, the most recent
- 25 100 results), for example. For the sake of simplicity, embodiments of the present invention are described herein with reference to a single search term. However, it will be apparent to those skilled in the art that it is a trivial matter to perform searches using one or more additional search terms and/or other search criteria.
- 30 At step 108, the search results are then processed to aggregate posts into 'discussions' relevant to the search criteria. Although the flow diagram of Figure 1 suggests that this

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aggregation is performed as an isolated step and only on posts identified in an initial search step 104, the aggregation and search steps 104, 108 are in general tightly coupled and may more accurately be considered as a single process in at least some embodiments.

- 5 Once the posts have been aggregated into discussions, display data representing an interactive user interface for displaying the resulting discussions to a user is generated at step 110. At step 112, the user can interact with the user interface to review and explore the discussions.
- 10 In the described embodiments, the system is a standard computer system such as an 32-bit or 64-bit Intel Architecture based computer system, as shown in Figure 2, and the described processes are implemented in the form of programming instructions of one or more software modules 202 stored on non-volatile (*e.g.*, hard disk or solid-state drive) storage 204 associated with the computer system, as shown in Figure 2. However, it will
15 be apparent that at least parts of the processes could alternatively be implemented as one or more dedicated hardware components, such as application-specific integrated circuits (ASICs) and/or field programmable gate arrays (FPGAs), for example.

The system 200 includes standard computer components, including random access
20 memory (RAM) 206, at least one processor 208, and external interfaces 210, 212, 214, all interconnected by a bus 216. The external interfaces include universal serial bus (USB) interfaces 210, at least one of which is optionally connected to a keyboard and a pointing device such as a mouse 218, a network interface connector (NIC) 212 which connects the system 200 to a communications network such as the Internet 220, and a display adapter
25 214, which is connected to a display device such as an LCD panel display 222.

The system 200 also includes a number of standard software modules 226 to 230, including an operating system 224 such as Linux or Microsoft Windows, web server software 226 such as Apache, available at <http://www.apache.org>, scripting language
30 support 228 such as PHP, available at <http://www.php.net>, or Microsoft ASP, and database management software having structured query language (SQL) support 230 such as

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MySQL, available from <http://www.mysql.com>, which allows data (including references to posts and discussions) to be stored in and retrieved from an SQL database 232.

Depending upon the nature of the posts to be retrieved and processed, links to them may be
5 extracted from the html pages generated by internet search engines, from the APIs made
available by platforms such as Twitter, from RSS feeds and other known platforms. In
addition, posts that are determined to be of particular interest may be used to seed further
searches to find posts of interest in the future. Sites, such as blogs and the like, which do
not provide for native methods of returning posts or links to posts can be handled in
10 standard ways using standard methods for extracting content from web pages. An example
of such a method is described in Rowlands, Tom, Thomas, Paul and Wan, Stephen (2009)
Web Indexing on a Diet: Template Removal with the Sandwich Algorithm. In Proc. ADCS
2009.

15 In general, a post may be considered relevant to a search term because the post includes the
search term. Alternatively, a post may be considered relevant because it includes a
synonym of the search term, or a word or phrase otherwise closely associated with the
search term, using at least one dictionary, thesaurus, and/or list of such terms stored on the
system. Such a dictionary, thesaurus, or list may be manually created, automatically
20 generated (e.g., from posts), or may be generated by manually or automatically
editing/filtering such a dictionary, thesaurus, or list. Other criteria and/or methods for
determining the relevance of a post to a search term will be apparent to those skilled in the
art of search engines.

25 In one embodiment, and where a post matching the user-supplied search criteria is
displayed as part of at least one Web page, instead of retrieving only the relevant post, the
whole web page containing the post is retrieved. The initial matching post can be identified
using any suitable search method, including the google search engine API. Irrespective of
how the initial matching post is identified, it is deemed to be the "first" post, and the
30 retrieved web page containing that post is then parsed to identify one or more other,
"second" posts having content which is responsive to the first post, or to which the first

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post is responsive. Additionally, the matching (first) post may have links to other posts, including posts in other web pages, or parts of other social media sites. For example, a first post might link to a Twitter microblogging entry (*i.e.*, a "tweet"), and comment upon that entry, in which case the tweet would be considered to be a secondary post.

5

Posts are considered to be responsive to one another if one includes a specific link to another. However, in some embodiments, a responsive link between posts is inferred in the event that a different form of association exists between the posts. For example, in some embodiments, an association is inferred on the basis of semantic or word overlap
10 between the posts using semantic analysis or a vector space approach, or by more general statistical techniques, such as word, token, or n-gram analysis, including standard clustering techniques known to those skilled in the art. However, it will be apparent to those skilled in the art that many other forms of textual processing can be used to infer an association between posts.

15

Irrespective of how the secondary posts are identified, the one or more secondary posts are retrieved, and aggregated into discussions at step 108. At step 110, the system generates display data representing the discussions in a graphical user interface, and sends the generated display data to a user's web browser in order to display the graphical user
20 interface to the user. In the described embodiments, the display data is in the form of an HTML document incorporating PHP scripting language code. However, it will be apparent to those skilled in the art that the display data can alternatively be generated using other scripting and/or programming languages, such as Python, Javascript or Java, for example.

