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(54) **SOCIAL NETWORKING AGGREGATOR TO TRACK ILLNESSES**

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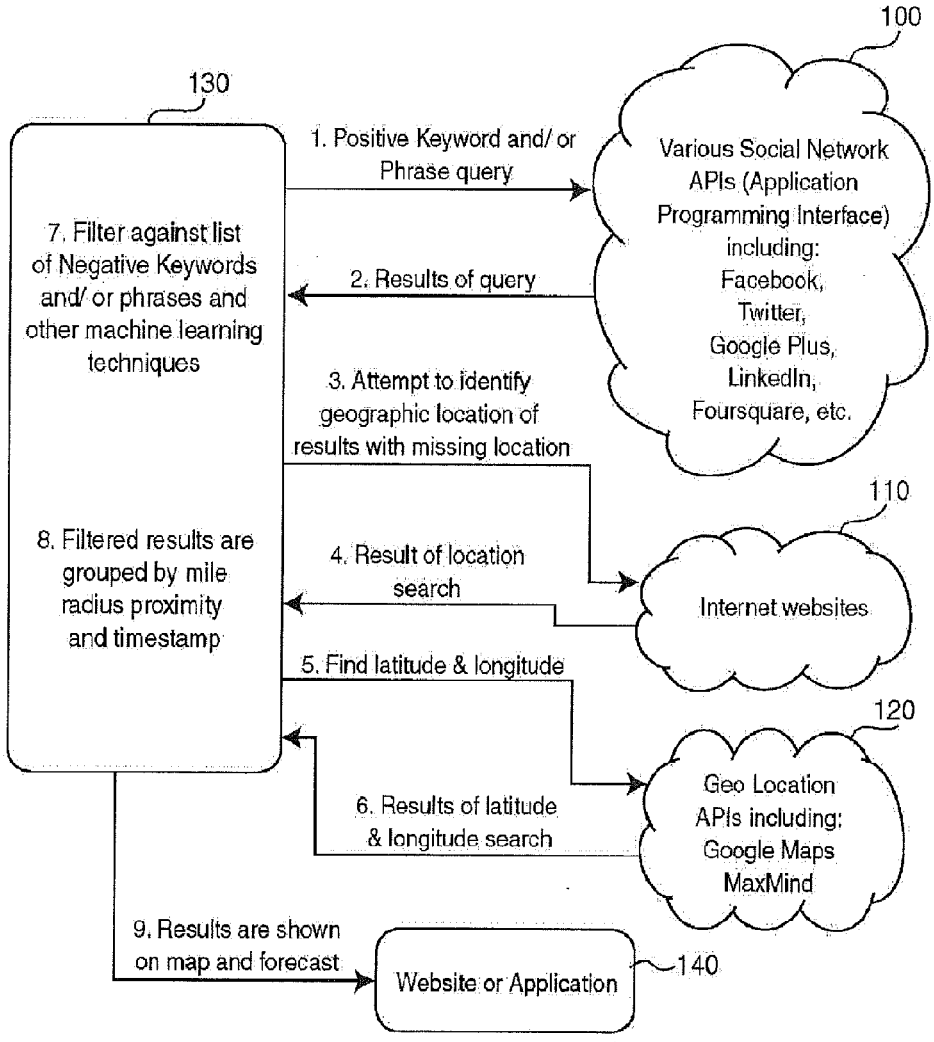
(57) **ABSTRACT**

A social networking aggregator computer program that filters user updates from several sources and merges them with geo-tagging data to provide real-time "weather maps" of symptoms and ailments, which can then be used to forecast where and when illnesses spread. Data sources include, but are not limited to popular social media "user broadcasting" platforms, social network sites and smart-phone applications.



