(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
16 August 2012 (16.08.2012)

WIPO | PCT

(10) International Publication Number
WO 2012/108608 A1

(51) International Patent Classification:
G06F 17/30 (2006.01)

(21) International Application Number:
PCT/KR2011/008062

(22) International Filing Date:
27 October 2011 (27.10.2011)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10-2011-0011661 9 February 2011 (09.02.2011) KR
10-2011-0045567 16 May 2011 (16.05.2011) KR

(71) Applicant *(for all designated States except US)*: **SUNNYLOFT CORP.** [KR/KR]; Bldg.35 Room.214-5, Seoul National University, Sillim-dong, Gwanak-gu, Seoul 151-744 (KR).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **JUNG, Joohwan** [KR/KR]; Bldg.35 Room.214-5, Seoul National University, Sillim-dong, Gwanak-gu, Seoul 151-744 (KR).

(74) Agent: **SONG, Jin-young**; 543-10 The Paperbuilding, 4th floor, Sinsadong, Gangnam-gu, Seoul 135-889 (KR).

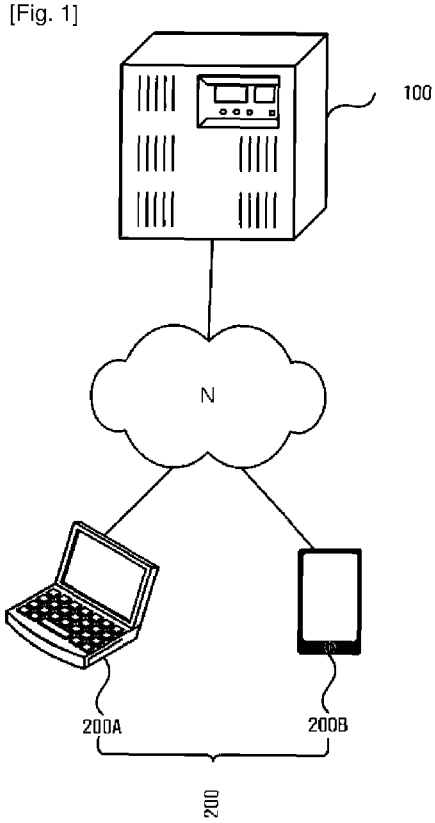
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ,

[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR SEARCHING THROUGH INFORMATION

[Fig. 1]



(57) Abstract: Disclosed herein is a system and method for searching through information. The system includes a server. The server includes an account management unit, an answerer search unit, and a question and answer management unit. The account management unit assigns user accounts to members and then manages user information. The answerer search unit extracts primary acquaintances of the questioner from an acquaintance list registered in the first user account of the questioner, extracts secondary acquaintances of the questioner registered in user accounts of the extracted primary acquaintances, and searches the extracted secondary acquaintances of the questioner for members to which tags corresponding to the received question were attached to locate answerers. The question and answer management unit transfers the received question to second user accounts corresponding to the answerers retrieved by the answerer search unit, and transfers the input answers to the first user account.

WO 2012/108608 A1

UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*

— *with amended claims (Art. 19(1))*

Description

Title of Invention: SYSTEM AND METHOD FOR SEARCHING THROUGH INFORMATION

Technical Field

[1] The present invention relates generally to a system and method for searching through information using the acquaintances of acquaintances and, more particularly, to a system and method for searching through information, which enables the information desired to be obtained using the acquaintances of acquaintances, thereby increasing the amount of knowledge from which answers can be obtained without impairing the reliability of the information.

Background Art

[2] Recently, knowledge search services in which desired information can be obtained by sharing the knowledge of individuals are being widely utilized. A typical method of searching through information is performed in such a way that when a questioner uploads a question to a system so as to obtain an answer, an answerer who has knowledge of the corresponding question uploads an answer to the question. A third party can check the questions and answers of other persons. However, this knowledge search method has the disadvantage of not ensuring the reliability of knowledge because it is impossible to find out the persons who posted answers.

Disclosure of Invention

Technical Problem

[3] Accordingly, the present invention has been made keeping in mind the above problems occurring in the prior art, and an object of the present invention is to provide a system and method for searching through information, which enable answerers who can answer a question to be limited to acquaintances or the acquaintances of acquaintances using a social network in knowledge searching, thereby ensuring the reliability of answers.

[4] Another object of the present invention is to provide a system and method for searching through information, which enables the amount of knowledge from which answers can be obtained in knowledge searching to be extended.

Solution to Problem

[5] In order to accomplish the above objects, the present invention provides a system for searching through information, comprising a server for exchanging data with a plurality of terminals, managing respective acquaintance lists of users of the terminals, and providing a social network service, the server including an account management unit for assigning user accounts to members and then managing user information; an

answerer search unit for, when a question is received from a terminal via a first user account of a questioner, extracting primary acquaintances of the questioner from an acquaintance list registered in the first user account of the questioner, extracting secondary acquaintances of the questioner registered in user accounts of the extracted primary acquaintances, and searching the extracted secondary acquaintances of the questioner for members to which tags corresponding to the received question were attached to locate answerers; and a question and answer management unit for transferring the received question to second user accounts corresponding to the answerers retrieved by the answerer search unit, and, when answers are input by terminals via the second user accounts, transferring the input answers to the first user account.

[6] When a tag from a primary acquaintance of the member included in the acquaintance list registered in the user account of the member is received from a terminal, the account management unit may attach the input tag to the user account of the primary acquaintance of the member.

[7] The account management unit may determine a tag to be registered in the user account of the member based on at least one of user information registered in the user account of the member and an answer list input by the member, and then attach the determined tag to the user account of the member.

[8] The account management unit may create tag information including the input tag and user information of the member who input the tag, and register the tag information in the user account of a primary acquaintance of the member.

[9] The answerer search unit may extract tags related to a keyword included in the input question from a tag ontology including a set of synonyms and a set of related words.

[10] The answerer search unit may search the secondary acquaintances of the questioner for members to which tags corresponding to the received question were attached and/or searches the primary acquaintance of the questioner for members to which tags corresponding to the received question were attached.

[11] The question and answer management unit may store the input question and the answers by registering them in the user account of the questioner and the user accounts of the answerers.