25

A screenshot of the interactive user interface is shown in Figure 3. The user interface is generally divided into a left-hand panel 302 and a right-hand panel 304, with the right-hand panel 304 providing a scrollable and sorted list of discussions. Each discussion in the list is initially displayed in condensed or summary form as a header sub-panel only, with its constituent posts hidden. In order to view the constituent posts, a user clicks or
30 otherwise selects the header sub-panel with a pointing device such as a mouse or its equivalent (such as touching the screen when using a touch screen display device).

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In the Example screenshot of Figure 3, four discussions can be seen, with the posts of only the first (top) discussion displayed, the other discussions being displayed in condensed or summary form. For the first discussion, a first post 306 is displayed, along with secondary posts 308 and 310 . By identifying, retrieving and displaying the one or more secondary posts, the user can see relevant (first) posts in context. This enables the user to more fully assess the relevance and importance of the first post.

Typically, posts are associated with a timestamp indicating when the post was generated (in other words, when it was submitted to the social media site). For example, in the case of discussion forums, each post in the forum is associated with a timestamp which indicates when the post was posted. Similarly, tweets are also associated with a posting time. Where the first post and the one or more secondary posts have associated times (or timestamps), it is useful to display the first post and the one or more secondary posts (together, constituting a discussion) in chronological order, together with their timestamps (or text representing a corresponding time period, as shown) 312. This enables a user of the system to see how an issue or topic developed over time, and to easily determine which posts respond to which other posts.

Although a complete discussion view (showing the first post in the context of all of the secondary posts in the discussion) is often useful, it can take up valuable screen space. Accordingly, in one embodiment only the first post is shown by default. However, it is displayed together with an indication that one or more secondary posts are available for display. In the described embodiment, the indication is that a secondary post display control 314 is displayed. The user can then click on or otherwise activate the secondary post display control 314 to toggle the display of all of the secondary posts for that discussion, thereby enabling the user to see the first post in the context of the entire discussion. In this way, the user can quickly see an overview of first posts relating to an issue, and with a single mouse click can toggle the display of all of the associated secondary posts.

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Alternatively, a first post including content relevant to the search term can be retrieved directly and specifically, using an API for a corresponding social media platform (e.g., Twitter). Although the method described above retrieved an entire whole web page (or equivalent data item) containing the first post, in this second method only the post itself
5 is retrieved as an individual data item. A second post is then retrieved (e.g., in a similar manner), the second post including content which refers to, or is referred to by, the first post. Where the second post includes content referred to by the first post, identification of the second post involves parsing the first post to identify a reference (e.g., metadata of the first post, or a hyperlink) to another post (which will be a second post). However, to
10 identify content which refers to the first post, a search using information from the first post (such as a unique identifier, for example a Uniform Resource Locator) may be undertaken to identify a second post which contains the unique identifier, and therefore refers to the first post. Thus, for example, references between posts can include tweets replying to other tweets, retweets and the like, based on metadata of tweets.

15

As described above, a secondary post may be identified by determining whether it is responsive to a first post, or is a post to which the first post is responsive. Additionally, a second post may be identified based on whether it refers to, or is referred to by, a first post.

20 The first post and second post can be displayed in a manner that indicates that the first post refers to, or is referred to by, the second post. For example, in one embodiment, the second post is spatially positioned substantially adjacent to the first post, visually grouping the posts in a manner that indicates their relationship. Alternatively, or in addition, a graphical connector element (such as an arc 402, as shown in Figure 4 is displayed to indicate a
25 connection between a post and a discussion, or between a first post and a second post. For example, the connector element 402 in Figure 4 indicates that the third displayed post of Discussion "3" is a first or 'seed' post of Discussion "4".

30 As described above, it is not necessary for the first post and the second post to be from the same source. For example, the first post may be a post on a blog, which may link to a second post hosted on a picture sharing site such as Flickr. Particularly where the first post

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and second post are retrieved from different sources, it is useful to display an identification of the source from which the posts were retrieved. For example, if the first post was retrieved from a blog, an indication 316 that the first source is a blog, and the name of the source (*e.g.*, wordpress.org), can be displayed, as shown in Figure 1. Similarly, if the
5 second post was retrieved from a picture sharing site, an indication 318 that the second source is a picture sharing site, and the name or domain name of the source (*e.g.*, www.flickr.com), can be displayed. In other embodiments, identifiers of the sources of all of the posts in a discussion can be displayed in a header, or as a popup or tooltip (particularly if the posts are from many sources and would not easily fit into the header).

10

In a further embodiment, the search term is used to independently retrieve a first post including content relevant to the search term, and a second post also including content relevant to the search term. The determination of relevance can be made directly, using standard search engine techniques (*e.g.*, using a Google API), semantic or statistical word,
15 token, or n-gram analysis, and/or can be based on tags associated with the posts. For example, each of the first post and second post can be associated with one or more tags (which may be in the form of embedded tags or 'hashtags', such as those use by Twitter), and if there is a correspondence of tags between the first post and the second post, the first and second post are associated and are made part of the same discussion. The first and
20 second posts are then displayed in a manner that indicates that the first and second posts are associated.