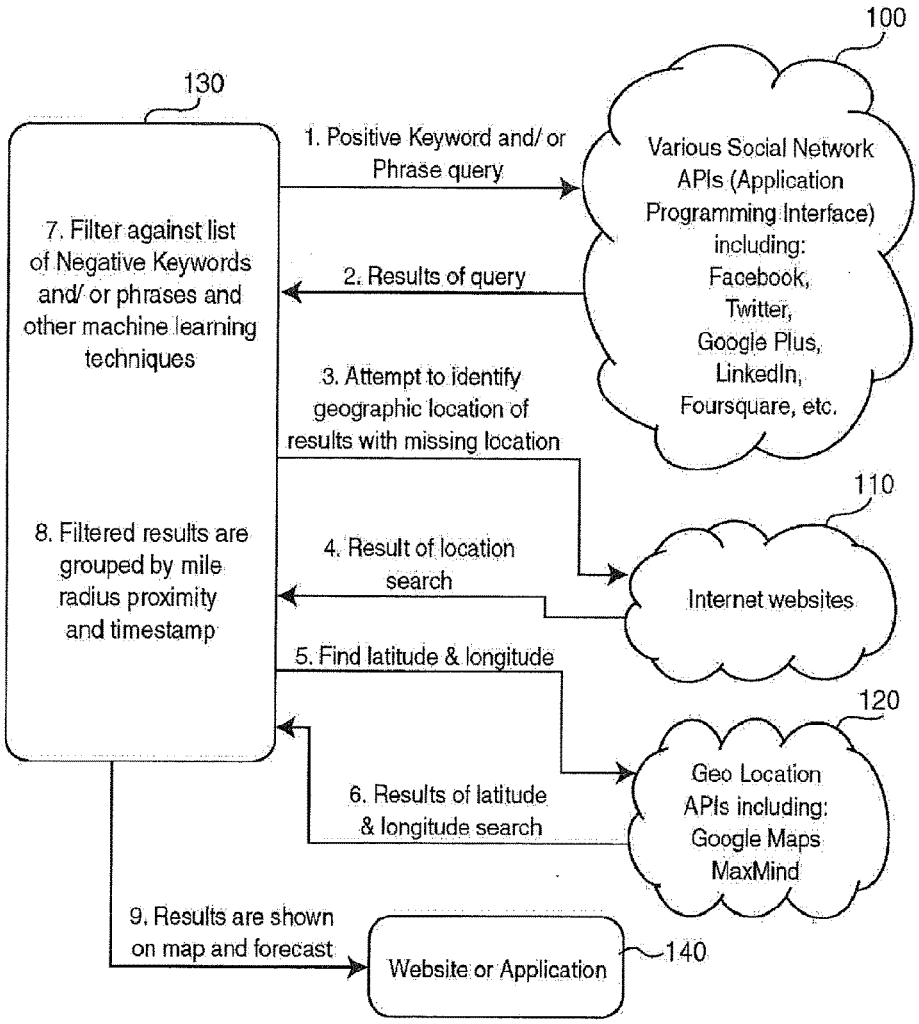

100
130
1. Positive Keyword and/ or Phrase query
Various Social Network APIs (Application Programming Interface) including: Facebook, Twitter, Google Plus, LinkedIn, Foursquare, etc.
2. Results of query
7. Filter against list of Negative Keywords and/ or phrases and other machine learning techniques
3. Attempt to identify geographic location of results with missing location
110
8. Filtered results are grouped by mile radius proximity and timestamp
4. Result of location search
Internet websites
5. Find latitude & longitude
120
Geo Location APIs including: Google Maps MaxMind
6. Results of latitude & longitude search
9. Results are shown on map and forecast
Website or Application
140