[12] Additionally, in order to accomplish the above objects, the present invention provides a method of searching through information using a system for searching through information, the system including a server for exchanging data with a plurality of terminals, managing acquaintance lists of members who receive service via terminals, and providing a social network service, the method including the steps of (A) receiving a question from a first terminal via a first user account; (B) extracting tags corresponding to the question received at step (A); (C) extracting primary ac-

quaintances of a first member corresponding to the first user account from an acquaintance list of the first user account, extracting secondary acquaintances of the first member from acquaintance lists of the extracted primary acquaintances, and searching the extracted secondary acquaintances for members to which the tags extracted at step (B) were attached; (D) transferring the question received at step (A) to a second terminal registered to correspond to a user account of at least one of the members retrieved at step (C); and (E) when an answer is received from the second terminal which received the question at step (D), transferring the received answer to the first terminal.

[13] Step (B) may include the step of extracting tags related to a keyword included in the input question from a tag ontology including a set of synonyms and a set of related words.

[14] Step (B) may include the step of receiving tags related to the question from the first terminal or the step of providing tags related to a keyword included in the question to the first terminal and causing some tags to be selected from among the provided tags.

[15] Step (D) may include (D1) sending a list of the user accounts, retrieved at step (C), to the first terminal; (D2) causing the first terminal to select at least one user account from the list of the user accounts sent at step (D1); and (D3) transferring the question received at step (A) to a second terminal registered to correspond to the selected user account.

[16] Step (D) may include (D4) assigning priorities to the user accounts retrieved at step (C) based on predetermined criteria, and selecting one or more user accounts from among the retrieved user accounts based on the priorities; and (D5) transferring the question, received at step (A), to a second terminal registered to correspond to at least one of the selected user accounts.

[17] The method may further include the step of recommending at least one of the members retrieved at step (C) as a primary acquaintance.

[18] At step (D), information about a primary acquaintance of the first terminal who attached a related tag, extracted at step (B), to a user account of a member corresponding to the second terminal, together with the question, may be transferred to the second terminal.

[19] The method may further include the step of providing an information set or a past answer list stored in a user account of a member corresponding to the second terminal in response to a tag which was attached to the user account of the member corresponding to the second terminal and which belongs to the related tags extracted at step (B) to the second terminal which received the question at step (D).

[20] The method may further include the step of, when a tagging request from a user account corresponding to a primary acquaintance of the first member to a user account

corresponding to a secondary acquaintance of the first member is received, registering a tag, included in the tagging request, in the user account of the secondary acquaintance.

[21] The method may further include the steps of determining a tag to be registered based on at least one of user information registered in a user account of a member corresponding to a primary acquaintance of the first member and an answer list input by the member corresponding to the primary acquaintance of the first member, and attaching the determined tag to the user account of the member corresponding to the primary acquaintance of the first member.

[22] Step (C) may further include the step of searching user accounts of tertiary acquaintances of the first user, included in acquaintance lists of the secondary acquaintances of the first user, for user accounts to which the tags extracted at step (B) were attached.

Advantageous Effects of Invention

[23] The system and method for searching through information according to the present invention have the following advantages.

[24] That is, the system and method for searching through information according to the present invention have the advantage of enabling answers to questions to be obtained from other persons connected via the acquaintances of a user in a reliable fashion, thereby ensuring the reliability of answers and relying on answerers based on the evaluation of the degrees of satisfaction with past answers of the answerers without directly being acquainted with them.

[25] Furthermore, the system and method for searching through information according to the present invention have the advantage of increasing the range of acquaintances who can provide knowledge, using a social network.

Brief Description of Drawings

[26] The above and other objects, features and advantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

[27] FIG. 1 is a diagram illustrating the overall configuration of a system for searching through information according to an embodiment of the present invention;

[28] FIG. 2 is a block diagram schematically illustrating the configuration of an information search server according to an embodiment of the present invention;

[29] FIG. 3 is a flowchart illustrating a process of attaching a tag to an acquaintance in a method of searching through information according to an embodiment of the present invention;

[30] FIG. 4 is a flowchart illustrating a process of making a question and an answer using

tags in the method of searching through information according to an embodiment of the present invention; and

[31] FIG. 5 is a diagram illustrating an example of an acquaintance network which is used to illustrate an embodiment of the present invention.

Mode for the Invention

[32] Reference now should be made to the different drawings, throughout which the same reference numerals are used to designate the same or similar components.

[33] The present invention will be described in detail below with reference to the accompanying drawings. Repetitive descriptions and descriptions of known functions and constructions which have been deemed to make the gist of the present invention unnecessarily vague will be omitted below. The embodiments of the present invention are provided in order to fully describe the present invention to a person having ordinary skill in the art. Accordingly, the shapes, sizes, etc. of elements in the drawings may be exaggerated to make the description clear.

[34] The present invention provides a method of searching through information using a Social Network Service (SNS) system. Accordingly, the present invention basically includes the process of, when a user subscribes to a social network service, creating the account of the user and registering the acquaintances (friends) of the user, thereby establishing personal connections of the user. Such a user manages his or her account and communicates with his or her acquaintances, using a social network service.

[35] The account of a user may be created during the performance of the process of the user subscribing to a social network service by directly entering his or her user information, or may be created by automatically providing terminal information (for example, a mobile communication terminal number, or the like) to a server for providing a social network service when an application program is executed and then creating an account using the terminal information.

[36] The registration of an acquaintance of each account user may be performed during the performance of the process of the account user applying for the registration of an acquaintance using the ID or e-mail of another user and the user approving the application, or the process of automatically including an e-mail address or a telephone number in an address directory or a telephone directory previously stored in the terminal of an account user in the form of the acquaintance list of the account user. That is, the registration of an acquaintance may be performed in a bidirectional or unidirectional fashion.

[37] A user who was registered as an acquaintance is different from a user who is not an acquaintance in that a user can view the profile, message board and photos of the acquaintance and can allow the acquaintance to view posts registered in his or her

account.

[38] Embodiments of the present invention enable the searches of reliable information to be conducted using a server for providing the above-described social network service and a plurality of terminals. To describe the embodiments of the present invention in greater detail, the accompanying drawings will be referred to.

[39] FIG. 1 is a diagram illustrating the overall configuration of a system for searching through information according to an embodiment of the present invention. FIG. 2 is a block diagram schematically illustrating the configuration of an information search server according to an embodiment of the present invention. FIG. 3 is a flowchart illustrating a process of attaching a tag to an acquaintance in a method of searching through information according to an embodiment of the present invention. FIG. 4 is a flowchart illustrating a process of making a question and an answer using tags in the method of searching through information according to an embodiment of the present invention. FIG. 5 is a diagram illustrating an example of an acquaintance network which is used to illustrate an embodiment of the present invention.