For example, a search for posts relating to Apple, Inc. may result in the retrieval of a first post relating to Apple, Inc's stock price movement. This post may be associated with the
25 tags "finance" and "share market". A second post may also be retrieved, relating to the release of the latest Apple product. This post may be associated with the tag "product release". As the first post does not have any tags that correspond to those of the second post, the first and second post are not associated. If the second post related to inconsistencies in Apple's tax statement, it may be associated with the tags "finance" and
30 "tax". In this case, one of the first one or more tags associated with the first post (the "finance" tag) would correspond with the same tag associated with the second post. The

first post and second post would therefore be deemed to be associated, and are thus displayed in a manner that indicates that the first post is associated with the second post. Examples of how a first and second post may be displayed in a manner to show an association (by relative spatial positioning of the posts or by the use of a graphical connector element) are described above. However, it will be apparent to those skilled in the art that the association between posts can be represented by any of a variety of other possible visual indications.

The step of associating a first one or more tags with the first post, and the step of associating a second one or more tags with the second post, may be automatic or manual. If the association of tags is automatic, the post is parsed and tags are associated with the respective posts based on the content of the post. This can be achieved using standard methods known to those skilled in the art, including many forms of semantic analysis. A simplistic approach to automatic tagging is to identify the words and phrases in the post, and determine whether any of those words and phrases correspond to a known tag. If so, the known tag is associated with the post.

Alternatively, a user of the system can manually assign tags to posts. The user can create new tags to be associated with a post, or assign existing tags (for example, by means of a drop-down list or a drag-and-drop mechanism).

In any case, the tags associated with each discussion and post are displayed in an area towards the right-hand of the corresponding part of the right panel.

Where the first and second posts are retrieved from different sources, the first and second post may be displayed together with an indication of the source from which they were retrieved (or are otherwise associated), as described in more detail above.

A collection of posts (*i.e.*, a discussion) retrieved using the search term can be displayed together with one or more selectable action controls, each of which is selectable to initiate an action in relation to a post or a group of posts (*e.g.*, a discussion). For example, one

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selectable action control can be selected to flag a corresponding post or group of posts as being of interest for later retrieval. In one embodiment, this selectable action control takes the form of an actionable label "Watch thread" 404, as shown in Figure 4. If the user selects the "Watch thread" label 404, the system receives an indication of this selection and
5 executes the associated action, being in this instance the addition of the post or collection of posts to a list of posts the user is particularly interested in, and can later retrieve easily by selection of a different control or menu item (not shown). The selectable action controls also include an actionable label "Forward to others" 502, as shown in Figure 5, the selection of which causes a reference to the posts or group of posts to be sent to one or
10 more message recipients. Although in some circumstances sending a reference to a post or group of posts is sufficient, if there is a risk that the posts or group of posts may be deleted or removed in the near future, selecting the "Forward to others" label can alternatively result in copies of the posts themselves being forwarded.

15 In some embodiments, the display includes indications of actions taken previously by users, for example by way of the selectable action controls. For example, in one embodiment, the label "Forward to others" 502 is rendered in one colour if the action has not been taken and in a different colour if the action has previously been taken. In one such embodiment, a tool tip is displayed in the event of the mouse pointer hovering over
20 the label, the tip providing information regarding the time the action was taken and/or the identity of the user who took the action.

The posts and discussions retrieved using the search term can also be displayed in a user-configurable order. For example, the posts can be ordered (or reverse ordered) by date,
25 source type or number of tags, most read, most tags, most notes, most views, or most posts by selecting a corresponding control of a display order sub-panel 320, as shown in Figure 3). The controls can be re-ordered by clicking and dragging, with the final display order being determined as follows. If the first ordering method determines that two discussions have the same ranking, then the second ordering method is used to determine the display
30 order of those two discussions, and so on until all of the ordering methods have been applied.

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With reference to Figure 5, the timeline of displayed discussions is represented visually in a coloured timeline sub-panel 504, where the portion 506 of the timeline being viewed in the right-hand panel 304 is indicated visually by the earlier and later discussions being
5 dimmed or darkened relative to the (brighter) portion 506 being viewed. Each discussion is represented graphically by a horizontal bar 508 whose starting and ending positions represent the earliest and latest posts in that discussion relative to the overall time period being viewed (in the example of Figure 4, being posts dating from 6 days ago to the present). Additionally, the time distribution of the individual posts constituting the
10 discussion are indicated graphically by dark squares 510. Corresponding horizontal bars 512 and squares 514 are also displayed immediately below each discussion. Related discussions are indicated by connector elements 516.

Finally, the posts can be displayed along with user annotations, which can either be
15 selected by the user from a list, or entered as free text by the user. The display of user annotations for a selected discussion can be toggled on and off by selecting an annotation control 406 displayed in the header region for that discussion. The number of user annotations associated with each discussion and with each displayed post are displayed in the header for the discussion and the post, respectively, as indicated by the reference
20 numerals 408 and 410 in Figure 4. Sentiment information 412 for each discussion and determined using standard methods known to those skilled in the art is displayed adjacent the user annotation information. An additional control 414 allows a user to toggle the display of all (first and second) posts for a selected discussion, and another control 416 allows a user to toggle the display of associations between discussions, if any, as shown in
25 Figure 4.

The embodiments described above have at least the following advantages over conventional social media tools:

- 30 - Social media content is presented in the form of aggregated posts referred to herein as discussions, not just as webpages or individual posts.

