

SPECIFICATION

KEYWORD PRESENTING METHOD AND APPARATUS

The present application claims priority to Chinese Patent Application No. 201510346513.2
5 filed on June 19, 2015 and entitled "KEYWORD PRESENTING METHOD AND APPARATUS",
which is incorporated herein by reference in its entirety.

Technical Field

The present application relates to the field of communication technologies, and in particular,
to a keyword presenting method and apparatus.

10 Background Art

With the rapid development of Internet technologies, more and more people acquire various
types of information via network. For example, a user may search for information by using a search
engine of a mobile terminal or a PC terminal. How to improve a search experience becomes an
urgent problem to be solved.

15 Summary of the Invention

In view of this, the present application provides a keyword presenting method and apparatus.

Specifically, the present application is implemented by using the following technical solution:

A keyword presenting method is provided, which includes:

receiving a presentation request for a search page, wherein the presentation request carries
20 target location information;

acquiring a keyword having search popularity meeting a first condition in a first region
matching the target location information as a first keyword; and

presenting the first keyword in the search page.

Optionally, the method further includes:

25 acquiring preset information of a service provider having a frequency index meeting a second
condition in a second region matching the target location information as a second keyword; and
presenting the first keyword and the second keyword in the search page.

Optionally, the method further includes:

generating multiple geographic grids according to acquired location information of the service provider, wherein each geographic grid contains one or more service providers; and

5 the second region matching the target location information is a geographic grid where the target location information resides.

Optionally, when the target location information does not belong to any geographic grid, the second region matching the target location information is:

one or more geographic grids adjacent to the target location information.

10 Optionally, when the target location information does not belong to any geographic grid, the second region matching the target location information is:

the first region.

Optionally, the step of generating multiple geographic grids according to location information of the service provider includes:

15 generating, through a GeoHash algorithm, the multiple geographic grids according to the acquired location information of the service provider.

Optionally, the method further includes:

calculating a frequency index of each service provider according to a TF-IDF algorithm.

Optionally, the search popularity is the number of searches or a search frequency within a preset time period.

20 Optionally, the target location information is current location information or location information selected by a user.

Optionally, the first region is a geographic region where the target location information resides.

A keyword presenting apparatus is provided, which includes:

25 a request receiving unit configured to receive a presentation request for a search page, wherein the presentation request carries target location information;

a first acquisition unit configured to acquire a keyword having search popularity meeting a first condition in a first region matching the target location information as a first keyword; and

a page presentation unit configured to present the first keyword in the search page.

Optionally, the apparatus further includes:

a second acquisition unit configured to acquire preset information of a service provider having a frequency index meeting a second condition in a second region matching the target location

5 information as a second keyword; wherein

the page presentation unit is further configured to present the first keyword and the second keyword in the search page.

Optionally, the apparatus further includes:

a grid generation unit configured to generate multiple geographic grids according to acquired
10 location information of the service provider, wherein each geographic grid contains one or more service providers; and

the second region matching the target location information is a geographic grid where the target location information resides.

Optionally, when the target location information does not belong to any geographic grid, the
15 second region matching the target location information is:

one or more geographic grids adjacent to the target location information.

Optionally, when the target location information does not belong to any geographic grid, the second region matching the target location information is:

the first region.

20 Optionally, the grid generation unit is specifically configured to generate, through a GeoHash algorithm, the multiple geographic grids according to the acquired location information of the service provider.

Optionally, an index calculation unit is configured to calculate a frequency index of each service provider according to a TF-IDF algorithm.

25 Optionally, the search popularity is the number of searches or a search frequency within a preset time period.

Optionally, the target location information is current location information or location information selected by a user.

Optionally, the first region is a geographic region where the target location information resides.

It can be seen from the foregoing description that, the present application may use a keyword having search popularity meeting a first condition in a first region matching target location information as a first keyword, and present the first keyword in a search page. In this way, different keywords may be presented to a user on the basis of different target locations, thus realizing personalized keyword presentation, enhancing accuracy of keyword presentation, and further improving search experience of the user.

10 **Brief Description of the Drawings**

FIG. 1 is a flowchart of a keyword presentation method according to an exemplary embodiment of the present application;

FIG. 2 is a flowchart of another keyword presentation method according to an exemplary embodiment of the present application;

15 FIG. 3 is a schematic diagram of an application scenario of keyword presentation according to an exemplary embodiment of the present application;

FIG. 4 is a flowchart of another keyword presentation method according to an exemplary embodiment of the present application;

20 FIG. 5 is a schematic structural diagram of a server terminal according to an exemplary embodiment of the present application; and

FIG. 6 is a schematic structural diagram of a keyword presentation apparatus according to an exemplary embodiment of the present application.