[40] As shown in FIG. 1, the system for searching through information according to the embodiment of the present invention includes an information search server 100 and a plurality of user terminals 200, which exchange data with each other over a network N. Here, the server 100 functions to provide a social network service, such as that described above. Furthermore, the terminals 200 are personalized information processing devices, and may be, for example, personal computers, portable mobile communication terminals, portable computers or the like.

[41] The server 100 receives requests from the plurality of terminals 200 and provides service-related pages, thereby enabling the users of the terminals 200 to share postings or exchange messages with their acquaintances.

[42] In the following description, in the social network service provided by the server 100, an acquaintance who is directly included in an acquaintance list registered in the user accounts of each terminal 200 will be referred to as a 'primary acquaintance,' while an acquaintance of a primary acquaintance included in an acquaintance list, who is not a primary acquaintance, will be referred to as a 'secondary acquaintance.'

[43] As shown in FIG. 2, the server 100 includes an account management unit 10. The account management unit 10 manages personal information including the identification and authentication information of each user, and stores the personal information of each user account in a user database 20. The server 100 then retrieves and provides the information stored in the user database 20 when necessary.

[44] Furthermore, the account management unit 10 associates tag information, which was attached to a user by another user who has the user as a primary acquaintance, with a corresponding user account, and stores and manages it in the user database 20. That is,

each user may attach a desired tag to a primary acquaintance registered in the acquaintance list of his or her account. The account management unit 10 registers the attached tag in the account of the corresponding primary acquaintance.

[45] Alternatively, the account management unit 10 may directly attach a tag to each user. That is, the account management unit 10 may create a tag corresponding to each user based on the user information registered in the account of each user and register it in the account of the corresponding user. Furthermore, the account management unit 10 may create, store and manage an answer list, which is a collection of answers registered by a corresponding user, in association with the account of the user, or may create a tag corresponding to a user based on answers included in an answer list and register it in the account of the user. Here, when a tag is created based on user information and/or an answer list, an appropriate tag may be extracted by analyzing the context of information included in the user information or answer data included in the answer list. This may be performed by an answerer search unit 30 (which will be described later) by referring to a tag ontology 40 (which will be described later).

[46] Here, a tag registered by each user in the account of his or her primary acquaintance or registered directly by the server 100 may be, for example, a keyword related to a field of interest or specialty. This will be used to search for an answerer who is appropriate to a question about information which is desired by a user.

[47] Furthermore, the server 100 includes an answerer search unit 30. The answerer search unit 30 functions to receive data about questions managed by a question and answer management unit 60 (which will be described later), to extract question-related tags, and to search for a user who will be an answerer using the extracted tags. In contrast, depending on the embodiment, it is possible for a user to directly input or select question-related tags rather than to automatically extract tags from questions.

[48] For this purpose, the answerer search unit 30 may refer to the tag ontology 40. The tag ontology 40 may include a set of synonyms to be used to perform tag standardization and a set of related tags to be used to represent the correlations between tags. Here, the answerer search unit 30 analyzes text included in question data and extracts one or more related tags from the tag ontology 40. Question data may be composed simply of a single word or may be composed of a sentence. Related tags can be extracted by searching for the synonyms for text included in question data and also analyzing other words highly related to retrieved synonyms. When two or more related tags are extracted, the answerer search unit 30 may send the extracted tags to the terminal 200 which sent the question data, cause the terminal 200 to select one or more tags and use only the selected tags to search for an answerer.

[49] Furthermore, the answerer search unit 30 may search for a user who will be an appropriate answerer, using the extracted, related tags. The answerer search unit 30 first

searches the accounts of all users, that is, the primary or secondary acquaintances of the user of the terminal 200 which input the question (hereinafter, 'questioner'), while referring to the correlations between user accounts stored in the network database 50. That is, the range of search for a answerer is limited to the primary and secondary acquaintances of a questioner. Meanwhile, since it is possible to pose a direct question because it is possible to know the field or interest or the specialty of each primary acquaintance, the range of search for answers may be limited only to secondary acquaintances.

[50] Thereafter, the answerer search unit 30 searches for users to which the related tags extracted with respect to the question were attached by referring to the tag information registered in the accounts of the primary and secondary acquaintances of the questioner from the user database 20. That is, the primary and secondary acquaintances of the questioner are searched for a user to which an extracted, related tag was attached. Thereafter, the answerer search unit 30 transfers the account of the user, retrieved as the answerer, to the question and answer management unit 60.

[51] When a question is received from a questioner, the question and answer management unit 60 stores received question data in the question/answer database 70, and transfers the stored question data to the answerer search unit 30, so that an appropriate answerer can be searched for.

[52] Furthermore, when the answerer search unit 30 transmits the user account of a retrieved answerer, the question and answer management unit 60 receives the user account and registers the question data in the user account of the answerer. Alternatively, it may be possible to create an instance message including question data and send the message to the terminal 200 of the answerer in real time.

[53] Furthermore, when answer data for the question is received from the terminal 200 of the answerer, the question and answer management unit 60 stores the received answer data in the question/answer database 70 and registers the stored answer data in the user account of the questioner related to the corresponding answer. Alternatively, it may be possible to create an instance message including answer data and send the message to the terminal 200 of the questioner in real time.

[54] Meanwhile, the question and answer data stored in the question/answer database 70 may include information about the questioner and the answerer. This data may be used to provide the question list or answer list of a corresponding user to each user account, or may be used to make an answer similar to a previously made answer.

[55] The procedure of registering a tag in the method of searching through information using the information search server 100 and the terminals 200 according to the embodiment of the present invention, which is configured as described above, will now be described in detail. As shown in FIG. 3, a first user selects a primary acquaintance (a

second user) from an acquaintance list, registered in the account of the first user, using his or her own first terminal 200A at step S100, and then generates a tag related to the field of interest or specialty of the selected second user at step S110.

[56] When the first user generates a tag related to the second user at step 110, the server 100 may additionally provide one or more tags, similar or highly related to the tag directly input by the first user, using the tag ontology 40, so that all of the provided tags are tagged to the second user or so that some selected tags may be tagged thereto. Furthermore, it may be possible to generate only a tag that is directly input by the first user.