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- The aggregated posts in a single discussion are sorted by the order of their posting, making it easier to follow the conversation.
- 5 - Discussions from more than one media type (or source) are presented (*e.g.*, not just in Twitter, but possibly Twitter triggered by news etc).
- Links or associations between discussions are created and displayed (which in some embodiments involves displaying connected discussions in adjacent
10 positions, as shown in Figure 4), reducing the need to manually find/follow connections. Users are able to readily see connections between online discussions, whether those connections are direct (in the form of cross-referencing links), or indirect connections, in the form of discussions about similar topics identified by
15 automatically generated tags and/or user selected tags, or by semantic analysis or clustering, for example. Other suitable methods for determining similarity will be apparent to those skilled in the art.
- Connections between media posts across media types are represented visually, showing how an article in one medium (such as a news article or blog post) has
20 sparked off a discussion in another medium (such as a forum discussion or Twitter conversation).
- The user interface displays both online posts and discussions and interactions with those posts by media monitoring staff (their comments, actions, key words).
- 25 - Users are able to clearly view connections between posts while still being able to view the textual content of those posts. This is in contrast to graph or node based visualisations that display the connections while obscuring the post content.
- 30 - A user can prioritise posts and discussions in a number of ways, including by chronological order, by the number of posts in a discussion, by the posts which have been viewed the most, etc.

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When displaying the posts, the user interface provides all the information appropriate for a relevance judgement, including number of posts, time, tags, etc. The user can then expand a discussion to see all the posts of that discussion.

5

- The same user interface can be used for a triage task (relevance judgement for recent posts), and also for displaying search results.

Many modifications will be apparent to those skilled in the art without departing from the scope of the present invention, embodiments of which have herein been described with reference to the accompanying drawings. Although a number of embodiments have been described above having different features, those features may be combined to create embodiments not explicitly described above. For example, a social media monitoring system in accordance with the present invention may retrieve relevant posts, associated web pages, related posts and posts independently relevant to the search term.

The reference in this specification to any prior publication (or information derived from it), or to any matter which is known, is not, and should not be taken as an acknowledgment or admission or any form of suggestion that that prior publication (or information derived from it) or known matter forms part of the common general knowledge in the field of endeavour to which this specification relates.

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CLAIMS :

1. A social media search process, including:

receiving search data representing one or more search criteria;

retrieving, from one or more social media platforms over a communications
5 network, social media data representing posts submitted to said social media platforms by
users of said social media platforms, said posts including at least one first post
corresponding to said search criteria;

processing the social media data to determine, for each said first post, one or more
corresponding second posts related to said first post;

10 generating discussion data representing one or more groups of said posts, each said
group including at least one of said first posts and the one or more corresponding second
posts related to said first post; and

processing the discussion data to generate display data representing said groups of
posts in an interactive user interface for display to a user.

15

2. The process of claim 1, wherein said processing of said social media data includes
parsing said social media data to identify at least one post that is responsive to the first post
or to which the first post is responsive, the identified at least one post providing at least
one of said corresponding second posts.

20

3. The process of claim 1 or 2, wherein said processing of said social media data
includes parsing said social media data to identify at least one post that includes a link to
the first post or which is linked to by the first post, the identified at least one post providing
at least one of said corresponding second posts.

25

4. The process of any one of claims 1 to 3, wherein said processing of said social
media data includes applying a clustering method to textual content of posts to identify at
least one post that is related to the first post, the identified at least one post providing at
least one of said corresponding second posts.

30

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5. The process of any one of claims 1 to 4, wherein said processing of said social media data includes comparing one or more tags associated with each first post to one or more tags associated with other posts to identify at least one post whose tags are related to the tags of the first post, the identified at least one post providing at least one of said
5 corresponding second posts.

6. The process of any one of claims 1 to 5, wherein said processing of said social media data includes identifying at least one post corresponding to said search criteria, the identified at least one post providing at least one of said corresponding second posts.

10

7. The process of any one of claims 1 to 6, wherein said interactive user interface includes at least one interactive control that is selectable by a user to select one of a plurality of methods of ordering said groups in said interactive user interface.

15 8. The process of any one of claims 1 to 7, wherein said interactive user interface includes at least one interactive control that is selectable by a user to display or hide a corresponding first post of at least one of said groups.

9. The process of any one of claims 1 to 8, wherein said interactive user interface
20 includes at least one interactive control that is selectable by a user to display or hide the one or more second posts of at least one of said groups.

10. The process of any one of claims 1 to 9, wherein said interactive user interface includes at least one interactive control that is selectable by a user to display or hide the
25 first and second posts of at least one of said groups.

11. The process of any one of claims 1 to 10,
wherein said interactive user interface includes information relating to the first post together with an indication that information relating to one or more secondary posts is
30 available for display; and

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an interactive control that is selectable by a user to display or hide the information relating to the one or more secondary posts.

12. The process of any one of claims 1 to 6, wherein said interactive user interface includes summary data for each displayed group, said summary data including, for each said group, a title, a text summary, and a time associated with the posts of the group.

13. The process of claim 7 or 8, wherein said summary data includes, for each said group, one or more identifiers of respective social media platforms from which the posts of the group were retrieved.

14. The process of any one of claims 1 to 13, wherein said interactive user interface is configured to display information relating to the first and secondary posts, including at least one of:

the content of the respective post;
a date and/or time of generation of the respective post;
an author of the respective post;
a number of secondary posts responsive to the respective post;
a number of times the respective post has been viewed;
an indication of a sentiment expressed in the content of the respective post.

15. The process of any one of claims 1 to 14, wherein said interactive user interface is configured to display information relating to the first post and the one or more secondary posts in a manner that indicates a relationship between the first post and the one or more secondary posts.