Detailed Description

Exemplary embodiments will be described in detail herein, and examples thereof are shown in the accompanying drawings. In the following description related to the accompanying drawings, identical numerals in different drawings denote identical or similar elements unless otherwise indicated. The implementations described in the following exemplary embodiments do not

represent all embodiments consistent with the present application. On the contrary, they are merely examples of apparatuses and methods consistent with some aspects of the present application as detailed in the appended claims.

The terminologies used in the present application are merely used for describing particular
5 embodiments but are not intended to limit the present application. Unless clearly specified otherwise in the context, the singular forms "a/an", "the", and "this" used in the present application and appended claims are also intended to include the plural forms. It should be further understood that, the term "and/or" used herein refers to and encompasses any or all of the possible combinations of one or more associated items listed.

10 It should be understood that, although various information may be described by using terms such as "first", "second", and "third", in the present application, such information should not be limited to these terms. These terms are used only to distinguish information of the same type from each other. For example, first information may also be referred to as second information without departing from the scope of the present application, and similarly, second information may also be
15 referred to as first information. Depending on the context, the word "if" used herein may be interpreted as "when", "while", or "in response to the determination of".

In the related technology, when a user performs searching, some hot keywords may be presented to the user in a search page. The user may select a hot keyword to implement searching for the hot keyword, thus facilitating the use of the user. However, in such an implementation
20 solution, the presented keywords are usually fixed, and personalized presentation cannot be performed according to an actual situation of the user. Therefore, the presented keyword has a low accuracy.

To solve the foregoing problems, the present application provides a keyword presentation solution, which can enhance the accuracy of the presented keyword.

25 FIG. 1 is a flowchart of a keyword presentation method according to an exemplary embodiment of the present application.

Referring to FIG. 1, the keyword presentation method may be applied to a server terminal, and include the following steps:

Step 101: A presentation request for a search page is received, wherein the presentation request carries target location information.

5 In this embodiment, a user may input a presentation request for a search page by using a terminal. After receiving the presentation request for the search page, the terminal may acquire current location information, and then send the current location information, carried in the presentation request for the search page as the target location information, to a server terminal. The user may also self-define the target location information. For example, the terminal acquires
10 location information selected by the user, and then sends the location information selected by the user, carried in the presentation request for the search page as the target location information, to the server terminal.

Step 102: A keyword having search popularity meeting a first condition in a first region matching the target location information is acquired as a first keyword.

15 In this embodiment, the first region may be a geographic region where the target location information resides. For example, the first region is an administrative region such as a city or a province where the target location information resides. The search popularity may be the number of searches or a search frequency within a preset time period, for example, the number of times of searching within the last 24 hours. The first condition may be set by a developer, for example,
20 search popularity is ranked in top N, N being a natural number greater than or equal to 1.

In this step, after receiving the presentation request, the server terminal may acquire keywords having the search popularity ranked in top N in the administrative region where the target location information resides, and use the acquired keywords as the first keywords. It may be understood that the number of the first keywords is N.

25 Step 103: The first keywords are presented in the search page.

In this embodiment, the server terminal may return the first keywords to the terminal, such that the terminal presents the first keywords in the search page.

It can be seen from the foregoing description that, the present application may use a keyword having search popularity meeting a first condition in a first region matching target location information as a first keyword, and present the first keyword in a search page. In this way, different keywords may be presented to a user on the basis of different target locations, thus realizing personalized keyword presentation, enhancing accuracy of keyword presentation, and further improving search experience of the user.

FIG. 2 is a flowchart of another keyword presentation method according to an exemplary embodiment of the present application.

Referring to FIG. 2, the keyword presentation method may be applied to a server terminal, and include the following steps:

Step 201: A presentation request for a search page is received, wherein the presentation request carries target location information.

In this embodiment, when needing to search for information, a user may use an APP installed on a terminal to search for the information. For example, after the user inputs a presentation request for a search page, the terminal acquires the search page from the server terminal and presents the search page to the user, such that the user uses the search page for searching.