[57] Thereafter, the account management unit 10 registers the tag generated at step 110 in the second user account of the user database 20, in which case information about the first user who input the tag is associated with the tag and then they are stored as a single piece of tag information at step S120. Accordingly, the second user may check who tagged a tag to him or herself in his or her account, or may edit the account, for example, by deleting a part thereof.

[58] An example of the above case will now be described with reference to FIG. 5. In FIG. 5, although a network of users may be configured in a complicated manner, like a net, it is illustrated as having a tree structure to provide a clearer description. That is, for example, 'G' who is one of the primary acquaintances of primary acquaintance 'B' of a 'person in question' may be a primary acquaintance of 'A' who is another primary acquaintance of the person in question. However, the following description will be given of the case where the correlations between persons cross each other are excluded from within the range, so as not to make the gist of the present invention obscure.

[59] For example, the 'person in question' who is a user of a social network service may perform tagging on A, B and C who were registered as primary acquaintances. In this case, the 'person in question' may tag keywords related to the fields of knowledge of A, B and C, such as the fields of interest or the specialties or hobbies of A, B and C, who were registered in the account of the person in question as primary acquaintances.

[60] For example, if A, that is, a primary acquaintance, is a wine lover and has sufficient knowledge of wine, the person in question may attach the tag 'wine' to A. If B has a lot of information about famous restaurants, the person may attach the tag 'famous restaurant' to B. If C is a TOEIC lecturer and has information related to TOEIC, the person in question may attach the tag 'TOEIC' to C.

[61] In the same manner, each of the other users as well as the person in question may tag keywords related to the fields of interest or specialties, to at least some of persons who were registered in his or her user account as primary acquaintances. Furthermore, each person who registered the 'person in question' as a primary acquaintance may tag a keyword related to the person in question to the 'person in question.'

[62] In this manner, it may be possible to tag a keyword related to the field of knowledge of each user, to the user.

[63] The account management unit 10 registers tag information in each user account, so that it can be stored in the user database 20. The account management unit 10 may store each tag together with information about the user who attached the tag.

[64] The tags registered in the user accounts as described above may be managed by the corresponding users. For example, the users may approve, reject and delete the tags tagged to their accounts. It will be apparent that the users can attach tags to their own accounts by themselves.

[65] Meanwhile, referring to FIG. 4, the method of searching through information according to the embodiment of the present invention will now be described sequentially. A question is received from the terminal (first user terminal 200A) of a questioner at step S200. The question and answer management unit 60 which has received the question from the first user terminal 200A stores question data and then performs the process of searching for an appropriate answerer.

[66] That is, the process of extracting tags related to the question is performed at step S210. As described above, it is possible to search for all synonyms and highly related words using the tag ontology 40.

[67] Once the related tags have been extracted, a search is conducted at step S220 to locate an answerer (second user) to which at least one of all of the extracted related tags or some of the extracted related tags, selected by the first user terminal 200A, was attached. In this case, the range of the search for the answerer may be limited to a range including only the primary and secondary acquaintances of a questioner.

[68] Depending on the embodiment, the range of the search for an answerer may be extended to a range including users registered in the acquaintance lists of the secondary acquaintances, that is, the tertiary acquaintances of the questioner. Since further extension may not guarantee the reliability of answers, the range may be limited to the range including acquaintances up to tertiary acquaintances. Furthermore, depending on the embodiment, only when a user to which a related tag was attached is not retrieved within the range including secondary acquaintances, the range of a search for an answerer may be extended to the range including tertiary acquaintances.

[69] Once one or more answerers have been retrieved at step 220, question data is sent to all of the answerers or some of the answerers selected by the first user terminal 200A at step S230. For this purpose, when a plurality of answerers is retrieved, a list of the plurality of answerers may be sent to the first user terminal 200A, so that some of them can be selected. It is possible to send some of a plurality of retrieved answerers rather than including the plurality of retrieved answerers in a list and sending the list to the first user terminal 200A. In this case, it may be possible to provide priorities to a

plurality of retrieved answerers in accordance with specific criteria and include only higher-priority answerers in a list. For example, in an embodiment of the present invention, when questions and answers are exchanged between a plurality of users, a questioner may score answerers' answers, and the sums or averages of scores may be criteria that are used to determine priorities. Furthermore, if a plurality of retrieved answerers includes one or more answerers who registered answers to questions of a questioner, it may be possible to include only the answerers who exchanged questions and answers in the past in an answerer list which will be sent to the first user terminal 200A. It may be possible to determine the priorities of answerers based on the numbers of questions and answers exchanged in the past.

[70] The sequence of answerers included in an answerer list to be displayed on the first user terminal 200A may be determined using the above-described methods of determining priorities.

[71] In this case, question data may be directly sent to the second user terminal 200B of an answerer in the form of an instance message, or question data is registered in the account of an answerer and then transferred to the answerer when the answerer accesses the social network service provided by the server 100. Furthermore, an answerer may receive a question via e-mail or a text message.

[72] Meanwhile, after the question has been sent to the answerer, the server 100 provides an information set stored in the user account of the answerer with respect to a tag related to a keyword included in the question or provides a past answer list for the related tag to the terminal of the answerer when the answerer reads the question or makes an answer to the question, so that the answerer can easily suggest an answer to the question. Here, the information set may be information that was collected and stored by the answerer, and the past answer list may be a list of answers which were registered by the answerer for previously received questions.

[73] When answer data for the sent question is received from the second user terminal 200B at step S240, the server 100 transfers the received answer data to the first user terminal 200A of the questioner, so that the questioner can obtain the desired answer at step S250. In this case, when the answer data is transferred to the first user terminal 200A, it may be immediately transferred in the form of an instance message, or may be registered in the account of the questioner and then transferred to the questioner when the questioner accesses the social network service provided by the server 100. Furthermore, the answer may be transferred via e-mail or a text message.

[74] This will now be described in a clearer manner by means of an example. When a person in question wants to ask a reliable person a specific question and to obtain an answer, the person in question may perform a search by inputting the question or a keyword related thereto in the social network service provided by the server 100. In

this case, the server 100 searches through information about the accounts of primary acquaintances, registered in the account of the person in question, for the acquaintances of my primary acquaintances, that is, secondary acquaintances, and then searches tags, tagged to the accounts of the retrieved users, for tags related to the input question or keyword. In this case, it may be possible to search information about the tags of secondary acquaintances in a similar range as well as in an identical range using the input keyword and the tag ontology 40.