16. The process of claim 15, wherein said relationship is indicated by spatially positioning the second posts substantially adjacent to the first post.

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17. The process of claim 15 or 16, wherein said relationship is indicated by displaying a graphical connector element indicating a connection between the first post and the second posts.

5 18. The process of any one of claims 1 to 17, wherein said interactive user interface is configured to display, for each displayed post, an identifier of the corresponding social media platform from which the post was retrieved.

19. The process of any one of claims 1 to 18, wherein said interactive user interface
10 includes one or more interactive controls selectable by a user to initiate respective actions in relation to a corresponding post or group of posts.

20. The process of claim 19, wherein said actions include:
flagging a corresponding post or a group of posts as being of interest for later
15 retrieval; and
forwarding a reference to a corresponding post or a group of posts to a message recipient.

21. The process of any one of claims 1 to 20, wherein the at least one first post and the
20 related one or more second posts were submitted to a plurality of social media platforms.

22. A social media search system, including one or more modules configured to perform the process of any one of claims 1 to 21.

25 23. A computer-readable storage medium having stored thereon processor-executable instructions that, when executed by at least one processor, cause the processor to execute the process of any one of claims 1 to 21.

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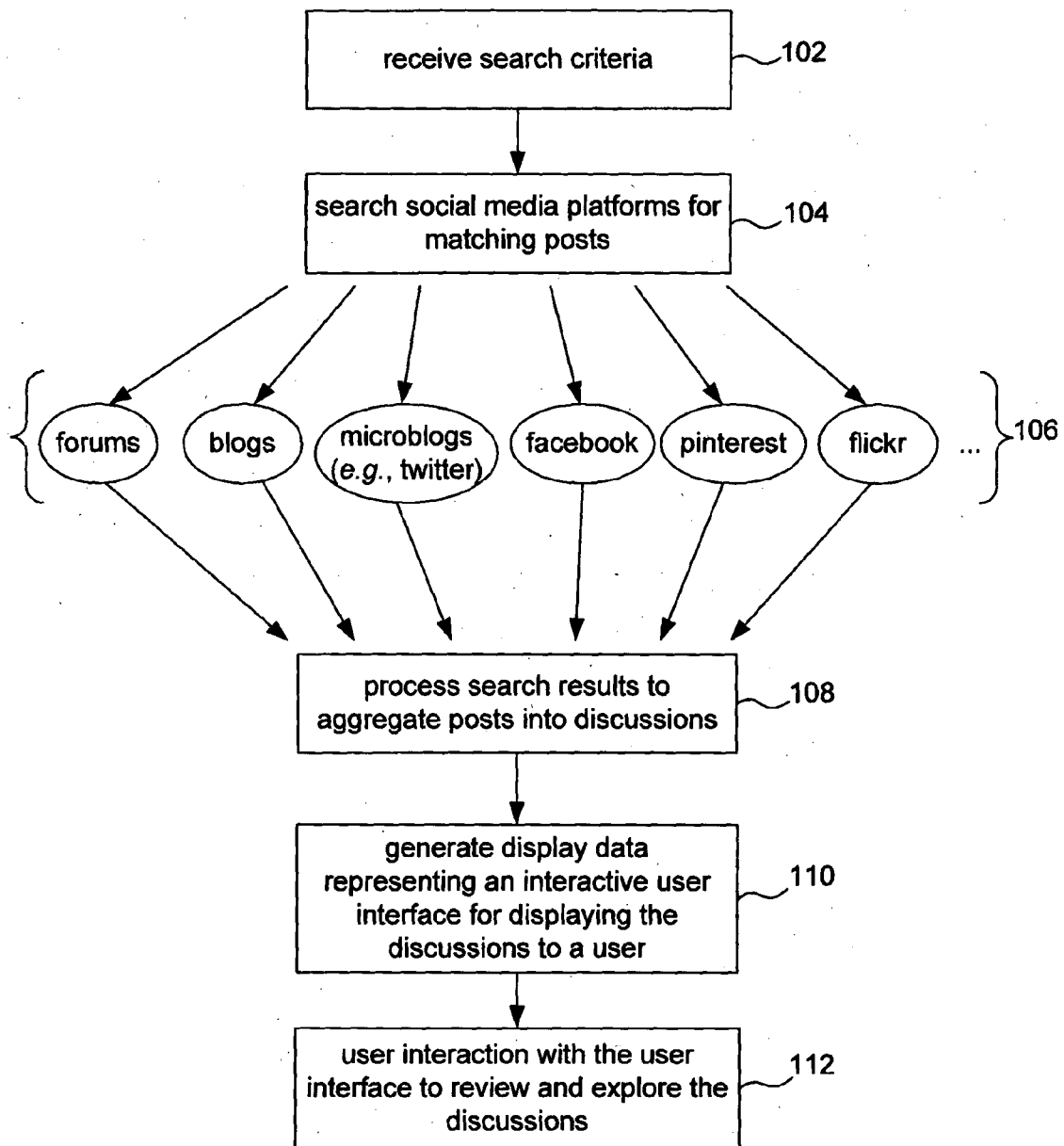