FIG. 1

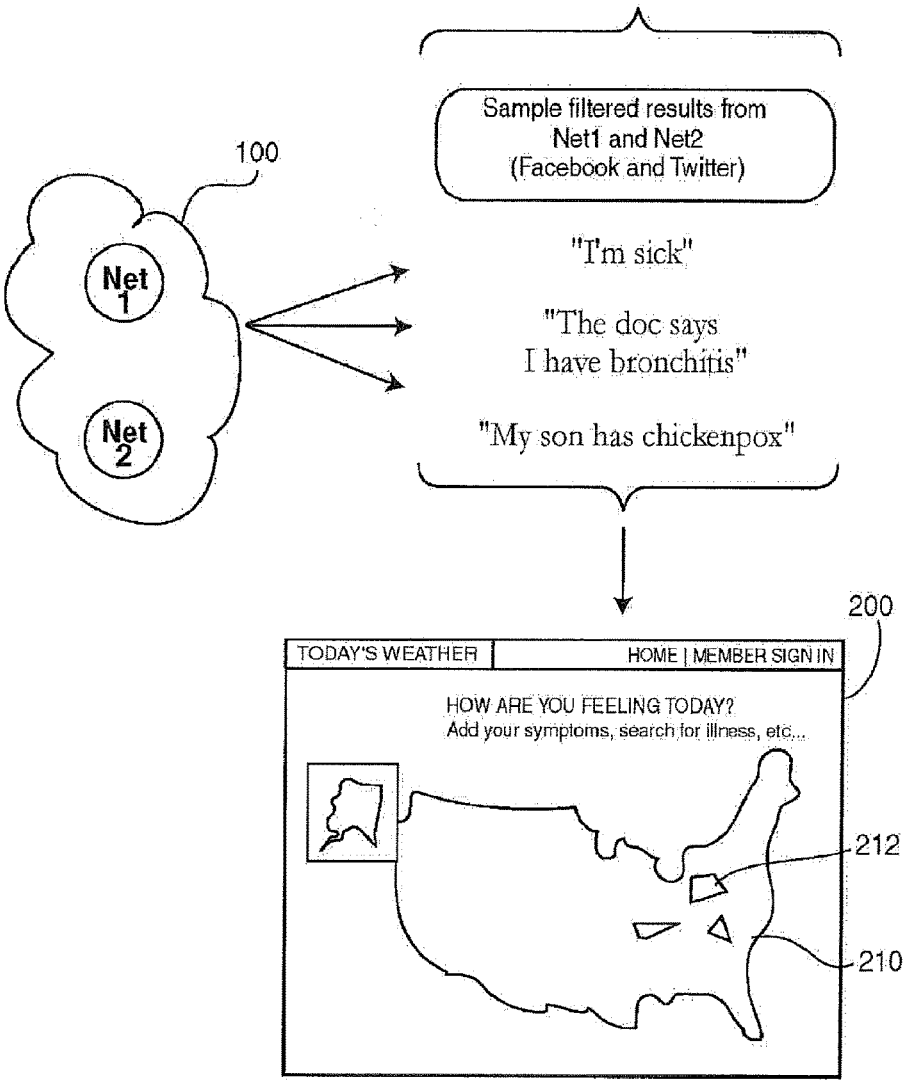

Sample filtered results from
Net1 and Net2
(Facebook and Twitter)
100
Net 1
Net 2
"I'm sick"
"The doc says
I have bronchitis"
"My son has chickenpox"
200
TODAY'S WEATHER
HOME | MEMBER SIGN IN
HOW ARE YOU FEELING TODAY?
Add your symptoms, search for illness, etc...
212
210

FIG. 2

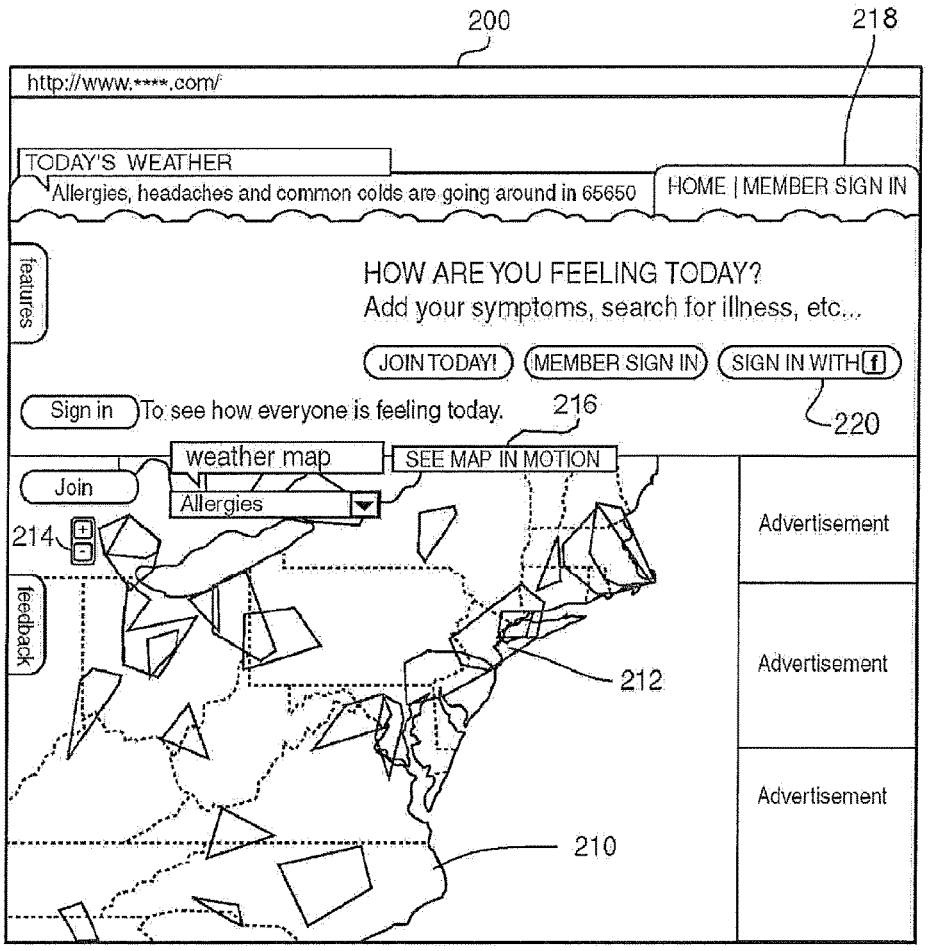

200
218
http://www.****.com/
TODAY'S WEATHER
Allergies, headaches and common colds are going around in 65650
HOME | MEMBER SIGN IN
features
HOW ARE YOU FEELING TODAY?
Add your symptoms, search for illness, etc...
JOIN TODAY!
MEMBER SIGN IN
SIGN IN WITH f
220
Sign in
To see how everyone is feeling today.
216
weather map
SEE MAP IN MOTION
Join
Allergies
214
feedback
212
210
Advertisement
Advertisement
Advertisement