[75] After searching for the related tags, the server 100 may transfer information about the tags related to the input question or keyword to the terminal of the person in question. For example, when a person in question wants to cook a new dish and learn how to cook it from a reliable person but there is no acquaintance who is an expert on the cooking, the person may access the server 100 and search for information by entering the keyword 'cooking.' In this case, the server 100 searches tags registered in the accounts of the secondary acquaintances D, E, F, G, H, I, J, K, and L for tags related to 'cooking' and then sends results of the search to the terminal of the person in question. As described above, the primary acquaintances may also be included within the range of the search.

[76] In this case, when a tag related to a question or a keyword input to the terminal 200 by the person in question, that is, a tag related to 'cooking,' exists in the account of a secondary acquaintance, the server 100 may show only the tag and allow the person in question to add a specific question to the corresponding tag and upload it. That is, it may be possible to hide 'L' in which the tag 'cooking' was registered, to disclose the tag itself and to transfer a corresponding question to 'L' in the form of a message when the person in question sends the question.

[77] Alternatively, it may be possible to disclose secondary acquaintance 'L' in which a corresponding tag was registered, and to enable the person in question to directly send a question-related message to 'L' and receive an answer. Alternatively, it may be possible to disclose secondary acquaintance 'L,' and to allow the person in question to publicly upload a question to a message board assigned to the account of 'L.' When the secondary acquaintance is disclosed as described above, it may be possible to provide a menu item that recommends that the corresponding secondary acquaintance be registered as a primary acquaintance.

[78] When secondary acquaintances in which the related tag was registered are multiple in number and only the tag itself is disclosed to the person in question, it may be possible to send the same question message to the secondary acquaintances in which the corresponding tag was registered. When the secondary acquaintances in which the related tag was registered are disclosed, it may be possible to display all of the retrieved secondary acquaintances on the terminal of the person in question.

[79] In this case, the question may be transferred in the form of a message or a post, as described above. The fact that such a question has been transferred to a secondary acquaintance may or may not be open to another person. Such questions sent may be registered in the question list of the account of the person in question or a secondary acquaintance, so that only the questions can be managed.

[80] If the person in question transfers a question message to the secondary acquaintance 'L' and an answer is input by 'L,' the answer may be transferred to the person in question in the form of a message or may be posted on the message board of 'L' in the form of a post.

[81] In this case, when the question is transferred to the secondary acquaintance, information about the primary acquaintance may be included in the question so as to determine the primary acquaintance via which the question was transferred. For example, when the person in question transfers a question about cooking to 'L,' the indication of the person in question transferring the question via 'C' may be included in a question message transferred to 'L' or in a post. Accordingly, since the question has been transferred via 'C' who is acquainted with 'L,' there is the effect of 'L' making a more reliable answer and transferring it to the person in question. Meanwhile, when, for example, 'L' was registered in the account of 'B' as well as in the account of 'C' as an acquaintance, 'B' tagged the tag 'chef' to 'L' and 'C' tagged the tag 'cooking' to 'L,' the keyword 'cooking' entered by the person in question is related to both of the two tags, and therefore the indication of the question having been transferred via both 'B' and 'C' may be provided to 'L.' Furthermore, when 'B' attached the tag 'song' to 'L,' 'C' attached the tag 'cooking' to 'L' and a person in question performs a search for 'cooking' and transfers a cooking-related question to 'L,' the indication of the question having been transferred only via 'C' who attached a tag related to the question or the indication of the question having been transferred via B' as well as 'C' may be provided to 'L'. For example, the indication "a question received from the person in question who is a friend of 'B' and 'C'", which can clearly indicate the path of the question, may be provided to 'L.'

[82] Meanwhile, an embodiment of the present invention will now be described based on 'A,' rather than based on the 'person in question.' When 'A' enters a desired question and issues a search command, tags registered in the accounts of the acquaintances M, N, O, P, Q, R, S, T and U of the primary acquaintances D, E and F of 'A' are searched to locate tags related to the question or a keyword entered by 'A' and to locate the tags themselves and a list of users to which the tags were attached are provided to the terminal of 'A,' so that reliable answers can be obtained from persons who are acquainted with the direct acquaintances of 'A.'

[83] That is, as described above, the present invention is configured to extend the range of

knowledge search by extending the range of search to a range including not only the acquaintances of the person in question but also the acquaintances of the acquaintances, and is configured to ask a question of only primary and secondary acquaintances and obtain answers from them, thereby increasing the reliability of the answers.

[84] In this case, when the accounts of secondary acquaintances are searched to locate tags related to a keyword entered by a person in question, tags may be searched for within the range of tags attached by the acquaintances of the person in question or tag information attached to secondary acquaintances by persons other than acquaintances may be also searched through.

[85] Meanwhile, the user of each account may check and manage tag information tagged to the user by other users who registered the user as an acquaintance. For example, when other persons attached the tags 'patent,' 'patent attorney' and 'camera' to the 'person in question,' the person in question can perform management in such a way as to delete tags which are not related to the person in question or are related to questions which cannot be answered reliably or to limit the range of exposure of tags only to acquaintances or prevent the tags from being disclosed to the public so that they cannot be searched by other persons. For example, when an acquaintance attached the tag 'camera' to the account of a person in question in spite of the fact that the person in question has no knowledge of 'camera,' the person in question can prevent unnecessary questions from being transferred by deleting the tag 'camera.'

[86] In this case, information about the acquaintance who input each tag may be indicated in the tag. Accordingly, each piece of tag information may include a keyword which was entered as a tag and information about the user who entered the corresponding tag.

[87] Furthermore, when a person in question makes an answer to another person's question, he or she may set the answer so that the answer can be prevented from being disclosed to the public.

[88] That is, the person in question may view and manage lists of tags, received questions, sent answers, sent questions and received answers to the sent questions.

[89] The above-described method of searching through information combined with a social network service may be implemented by installing an application program programmed to communicate with the server 100 on the terminal 200.

[90] For example, when a questioner enters a question in the case where the range of answerers includes primary and secondary acquaintances, tags which were attached to primary acquaintances by themselves, tags which were attached to primary acquaintances by the acquaintances of primary acquaintances, and tags which were attached to secondary acquaintances by primary acquaintances are searched to locate tags related to a keyword included in the question, and primary and/or secondary ac-

quaintances to which the related tags were attached may be selected as answerers. That is, it is possible to search information in such a way as to rely on tags directly attached by primary acquaintances and not to rely on tags attached by secondary acquaintances who are not directly acquainted with the questioner.