In this step, the user may input the presentation request for the search page by means of enabling a search function, clicking a search input box, or other manners. For example, supposing that a search APP is installed on the terminal of the user, when the user opens the APP, it is regarded that the presentation request for the search page input by the user is received. Further, supposing that an APP having a search function is installed on the terminal of the user, for example, AlipayTM Wallet, when the user opens the AlipayTM Wallet, a function page thereof is presented, and a search button for enabling a search function is usually provided in the function page. When the user wants to search through the AlipayTM Wallet, the user may click the search button, to input the presentation request for the search page.

In this embodiment, the target location information may be current location information of the terminal or location information selected by the user. Specifically, in this step, after receiving the

presentation request for the search page, the terminal may acquire the current location information, and then send the current location information, carried in the presentation request for the search page as the target location information, to the server terminal. Optionally, after the terminal receives the presentation request for the search page, if the acquired current location information is different from previously recorded location information, the terminal may generate prompt information and send it to the user, such that the user selects the location information, and then send the location information selected by the user, carried in the presentation request for the search page as the target location information, to the server terminal.

Step 202: A keyword having search popularity meeting a first condition in a first region matching the target location information is acquired as a first keyword.

In this embodiment, the first region may be a geographic region where the target location information resides. For example, the first region is an administrative region such as a city or a province where the target location information resides. The search popularity may be the number of searches or a search frequency within a preset time period, for example, the number of times of searching within the last 24 hours. The first condition may be set by a developer, for example, search popularity is ranked in top N, which is not particularly limited in the present application.

In this step, after receiving the presentation request, the server terminal may acquire the keywords having the search popularity ranked in top N in the administrative region where the target location information resides as the first keywords. For example, the server terminal may acquire keywords having search popularity ranked in top 3 within the last 24 hours in a city where the target location resides as the first keywords. In this way, the keywords having a high popularity currently in the administrative region where the target location information resides are presented to the user, thus enhancing accuracy of keyword presentation.

Step 203: Preset information of a service provider having a frequency index meeting a second condition in a second region matching the target location information is acquired as a second keyword.

In this embodiment, after receiving the presentation request, the server terminal may further determine a second region matching the target location information according to offline statistics, and acquire preset information of a service provider having a frequency index meeting a second condition in the second region as the second keyword.

5 The second region may be a geographic grid where the target location information resides or an adjacent geographic grid. The frequency index may be parameters obtained through calculation according to features such as popularity and an applause rate of the service provider. The service provider may be a merchant. The second condition may also be set by a developer, for example, frequency indexes are ranked in top M, M being a natural number greater than or equal to 1.

10 In this embodiment, the server terminal may generate the geographic grid according to location information of the service provider. Specifically, the server terminal may make statistics on location information of all merchants, and then generate multiple geographic grids through a GeoHash algorithm according to the location information, wherein each geographic grid contains one or more service providers. For example, the server terminal may make statistics on location
15 information of merchants throughout the country, set the side length of the geographic grid as 2 kilometers, and then map all the merchants on which statistics are made to the multiple generated geographic grids by using a GeoHash algorithm.

In this embodiment, the server terminal may calculate a frequency index of each service provider according to a TF-IDF (Term Frequency - Inverse Document Frequency) algorithm.
20 Specifically, the TF-IDF algorithm calculates a product of a TF (Term Frequency) multiplied by an IDF (Inverse Document Frequency), and in this embodiment, the frequency index of the service provider is equal to a product of a term frequency of the service provider multiplied by an inverse document frequency of the service provider. Specifically, the service provider is usually a merchant, the TF is equal to a weighted sum of information such as brand popularity and a brand
25 applause rate of the merchant, and the IDF is equal to a reciprocal of a frequency of appearance of a merchant brand in all the geographic grids. The IDF may be used to downgrade common merchant brands and highlight regionally distinctive merchant brands. The TF is multiplied by the

IDF to obtain the frequency index of each merchant brand. It should be noted that, documents involved in the TF-IDF algorithm refer to all the geographic grids.

In this step, the acquiring preset information of a service provider having a frequency index meeting a second condition in a second region matching the target location information as a second keyword may include the following three cases.

In a first case, the second region matching the target location information is a geographic grid where the target location information resides.

In such a case, the server terminal may first determine the geographic grid where the target location information resides, then sequence all service providers in the geographic grid in a descending order of frequency indexes, select the service providers ranked in top M, and use preset information of the M service providers as the second keywords. The preset information of the service providers is generally brand information, such as a shop name and a logo, of the service providers.

In a second case, the second region matching the target location information is one or more geographic grids adjacent to the target location information.