FIG. 3

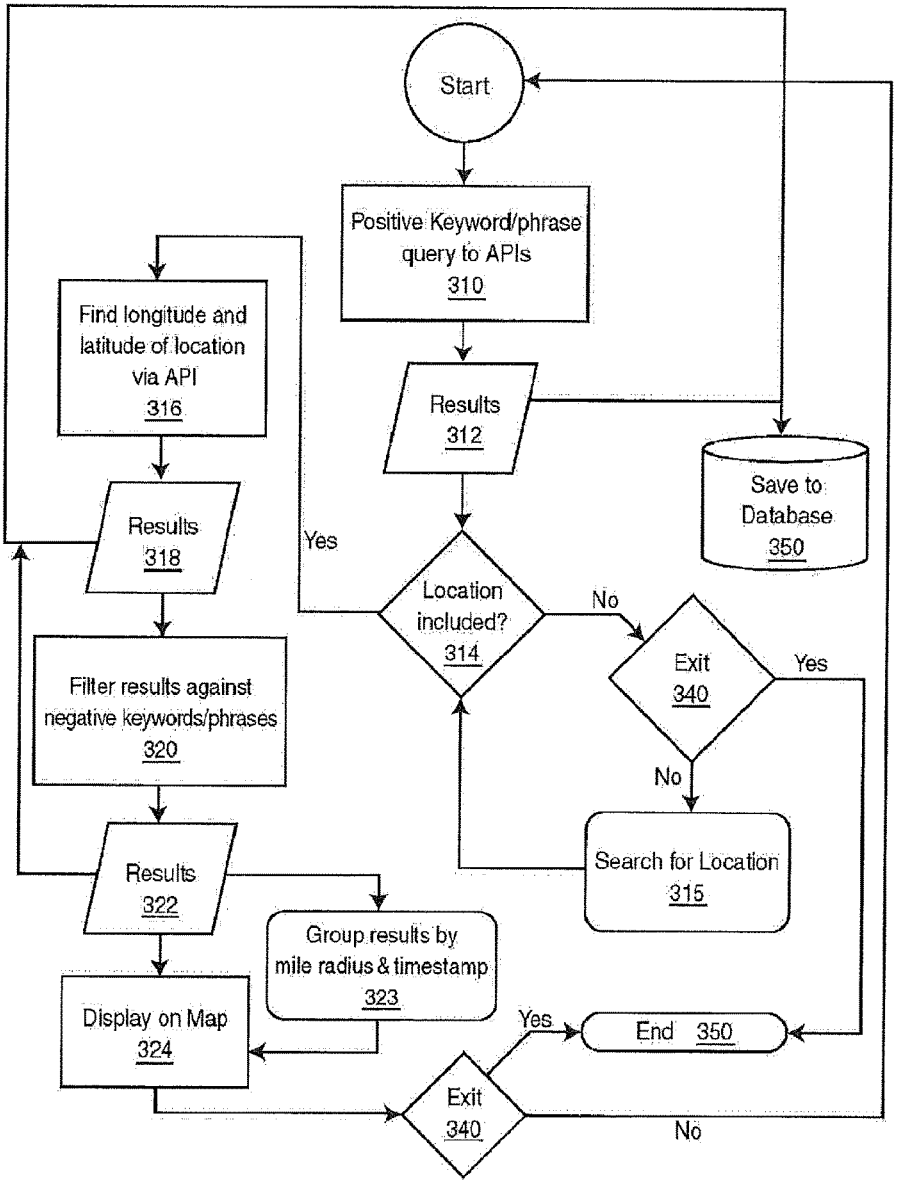

Start
Positive Keyword/phrase query to APIs 310
Results 312
Save to Database 350
Location included? 314
Yes
No
Exit 340
Yes
No
Search for Location 315
Find longitude and latitude of location via API 316
Results 318
Filter results against negative keywords/phrases 320
Results 322
Group results by mile radius & timestamp 323
Display on Map 324
Yes
End 350
Exit 340
No

FIG. 4

SOCIAL NETWORKING AGGREGATOR TO TRACK ILLNESSES

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. Provisional Application No. 61/496,625, filed Jun. 14, 2011, now expired.

BACKGROUND

Field of the Invention

[0002] This invention relates to a method and computer program for tracking illnesses.

Background of the Invention

[0003] Illnesses are tracked by various means and by numerous local, state and federal government entities, such as the Centers for Disease Control, and state health departments in order to identify trends and slow the spread of disease. Tracking of illnesses is particularly of interest if the illness is contagious in nature or caused by environmental sources. Computer programs used by health professionals are available, such as GOOGLE FLU TRENDS, HEALTH MAP or GLOBAL PUBLIC HEALTH INTELLIGENCE NETWORK to track the spread of infectious diseases. Researchers at the London School of Hygiene and Tropical Medicine have also launched The Flu Survey, which has recruited volunteers from 10 European countries to report symptoms and provide weekly updates of the spread of flu across the continent. A smartphone application, InFlu, tracks the response of users who rate the strength of their symptoms on a red dial, before plotting their position on the map so that other app users can avoid them. None of these programs track illnesses in real time and the data gathering of the programs is limited.