[91] Although the preferred embodiments of the present invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

Claims

[Claim 1] A system for searching through information, comprising a server for exchanging data with a plurality of terminals, managing respective acquaintance lists of users of the terminals, and providing a social network service,
the server comprising:
an account management unit for assigning user accounts to members and then managing user information;
an answerer search unit for, when a question is received from a terminal via a first user account of a questioner, extracting primary acquaintances of the questioner from an acquaintance list registered in the first user account of the questioner, extracting secondary acquaintances of the questioner registered in user accounts of the extracted primary acquaintances, and searching the extracted secondary acquaintances of the questioner for members to which tags corresponding to the received question were attached to locate answerers; and
a question and answer management unit for transferring the received question to second user accounts corresponding to the answerers retrieved by the answerer search unit, and, when answers are input by terminals via the second user accounts, transferring the input answers to the first user account.

[Claim 2] The system as set forth in claim 1, wherein the account management unit, when a tag from a primary acquaintance of the member included in the acquaintance list registered in the user account of the member is received from a terminal, attaches the input tag to a user account of the primary acquaintance of the member.

[Claim 3] The system as set forth in claim 1, wherein the account management unit determines a tag to be registered in the user account of the member based on at least one of user information registered in the user account of the member and an answer list input by the member, and then attaches the determined tag to the user account of the member.

[Claim 4] The system as set forth in claim 2, wherein the account management unit creates tag information including the input tag and user information of the member who input the tag and registers the tag information in a user account of a primary acquaintance of the member.

[Claim 5] The system as set forth in claim 1, wherein the answerer search unit extracts tags related to a keyword included in the input question from a

tag ontology including a set of synonyms and a set of related words.

[Claim 6] The system as set forth in claim 1 or 5, wherein the answerer search unit searches the secondary acquaintances of the questioner for members to which tags corresponding to the received question were attached and/or searches the primary acquaintance of the questioner for members to which tags corresponding to the received question were attached.

[Claim 7] The system as set forth in claim 1 or 5, wherein the question and answer management unit stores the input question and the answers by registering them in the user account of the questioner and the user accounts of the answerers.

[Claim 8] A method of searching through information using a system for searching through information, the system including a server for exchanging data with a plurality of terminals, managing acquaintance lists of members who receive service via terminals, and providing a social network service, the method comprising the steps of:
(A) receiving a question from a first terminal via a first user account;
(B) extracting tags corresponding to the question received at step (A);
(C) extracting primary acquaintances of a first member corresponding to the first user account from an acquaintance list of the first user account, extracting secondary acquaintances of the first member from acquaintance lists of the extracted primary acquaintances, and searching the extracted secondary acquaintances for members to which the tags extracted at step (B) were attached;
(D) transferring the question received at step (A) to a second terminal registered to correspond to a user account of at least one of the members retrieved at step (C); and
(E) when an answer is received from the second terminal which received the question at step (D), transferring the received answer to the first terminal.

[Claim 9] The method as set forth in claim 8, wherein step (B) comprises the step of extracting tags related to a keyword included in the input question from a tag ontology including a set of synonyms and a set of related words.

[Claim 10] The method as set forth in claim 8, wherein step (B) comprises the step of receiving tags related to the question from the first terminal or the step of providing tags related to a keyword included in the question to the first terminal and causing some tags to be selected from among the

provided tags.

[Claim 11] The method as set forth in claim 8, wherein step (D) comprises:
(D1) sending a list of the user accounts, retrieved at step (C), to the first terminal;
(D2) causing the first terminal to select at least one user account from the list of the user accounts sent at step (D1); and
(D3) transferring the question received at step (A) to a second terminal registered to correspond to the selected user account.

[Claim 12] The method as set forth in claim 8, wherein step (D) comprises:
(D4) assigning priorities to the user accounts retrieved at step (C) based on predetermined criteria, and selecting one or more user accounts from among the retrieved user accounts based on the priorities; and
(D5) transferring the question, received at step (A), to a second terminal registered to correspond to at least one of the selected user accounts.

[Claim 13] The method as set forth in claim 8, further comprising the step of recommending at least one of the members retrieved at step (C) as a primary acquaintance.

[Claim 14] The method as set forth in claim 8, wherein at step (D), information about a primary acquaintance of the first terminal who attached a related tag, extracted at step (B), to a user account of a member corresponding to the second terminal, together with the question, is transferred to the second terminal.

[Claim 15] The method as set forth in claim 8, further comprising the step of providing an information set or a past answer list stored in a user account of a member corresponding to the second terminal in response to a tag which was attached to the user account of the member corresponding to the second terminal and which belongs to the related tags extracted at step (B) to the second terminal which received the question at step (D).

[Claim 16] The method as set forth in claim 8, further comprising the step of, when a tagging request from a user account corresponding to a primary acquaintance of the first member to a user account corresponding to a secondary acquaintance of the first member is received, registering a tag, included in the tagging request, in the user account of the secondary acquaintance.

[Claim 17] The method as set forth in claim 8, further comprising the steps of determining a tag to be registered based on at least one of user in-

formation registered in a user account of a member corresponding to a primary acquaintance of the first member and an answer list input by the member corresponding to the primary acquaintance of the first member, and attaching the determined tag to the user account of the member corresponding to the primary acquaintance of the first member.

[Claim 18] The method as set forth in claim 8, wherein step (C) further comprises the step of searching user accounts of tertiary acquaintances of the first user, included in acquaintance lists of the secondary acquaintances of the first user, for user accounts to which the tags extracted at step (B) were attached.

AMENDED CLAIMS
received by the International Bureau on 02 July 2012 (02.07.12)

Claims

[Claim 1] A system for searching through information, comprising a server for exchanging data with a plurality of terminals, managing respective acquaintance lists of users of the terminals, and providing a social network service,
the server comprising:
an account management unit for assigning user accounts to members and then managing user information, and for, when a keyword related to a field of interest or specialty of a primary acquaintance included in the acquaintance list registered in the user account of a member is received from a terminal, attaching the input keyword to a user account of the primary acquaintance of the member as a tag;
an answerer search unit for, when a question is received from a terminal via a first user account of a questioner, extracting primary acquaintances of the questioner from an acquaintance list registered in the first user account of the questioner, extracting secondary acquaintances of the questioner registered in user accounts of the extracted primary acquaintances, and searching the extracted secondary acquaintances of the questioner for members to which tags corresponding to the received question were attached by members whose acquaintance list includes the extracted secondary acquaintances of the questioner to locate answerers; and
a question and answer management unit for transferring the received question to second user accounts corresponding to the answerers retrieved by the answerer search unit, and, when answers are input by terminals via the second user accounts, transferring the input answers to the first user account.