In this case, if the target location information does not belong to any geographic grid, one or more geographic grids adjacent to the target location information may be selected. Then, all service providers in the one or more geographic grids are sequenced in a descending order of frequency indexes, service providers ranked in top M are selected, and preset information of the M service providers is used as the second keywords. For example, eight geographic grids adjacent to the target location information may be selected at the server terminal, and the preset information of the M service providers in the eight geographic grids is selected in a descending order of frequency indexes as the second keywords.

In a third case, the second region matching the target location information is the first region.

In this case, if the target location information does not belong to any geographic grid, the first region matching the target location information may be selected. Then, all service providers in the first region are sequenced in a descending order of frequency indexes, the service providers ranked

in top M are selected, and preset information of the M service providers is used as the second keyword. For example, the preset information of M service providers in a city where the target location information resides may be selected at the server terminal in a descending order of frequency indexes as the second keywords.

5 It can be seen from the above that, the present application may also make statistics on the frequency indexes of all the service providers by using a geographic grid as a unit, and present the preset information of the service providers having a high frequency index in the geographic grid where the target location information resides or the adjacent geographic grid to a user as the second keywords, thus enhancing accuracy of keyword presentation.

10 It should be noted that, this embodiment does not limit an execution sequence of the foregoing steps 202 and 203. In an actual application, step 203 may be performed before step 202.

Step 204: The first keyword and the second keyword are presented in the search page.

Based on the foregoing steps 202 and 203, after acquiring the first keyword and the second keyword, the server terminal may return the first keyword and the second keyword to the terminal, such that the terminal presents the first keyword and the second keyword in the search page.

15 FIG. 3 is a schematic diagram of an application scenario of keyword presentation according to an exemplary embodiment of the present application.

Referring to FIG. 3, a user may open an APP AlipayTM Wallet by using a mobile phone (or another terminal device), and then click "Explore" on a function page of the AlipayTM Wallet. After an operation of clicking "Explore" is detected, it is regarded that a presentation request for a search page input by the user is received. The mobile phone sends target location information carried in the presentation request to a server terminal, thereby acquiring the search page from the server terminal and presenting the search page to the user.

FIG. 4 is a flowchart of another keyword presentation method according to an exemplary embodiment of the present application, which is corresponding to the application scenario shown in FIG. 3. Referring to FIG. 4, the keyword presentation method is applied to a server terminal, and includes the following steps:

Step 401: A presentation request for a search page is received, wherein the presentation request carries target location information.

Step 402: Keywords having search popularity ranked in top 3 in a city where the target location information resides are acquired as first keywords.

5 In this embodiment, if the target location information is Zhongguancun, in this step, the server terminal may acquire first keywords having search popularity ranked in top 3 within 24 hours in Beijing city. It is supposed that the top 3 first keywords are separately: Siebel, Diaoye Sirloin, and café.

Step 403: Brand information of two merchants in a geographic grid where the target location
10 information resides is selected in a descending order of frequency indexes as second keywords.

In this embodiment, it is supposed that brands of the two merchants selected from a geographic grid where Zhongguancun is located are: Middle 8th Restaurant and Spice Spirit.

Step 404: The three first keywords and the two second keywords are presented in the search page.

15 Based on the steps 402 and 403, in this step, the server terminal returns Siebel, Diaoye Sirloin, café, Middle 8th Restaurant and Spice Spirit to the mobile phone, such that the mobile phone presents the five keywords in the search page.

In the embodiment shown in FIG. 4, the server terminal may use the method provided in the foregoing method embodiment shown in FIG. 2 to implement keyword presentation, and details
20 are not repeated herein.

The present application further provides an embodiment of a keyword presentation apparatus corresponding to the foregoing embodiment of the keyword presentation method.

The embodiment of the keyword presentation apparatus in the present application may be applied to a server terminal. The apparatus embodiment may be implemented by using software or
25 hardware, or implemented in the manner of a combination of software and hardware. When software implementation is taken as an example, an apparatus in the logical sense is formed after a processor of the server terminal where the apparatus is located reads corresponding computer

program instructions from a non-volatile storage device to a memory and runs the instructions. With regard to hardware, as shown in FIG. 5, FIG. 5 is a structural diagram of hardware of a server terminal where the keyword presentation apparatus is located according to the present application. In addition to a processor, a memory, a network interface, and a non-volatile storage device that are shown in FIG. 5, the server terminal where the apparatus in the embodiment is located may usually further include other hardware according to actual functions of the server terminal, and details are not described herein.