SUMMARY OF THE INVENTION

[0004] The present invention is drawn to a computer program that filters updates on social networking sites to provide the user information about the location and spread of illnesses and health-related dangers.

BRIEF DESCRIPTION OF THE FIGURES

[0005] FIG. **1** depicts a process of the invention.

[0006] FIG. **2** is a graphical overview of the invention.

[0007] FIG. **3** shows a screen shot example and user interface.

[0008] FIG. **4** is a flow chart of a process of the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0009] The present invention is drawn to a social networking aggregator computer program that filters user updates from several sources and merges them with geo-tagging data to provide real-time "weather maps" of symptoms and ailments, which can then be used to forecast where and when illnesses spread. Data sources include, but are not limited to popular social media "user broadcasting" platforms such as FACEBOOK, TWITTER, GOOGLE PLUS, Google OpenSocial, FourSquare, Yelp and LinkedIn. Additional sources can include other sites and regional sites such as ORKUT, HI5, MYSPACE, FRIENDSTER, QQ (China), V KONTAKTE (Russia), SINA WEIBO (China), MIXI (Japan), CYWORLD (South Korea), QZONE (China), ZING (Vietnam), and WRETCH (Taiwan).

[0010] The computer program of the invention applies a search engine onto the aggregated data to single out key words and/or phrases that are commonly used to represent illness, getting sick, ailments, and specific names of diseases. Second, the computer program of the invention applies negative key words to those terms to qualify the terms as a positive instance. Third, the computer program of the invention locates the originating latitude and longitude of the data to plot the positive instances on a map. Alternatively, the second step of the computer program of the invention applies a search to these results to identify if the data includes location information such as city, state, province, country or zip code. The alternative third step, if the computer program of invention does not identify location information in the data, the computer program of invention discards the data that does not contain location information. Fourth, if location information is found, the computer program of invention locates the latitude and longitude of the available location information. Fifth, if the computer program of invention locates the latitude and longitude of the aggregate data, the computer program of invention searches the results for negative key words and phrases that are indicators of false reports of illness, getting sick, ailments and specific names of illnesses. Finally, the remaining aggregate data that contains latitude and longitude information, and that does not contain any negative key words or phrases, is plotted on a map, and is termed, "qualified aggregate data." An alternative final step is that the remaining aggregate data is grouped by a specified mile radius distance from each other and a specified window of time to be represented as clustered activity on the map.

[0011] FIG. **1** is a graphical representation of the computer program system of the invention. The order of the steps may change from time to time, depending on optimal processing requirements and/or users' requests. Other steps may be added or deleted if sich additions or deletions would enhance the accuracy of the information or the users' experience. In Step ①, a positive keyword and/or phrase search entry is entered to "the Social Graph" **100**. In Step ②, the results of the query is sent to a database server **130** where the following steps are used to qualify relevant locations to the results and relevancy to the symptoms and illnesses being tracked. An attempt to identify the geographic location of the results with a missing location is shown in Step ③ by gleaning more public information from networking and internet websites **110** about the origin of the data. From the internet websites **110**, the program obtains results of the location search as seen in Step ④ and are then sent to other third party Geo Location and Geo-coding services **120** such as GOOGLE MAPS, MAXMIND and GOOGLE EARTH to match the locations with longitude and latitude information in Step ⑤. Once latitude and longitude results are returned in Step ⑥, the remaining data is then filtered by the database server **130** and its list of negative keywords and phrases and other machine learning techniques that make use of natural language processing in Step ⑦ to indicate whether or not the data is relevant to symptoms of illness being tracked. Then, filtered results are either grouped by a specified mile radius proximity and time-stamp in the database server **130** in Step **8** and then

displayed on a map and forecasts through the website or application **140** in Step **9**, or just sent directly to the website or application **140** if they are not able to be grouped.

[0012] FIG. **2** illustrates how the conversations from the networking sites translate onto the map of the invention. Everyday thousands of people around the globe update social media sites, "Net **1**" or "Net **2**" **100**, like FACEBOOK and TWITTER when they (or someone close to them) get sick. Posts like "I'm sick," "the doe says I have bronchitis" and "My son has chickenpox" are gathered up by the program for analysis and location mapping. When this information is made publicly available by the user and contains location information, the program tracks and maps this data. The map **210** is displayed on a screen interface **200** and the areas of illnesses are shown as polygons **212** on the map **210**. A screen shot **200** is shown in FIG. **3** and is described below in "Working Examples."