[Claim 2] The system as set forth in claim 1, wherein the answerer search unit locates members corresponding to user accounts to which the tags corresponding to the received question were attached by primary acquaintances of the questioner as answerers.

[Claim 3] The system as set forth in claim 1, wherein the account management unit determines a tag to be registered in the user account of the member based on at least one of user information registered in the user account of the member and an answer list input by the member, and then attaches the determined tag to the user account of the member.

[Claim 4] The system as set forth in claim 1, wherein the account management unit creates tag information including the input keyword and user information of the member who input the keyword and registers the tag information in a user account of a primary acquaintance of the member.

[Claim 5] The system as set forth in claim 1, wherein the answerer search unit extracts tags related to a keyword included in the input question from a tag ontology including a set of synonyms and a set of related words.

[Claim 6] The system as set forth in claim 1 or 5, wherein the answerer search unit searches the secondary acquaintances of the questioner for members to which tags corresponding to the received question were attached and/or searches the primary acquaintance of the questioner for members to which tags corresponding to the received question were attached to locate answerers.

[Claim 7] The system as set forth in claim 1, wherein the question and answer management unit stores the input question and the answers by registering them in the user account of the questioner and the user accounts of the answerers.

[Claim 8] A method of searching through information using a system for searching through information, the system including a server for exchanging data with a plurality of terminals, managing acquaintance lists of members who receive service via terminals, and providing a social network service, the method comprising the steps of:

(A) receiving a question from a first terminal via a first user account;

(B) extracting tags corresponding to the question received at step (A);

(C) extracting primary acquaintances of a first member corresponding to the first user account from an acquaintance list of the first user account, and extracting secondary acquaintances of the first member from acquaintance lists of the extracted primary acquaintances;

(D) searching the secondary acquaintances of the first member extracted at step (C) for members to which the tags extracted at step (B) were attached, based on keywords related to a field of interest or specialty of the secondary acquaintances of the first member input by members whose acquaintance list includes the secondary acquaintances of the first member;

(E) transferring the question received at step (A) to a second terminal registered to correspond to a user account of at least one of the members retrieved at step (D); and

(F) when an answer is received from the second terminal which received the question at step (E), transferring the received answer to the first terminal.

[Claim 9] The method as set forth in claim 8, wherein step (B) comprises the step of extracting tags related to a keyword included in the input question from a tag ontology including a set of synonyms and a set of related words.

[Claim 10] The method as set forth in claim 8, wherein step (B) comprises the step of receiving tags related to the question from the first terminal or the step of providing tags related to a keyword included in the question to the first terminal and causing some tags to be selected from among the provided tags.

[Claim 11] The method as set forth in claim 8, wherein step (E) comprises:
(E1) sending a list of the user accounts, retrieved at step (D), to the first terminal;
(E2) causing the first terminal to select at least one user account from the list of the user accounts sent at step (E1); and
(E3) transferring the question received at step (A) to a second terminal registered to correspond to the selected user account.

[Claim 12] The method as set forth in claim 8, wherein step (E) comprises:
(E4) assigning priorities to the user accounts retrieved at step (D) based on predetermined criteria, and selecting one or more user accounts from among the retrieved user accounts based on the priorities; and
(E5) transferring the question, received at step (A), to a second terminal registered to correspond to at least one of the selected user accounts.

[Claim 13] The method as set forth in claim 8, further comprising the step of recommending at least one of the members retrieved at step (D) as a primary acquaintance.

[Claim 14] The method as set forth in claim 8, wherein at step (E) comprises,
(E1) extracting at least one secondary acquaintance to which the tags extracted at step (B) was attached by the first acquaintances of the first member, among the secondary acquaintances searched for at step (D); and
(E2) transferring the question, received at step (A), together with information about a primary acquaintance of the first terminal who attached a related tag, extracted at step (B), to a second terminal registered to correspond to the user account of secondary acquaintance, extracted at step (E1).

[Claim 15] The method as set forth in claim 8, further comprising the step of providing an information set or a past answer list stored in a user account of a member corresponding to the second terminal in response to a tag which was attached to the user account of the member corresponding to the second terminal and which belongs to the related tags extracted at step (B) to the second terminal which received the question at step (E).

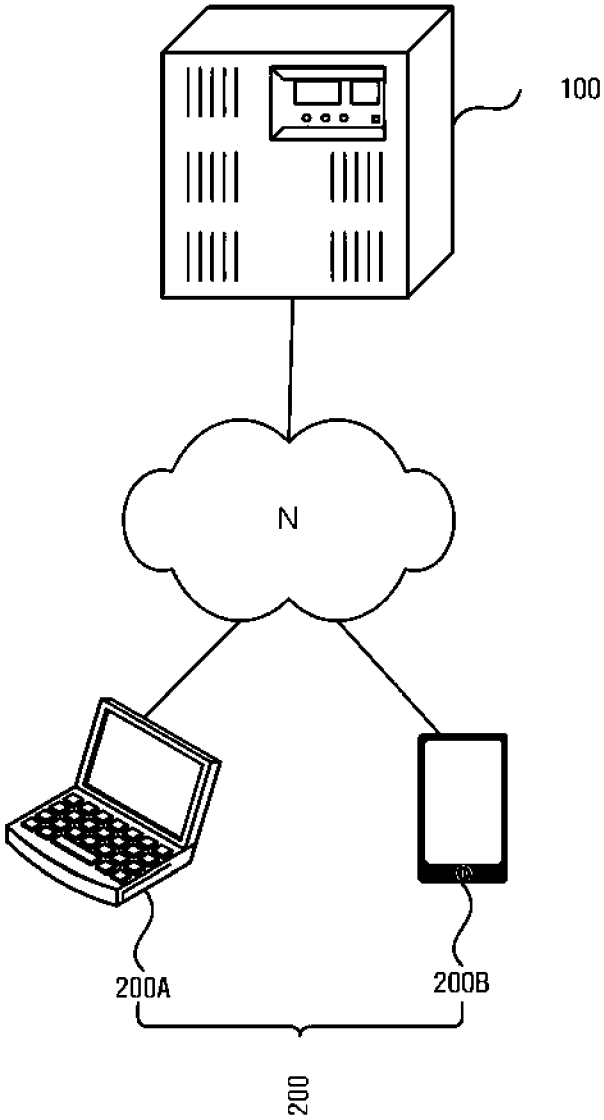
[Claim 16] The method as set forth in claim 8, further comprising the step of, when a tagging request from a user account corresponding to a primary acquaintance of the first member to a user account corresponding to a secondary acquaintance of the first member is received, registering a keyword, included in the tagging request, in the user account of the secondary acquaintance, as a tag.