Figure 1

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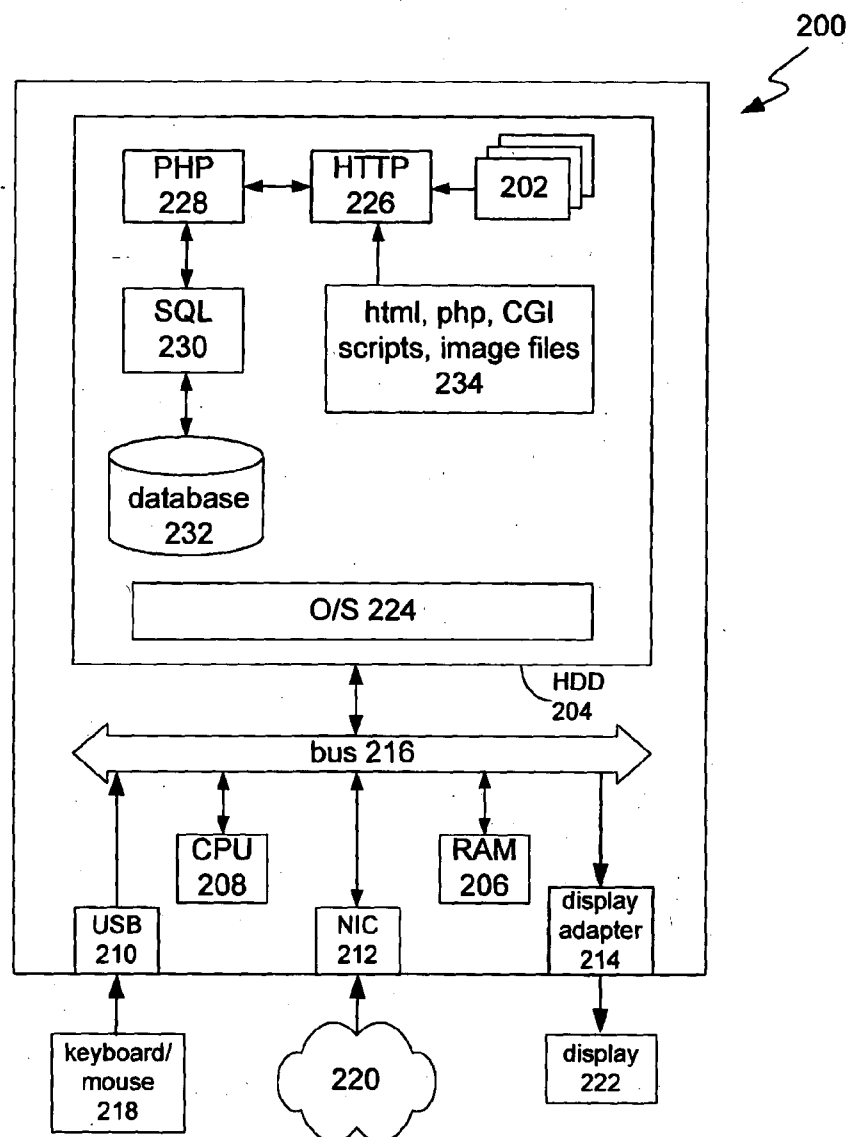


Figure 2

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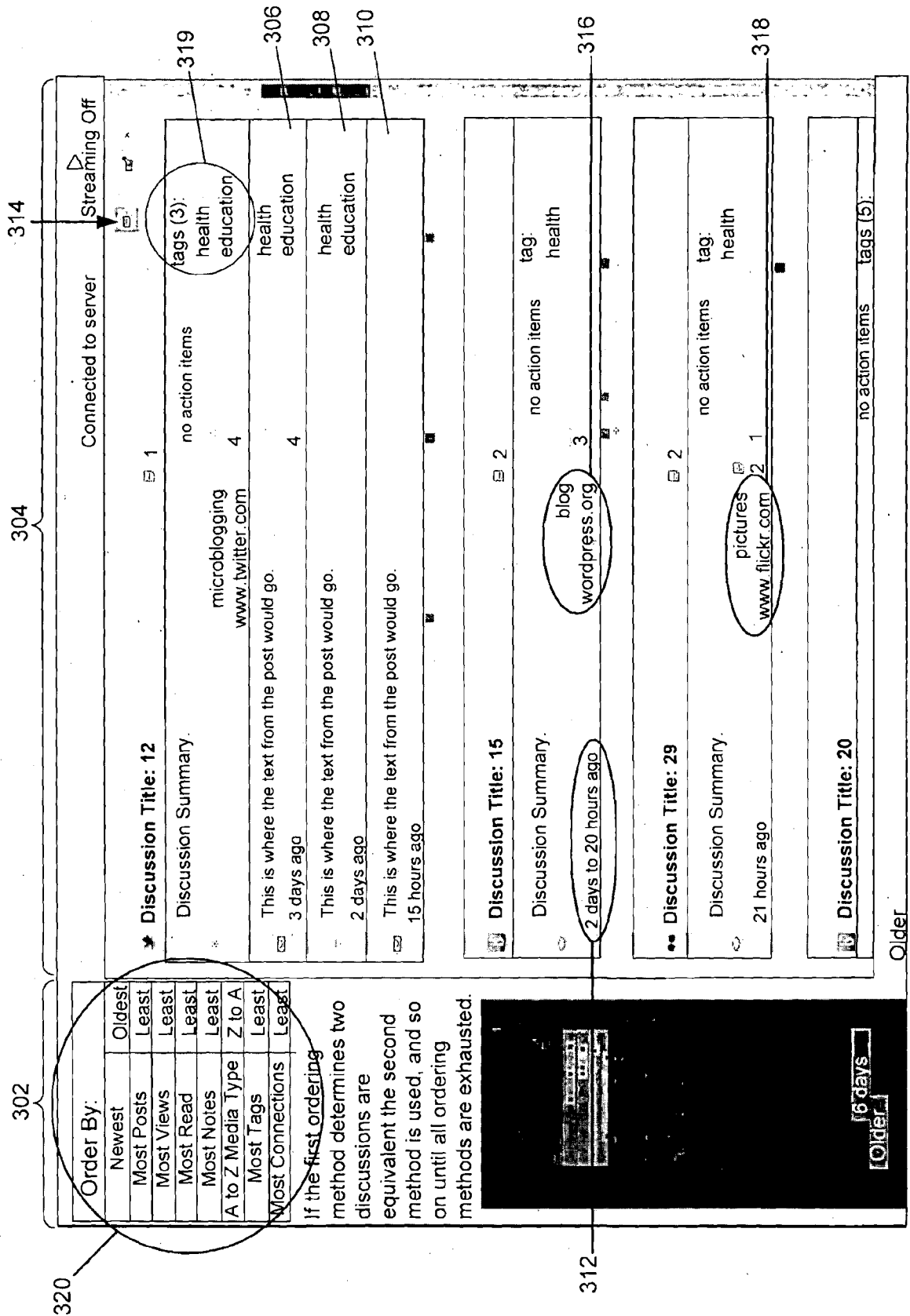