[0013] "Illnesses" as used herein includes mental illness such as stress and depression, and "chronic illness" such as cancer, contagious illnesses and/or diseases caused by viruses, bacteria, protozoa, insect bites, and other living organisms. Such illnesses or diseases include: influenza, West Nile virus, avian flu, norovirus, chicken pox, measles, rabies, encephalitis, meningitis, dengue fever, Lyme disease, Rocky Mountain spotted fever, and the like. Also included are allergens and/or pollen counts, and health emergencies or conditions such as forest fires, boil water alerts, dangerous animal activity, pollution alerts, bioterrorism alerts, and the like. Public health notices and recalls can also be included either as news alerts or postings on a website.

[0014] The program has information available to the public as well as an optional member login area where information is only available to members ("Registered Users"). Among other features, members have access to maps and information which is available on an "advanced search" function, where further refined information is presented. Registered users can link their accounts to FACEBOOK, TWITTER, GOOGLE+ or any other social network accounts. The purpose of linking social media accounts is to form a "social circle" for users to be informed of illnesses among friends and family with whom they have close contact. Private messaging, identities of sick circle members, and the ability to send gifts, get well cards and games, and the like are available to Registered Users as well.

[0015] Additionally, the program of the invention allows its members to report directly to the map and forecast anonymously via the input field under "How Are You Feeling Today?" The user types in how he or she feels and the program performs a "best match" to the most relevant forecasts. If symptoms or illnesses are reported that are not currently being tracked, that information are processed by the program to automatically make suggestions for expanding tracking capabilities. In this regard, the program continues to "learn" as users input information. Individual reports of illnesses are also shown on a map using icons or data point indicators.

[0016] A newsfeed is optionally available to Registered Users to show only health-related posts from within the Registered User's social circle and serves as a way for users to stay informed of who has illnesses within their personal network. A function is optionally available to Registered Users that allow them to create and view a chart to track their own health, as well as the health of any family members or friends for whom they are reporting on their behalf, and can act as an informal medical chart. The ability to track one's own medical history can also be combined with healthful living practices such as tracking exercise, calorie intake and the like.

[0017] The program of the invention can be gamified, as the user uses more services, they can earn virtual items, such as "sympathy badges," points, or levels for their accomplishments. Prizes not only drive additional usage, but also encourage sympathetic communication among users, which increases the amount of information that can be gathered by the program and thus enhances the accuracy and timeliness of the information available to users.

[0018] An augmented reality function is also included in the invention. The augmented reality function allows users to tag a specific public place where they know there is a health threat and/or sick individual that could be a threat to others.

[0019] A smartphone application is also included in the invention. The smart phone functionality, such as notification alerts for when new illnesses pop up in your area, as well as animated maps and forecasts are included so a user can easily see in real time, the spread of diseases in a desired area. Applications are available in commonly used platforms, such as iPHONE and ANDROID, and the like. The smart phone program scans social networks for indicators of illness, allowing users to check for the chance of sickness, using network outlets such as FACEBOOK, TWITTER, GOOGLE PLUS, GOOGLE OPENSOCIAL, FOURSQUARE, YELP and LINKEDIN. Additional sources can include other sites and regional sites such as ORKUT, HI5, MYSPACE, FRIENDSTER, QQ (China), V KONTAKTE (Russia), SINA WEIBO (China), MIXI (Japan), CYWORLD (South Korea), QZONE (China), ZING (Vietnam), and WRETCH (Taiwan). The smartphone program of the invention also allows users to update their friends and followers when they get sick. The smart phone program of the invention, gleans the immense amount of real-time data available on the health of the population through various sources and the program filters and qualifies this data and cross references them with location tags to produce real-time "weather maps" of reported symptoms, which is available on the hand-held devices of the user. As described for the computer program of the invention, the information is then used to forecast the movement of illness, sicknesses and other health-related issues.

WORKING EXAMPLES

Example 1

Real-Time Mapping of Global Illnesses

[0020] The user interface **200** of the invention is shown in FIG. **3**. A map **210** is displayed of a region desired to be viewed by the user. Overlays of regions where certain illnesses are determined by the program are shown in shaded or colored geometric shapes **212** overlaying the map **210**. In one embodiment of the invention, the geometric shapes are calculated and formed based on a predetermined mile radius distance that the data points are from each other and the timestamp of the reports, so that data points that occur within a certain proximity and time are shown as being grouped using the shaded or colored geometric shapes. The data representing positive instances on the map is presented as a "weather map" of illnesses to the user, to show when

and where illnesses are located. On the map, the user has the ability to zoom in, zoom out **214** and initiate a time-lapse animation **216** of where the contagion or disease is spreading. When several reports appear nearby each other at approximately the same time, they are grouped as potential storm activity represented by polygons and/or lines. These may change shape as the user zooms in and the density becomes more refined. At map zoom level **4**, polygons are drawn to group illness reports within 4 hours and 30 miles radius of each other; at map zoom level **3**, polygons are drawn to group illness report within 4 hours and 15 miles radius of each other, and so forth. Thus, if the user zooms in far enough, individual reports down to the street level can be shown. Memberships are included in the invention and a member can log into a member area **218** to obtain additional information and/or high zoom potential. Additionally, a user may log in through social networking sites, such as FACEBOOK or TWITTER **220**.