Referring to FIG. 6, FIG. 6 is a schematic structural diagram of a keyword presentation apparatus according to an exemplary embodiment of the present application. The keyword presentation apparatus 600 may include: a request receiving unit 601, a first acquisition unit 602, a page presentation unit 603, a second acquisition unit 604, a grid generation unit 605, and an index calculation unit 606.

The request receiving unit 601 is configured to receive a presentation request for a search page, wherein the presentation request carries target location information.

The first acquisition unit 602 is configured to acquire a keyword having search popularity meeting a first condition in a first region matching the target location information as a first keyword.

The page presentation unit 603 is configured to present the first keyword in the search page.

The second acquisition unit 604 is configured to acquire preset information of a service provider having a frequency index meeting a second condition in a second region matching the target location information as a second keyword.

The page presentation unit 603 is further configured to present the first keyword and the second keyword in the search page.

The grid generation unit 605 is configured to generate multiple geographic grids according to location information of the service provider, wherein each geographic grid contains one or more service providers; and

the second region matching the target location information is a geographic grid where the target location information resides.

Optionally, when the target location information does not belong to any geographic grid, the second region matching the target location information is:

5 one or more geographic grids adjacent to the target location information.

Optionally, when the target location information does not belong to any geographic grid, the second region matching the target location information is:

the first region.

Optionally, the grid generation unit 605 is specifically configured to generate, through a
10 GeoHash algorithm, the multiple geographic grids according to the location information of the service provider.

The index calculation unit 606 is configured to calculate a frequency index of each service provider according to a TF-IDF algorithm.

Optionally, the search popularity is the number of searches or a search frequency within a preset
15 time period.

Optionally, the target location information is current location information or location information selected by a user.

Optionally, the first region is an administrative region where the target location information resides.

20 For an implementation process of functions and effects of all the units in the apparatus, refer to an implementation process of corresponding steps in the foregoing method, and details are not described herein again.

The apparatus embodiment basically corresponds to the method embodiment. Therefore, reference may be made to the description of the method embodiment for related portions. The
25 apparatus embodiment described is merely schematic, and units described as separate parts may or may not be physically separated. A part displayed as a unit may or may not be a physical unit, that is, the part may be located at one place or distributed on multiple network units. Some or all

modules may be selected according to actual demands to implement the objective of the solution of the present application. Persons of ordinary skill in the art may comprehend and implement the present application without paying creative efforts.

5 The above described are merely preferred embodiments of the present application, but are not intended to limit the present application. Any modification, equivalent replacement, improvement, and the like made within the spirit and principle of the present application shall be included in the protection scope of the present application.

CLAIMS

1. A method for presenting keywords, the method comprising:

receiving a presentation request for a search page, wherein the presentation request comprises target location information;

obtaining a keyword having search popularity meeting a first condition in a first region matching the target location information, and using the obtained keyword as a first keyword;

obtaining preset information of a service provider having a frequency index meeting a second condition in a second region matching the target location information, and using the obtained preset information as a second keyword; and

presenting the first keyword and the second keyword in the search page so that a user can perform a search based on the first keyword and the second keyword.

2. The method of claim 1, further comprising:

generating multiple geographic grids according to obtained location information of the service provider, wherein each geographic grid contains one or more service providers; and

the second region matching the target location information comprises a geographic grid for a region defined by the target location information.

3. The method of claim 2, wherein, when the target location information does not belong to any geographic grid, the second region matching the target location information comprises one or more geographic grids adjacent to the target location information.

4. The method of claim 2, wherein, when the target location information does not belong to any geographic grid, the second region matching the target location information is the first region.

5. The method of any one of claims 2 to 4, wherein the step of generating multiple geographic grids according to location information of the service provider comprises generating, through a GeoHash algorithm, the multiple geographic grids according to the obtained location information of the service provider.
6. The method of any one of claims 2 to 5, further comprising calculating a frequency index of each service provider according to a TF-IDF algorithm.
7. The method of any one of claims 1 to 6, wherein the search popularity comprises the number of searches or a search frequency within a preset time period.
8. The method of any one of claims 1 to 7, wherein the target location information comprises current location information or location information selected by a user.
9. The method of any one of claims 1 to 8, wherein the first region comprises a geographic region defined by the target location information.
10. The method of claim 2 or claim 9, wherein a region defined by the target location information comprises a region that includes the target location.
11. The method of any preceding claim, wherein the preset information of the service provider comprises a name of the service provider.
12. An apparatus for presenting keywords, the apparatus comprising multiple units configured to perform the method of any one of claims 1 to 11.