Figure 3

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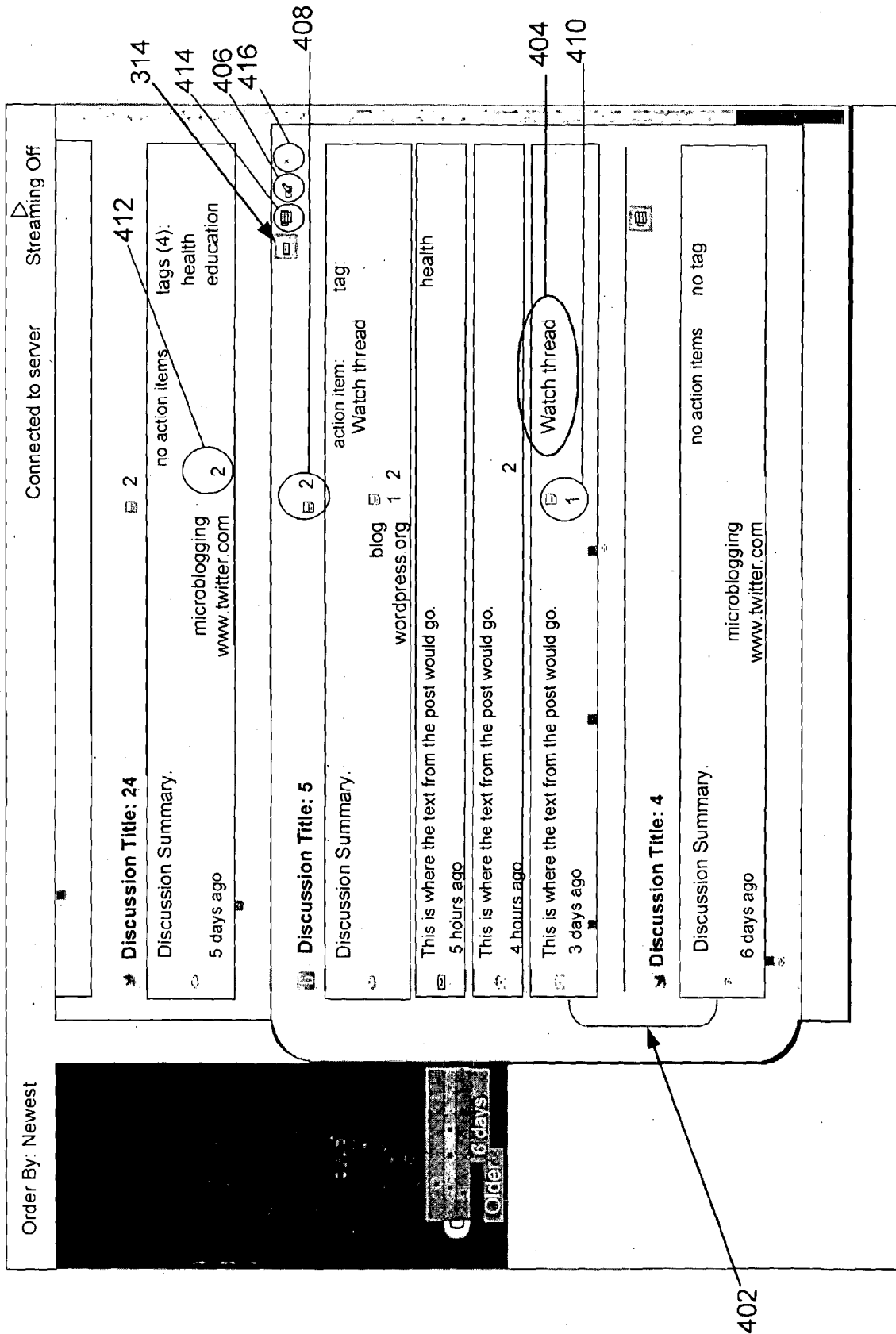