[0021] A flowchart showing the implementation of the method and computer program of the invention is shown in FIG. **4**. Positive keywords or phrases are queried to application programming interfaces ("APIs") **310**, which then yields results **312**. If such results **312** have a location included **314**, then the longitude and latitude of the location via the API is obtained **316**. If a location is not included, then the program can either exit **340** or search for a location **315**. Once a location is found **314**, and the longitude and latitude are located **316**, the results **318** are filtered against negative keywords or phrases **320** "Negative keywords", as used herein are words or phrases that indicate that a posting is not discussing illnesses. Such phrases, by example would include a posting such as, "I have Bieber fever!", or "I'm sick about how ugly my new hair is!" and the like. Such negative phrases are filtered out and not used in the final displayed results. The results **322** can either be displayed on a map **324** or the results can be grouped by mile radius and time stamped **323**, then displayed on a map **324**. Afterwards, the user can exit the program **340**. All results obtained are also saved to a database **350** for further "learning" by the system. Further "learning" by the computer program means that words or phrases that cannot be filtered as specified by the system are saved for later processing either by the computer system, by human intervention, or a combination of the two. Nothing herein would preclude oversight, modification or intervention by humans and/or users.

OVERVIEW OF THE INVENTION

[0022] The invention includes a computer program that filters updates on social networking sites to provide information about the location and spread of illnesses and health-related dangers, comprising: at least one program instruction for loading into a server used for providing a service website; at least one program instruction loaded into the server to execute following steps: applying a search engine onto aggregated data to single out key words and/or phrases that are commonly used to represent a health-related danger; applying a search to these results to identify if the data includes location information such as city, state, province, country or zip code; if the computer program does not identify location information in the data, the computer program of invention will discards the data that does not contain location information; if location information is found, the computer program locates the latitude and longitude of the available location information; if the computer program of invention locates the latitude and longitude of the aggregate data, the computer program of invention searches the results for negative key words and phrases that are indicators of false reports of health related dangers creating a qualified aggregate data set; and plotting the remaining qualified aggregate data that contains latitude and longitude information, and that does not contain any negative key words or phrases, on a map; and displaying the qualified aggregate data in a user friendly interface similar to a weather forecast or weather radar map; and providing various tools for selecting and changing views and visualizations of the data and sharing and commenting on the data with social networking tools.

[0023] The invention also includes an online service system, comprising: a server, comprising: a data transmission unit; a verification unit, coupled to the data transmission unit, for sending a verification link corresponding to a user account that is not verified through the data transmission unit; and a service providing unit, coupled to the verification unit and the data transmission unit, for providing a service web site; said online service system that filters updates on social networking sites to provide information about the location and spread of illnesses and health-related dangers, comprising the steps of: at least one program instruction for loading into a server used for providing a service website; at least one program instruction loaded into the server to execute following steps: applying a search engine onto aggregated data to single out key words and/or phrases that are commonly used to represent a health-related danger; applying a search to these results to identify if the data includes location information such as city, state, province, country or zip code; if the computer program does not identify location information in the data, the computer program of invention will discard the data that does not contain location information; if location information is found, the computer program locates the latitude and longitude of the available location information; if the computer program of invention locates the latitude and longitude of the aggregate data, the computer program of invention searches the results for negative key words and phrases that are indicators of false reports of health related dangers creating a qualified aggregate data set; and plotting the remaining qualified aggregate data that contains latitude and longitude information, and that does not contain any negative key words or phrases, on a map; and displaying the qualified aggregate data in a user friendly interface similar to a weather forecast or weather radar map; and providing various tools for selecting and changing views and visualizations of the data and sharing and commenting on the data with social networking tools.

[0024] The invention also includes a method for providing an online service, adapted to a server providing a service website, the method comprising: sending a verification link corresponding to a user account that is not verified through the data transmission unit; and a service providing unit, coupled to the verification unit and the data transmission unit, for providing a service web site; said online service system that filters updates on social networking sites to provide information about the location and spread of illnesses and health-related dangers, comprising the steps of: providing at least one program instruction for loading into a server used for providing a service website; providing at least one program instruction loaded into the server to execute following steps: applying a search engine onto

aggregated data to single out key words and/or phrases that are commonly used to represent a health-related danger; applying a search to these results to identify if the data includes location information such as city, state, province, country or zip code; if the computer program does not identify location information in the data, the computer program of invention will discards the data that does not contain location information; if location information is found, the computer program locates the latitude and longitude of the available location information; if the computer program of invention locates the latitude and longitude of the aggregate data, the computer program of invention searches the results for negative key words and phrases that are indicators of false reports of health related dangers creating a qualified aggregate data set; and plotting the remaining qualified aggregate data that contains latitude and longitude information, and that does not contain any negative key words or phrases, on a map; and displaying the qualified aggregate data in a user friendly interface similar to a weather forecast or weather radar map; and providing various tools for selecting and changing views and visualizations of the data and sharing and commenting on the data with social networking tools.

[0025] Additionally, the computer program, online service system and/or method of the invention include qualified aggregation data that are displayed in a manner from the group selected from: on a website, or an application, or other media such as television, radio and print. Also, the method includes at least some of the information is provided only to paid members of the service.

[0026] Having now fully described this invention, it will be understood to those of ordinary skill in the art that the same can be performed within a wide and equivalent range of conditions, formulations, and other parameters without affecting the scope of the invention or any embodiment thereof. All patents and publications cited herein are incorporated by reference in their entirety.

1-9. (canceled)

10. A method comprising:

searching, via a processor, social media data for words associated with health, results of the searching being a data subset of the social media data;

for each respective piece of social media data within the data subset, checking for location information, wherein when location information is found, a latitude and longitude is determined from the location information, and when location information is not found, results in the data subset that do not contain location information are discarded, resulting in a location filtered data subset;

removing results from the location filtered data subset that include words associated with false reports, resulting in a qualified data set; and

displaying, via the processor, the qualified data set.

11. The method of claim **10**, wherein the words associated with health identify an illness.

12. The method of claim **11**, wherein the displaying of the qualified data set comprises forecasting movement of the illness.

13. The method of claim **10**, wherein the words associated with health identify at least one of an allergen count, a pollen count, a forest fire, a pollution alert, a boil water alert, dangerous animal activity, and a bioterrorism alert.

14. The method of claim **10**, wherein the displaying of the qualified data set is on a map.

15. The method of claim **5**, further comprising:

grouping the qualified data set by radius on the map.

16. The method of claim **10**, wherein displaying the qualified data set comprises use of a time-lapse animation.

17. A system, comprising:

a processor; and

a computer-readable storage medium having instructions stored which, when executed by the processor, cause the processor to perform operations comprising:

searching social media data for words associated with health, results of the searching being a data subset of the social media data;

for each respective piece of social media data within the data subset, checking for location information, wherein when location information is found, a latitude and longitude is determined from the location information, and when location information is not found, results in the data subset that do not contain location information are discarded, resulting in a location filtered data subset;

removing results from the location filtered data subset that include words associated with false reports, resulting in a qualified data set; and

displaying the qualified data set.

18. The system of claim **17**, wherein the words associated with health identify an illness.

19. The system of claim **18**, wherein the displaying of the qualified data set comprises forecasting movement of the illness.

20. The system of claim **17**, wherein the words associated with health identify at least one of an allergen count, a pollen count, a forest fire, a pollution alert, a boil water alert, dangerous animal activity, and a bioterrorism alert.

21. The system of claim **17**, wherein the displaying of the qualified data set is on a map.

22. The system of claim **21**, having additional instructions stored which, when executed by the processor, cause the processor to perform operations comprising:

grouping the qualified data set by radius on the map.

23. The system of claim **17**, wherein displaying the qualified data set comprises use of a time-lapse animation.

24. A non-transitory computer-readable storage medium having instructions stored which, when executed by a computing device, cause the computing device to perform operations comprising:

searching social media data for words associated with health, results of the searching being a data subset of the social media data;

for each respective piece of social media data within the data subset, checking for location information, wherein when location information is found, a latitude and longitude is determined from the location information, and when location information is not found, results in the data subset that do not contain location information are discarded, resulting in a location filtered data subset;

removing results from the location filtered data subset that include words associated with false reports, resulting in a qualified data set; and

displaying the qualified data set.

25. The non-transitory computer-readable storage medium of claim **24**, wherein the words associated with health identify an illness.

26. The non-transitory computer-readable storage medium of claim **25**, wherein the displaying of the qualified data set comprises forecasting movement of the illness.

27. The non-transitory computer-readable storage medium of claim **24**, wherein the words associated with health identify at least one of an allergen count, a pollen count, a forest fire, a pollution alert, a boil water alert, dangerous animal activity, and a bioterrorism alert.

28. The non-transitory computer-readable storage medium of claim **24**, wherein the displaying of the qualified data set is on a map.

29. The non-transitory computer-readable storage medium of claim **28**, having additional instructions stored which, when executed by the computing device, cause the computing device to perform operations comprising:

grouping the qualified data set by radius on the map.

* * * * *