Figure 4

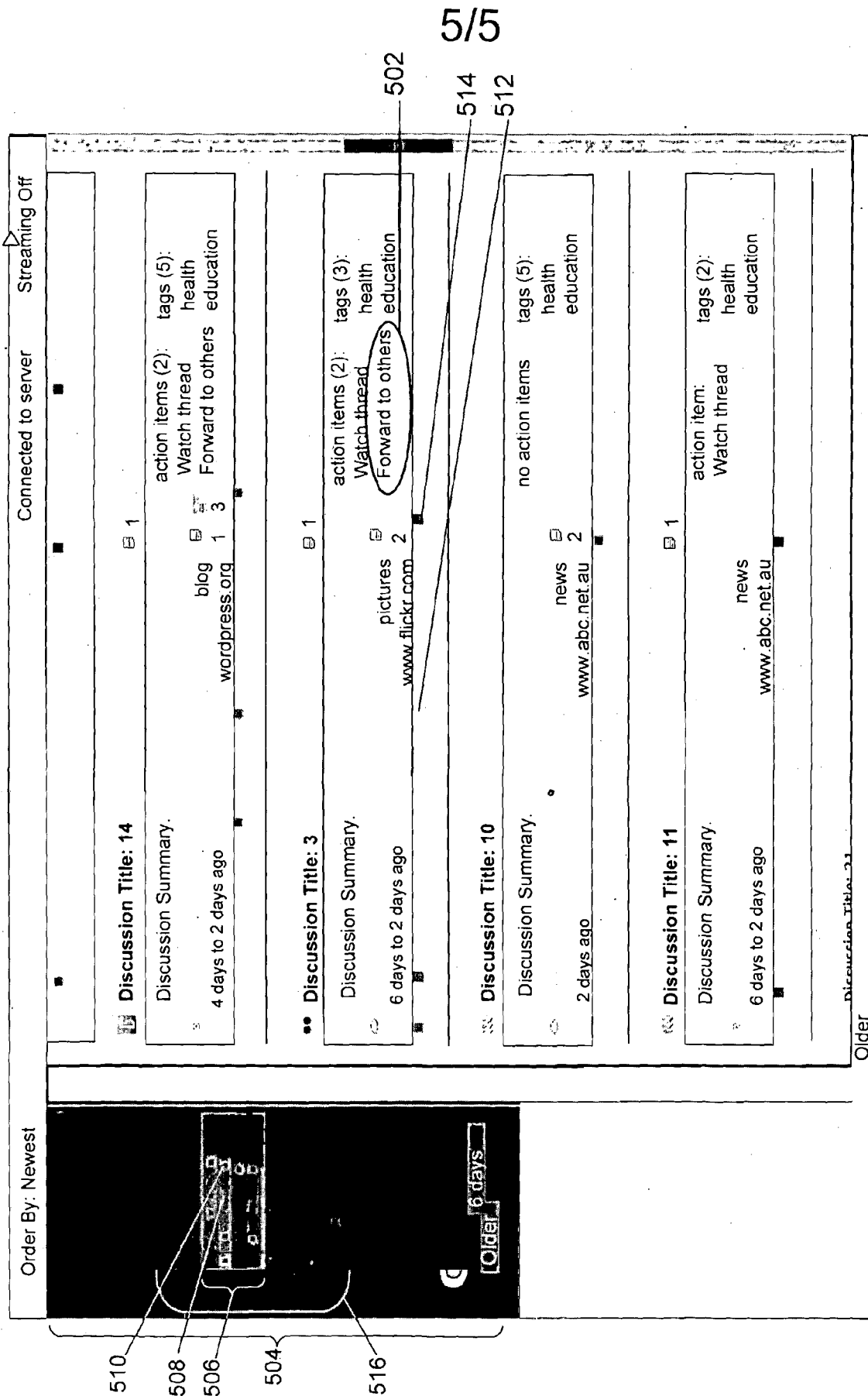


Figure 5

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2012/000694

A. CLASSIFICATION OF SUBJECT MATTER

G06F 17/30 (2006.01) G06Q 99/00 (2006.01)

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)

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)

WPI & EPODOC, Google Patents, Patentlens, Patentstorm

Keywords & Phrases: analysing social media posts, aggregate, correlate, or collect, related posts, postings, threads, social media contents, filter related posts, and like terms

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	Documents are listed in the continuation of Box C	



Further documents are listed in the continuation of Box C



See patent family annex

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier application or patent but published on or after the international filing date	"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
"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)	"&" document member of the same patent family
"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	

Date of the actual completion of the international search
27 August 2012Date of mailing of the international search report
29 August 2012

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INTERNATIONAL SEARCH REPORT		International application No.
C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		PCT/AU2012/000694
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2010/0119053 A1 (GOELDI) 13 May 2010 paras [0049, 0058-0059, 0060, 0067, 0082, 0101, 0109], figs 10-20, 33	1-23

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/AU2012/000694

This Annex lists known patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document/s Cited in Search Report**Patent Family Member/s****Publication Number****Publication Date****Publication Number****Publication Date**

US 2010/0119053 A1

13 May 2010

US 2010121843 A1

13 May 2010

US 7974983 B2

05 Jul 2011

US 2010119053 A1

13 May 2010

US 2010121707 A1

13 May 2010

US 2010121849 A1

13 May 2010

US 2011307312 A1

15 Dec 2011

End of Annex