[Claim 17] The method as set forth in claim 8, further comprising the steps of determining a tag to be registered based on at least one of user information

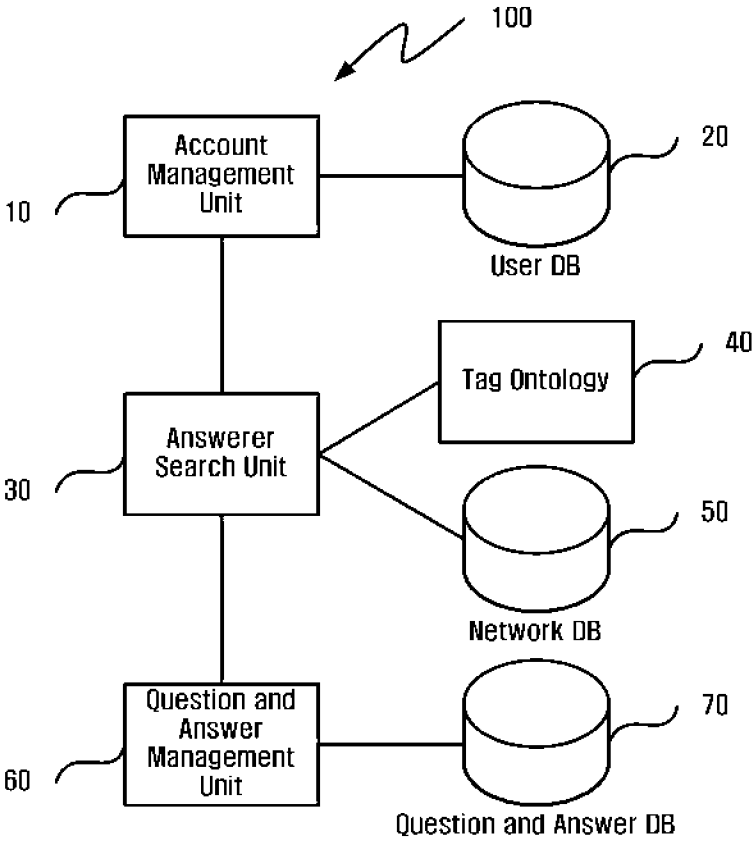
registered in a user account of a member corresponding to a primary acquaintance of the first member and an answer list input by the member corresponding to the primary acquaintance of the first member, and attaching the determined tag to the user account of the member corresponding to the primary acquaintance of the first member.

[Claim 18] The method as set forth in claim 8, wherein step (E) further comprises the step of searching user accounts of tertiary acquaintances of the first member, included in acquaintance lists of the secondary acquaintances of the first user, for user accounts to which the tags extracted at step (B) were attached and transferring the question received at step (A) to a second terminal registered to correspond to at least one searched user account.

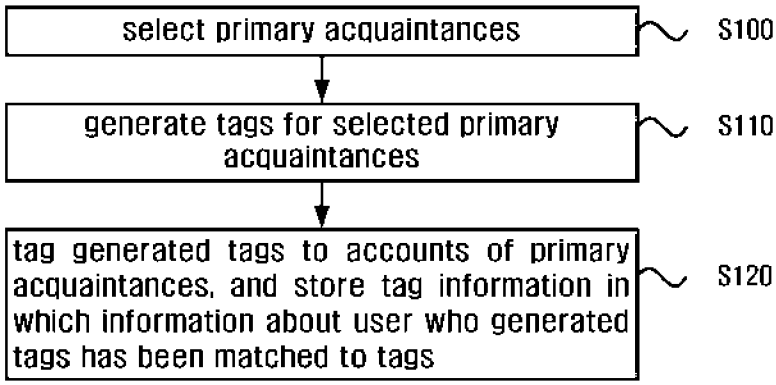
[Fig. 1]



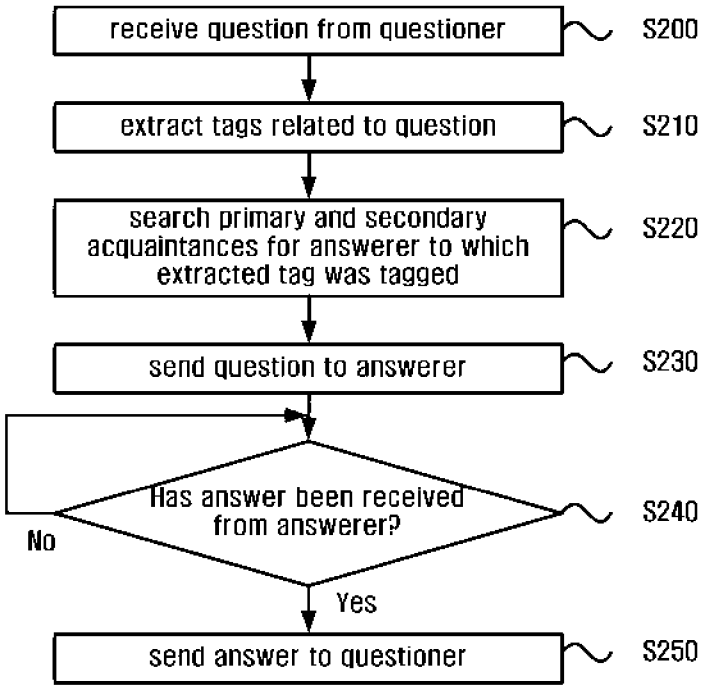
[Fig. 2]


100
Account Management Unit
10
20
User DB
Tag Ontology
40
Answerer Search Unit
30
50
Network DB
Question and Answer Management Unit
60
70
Question and Answer DB

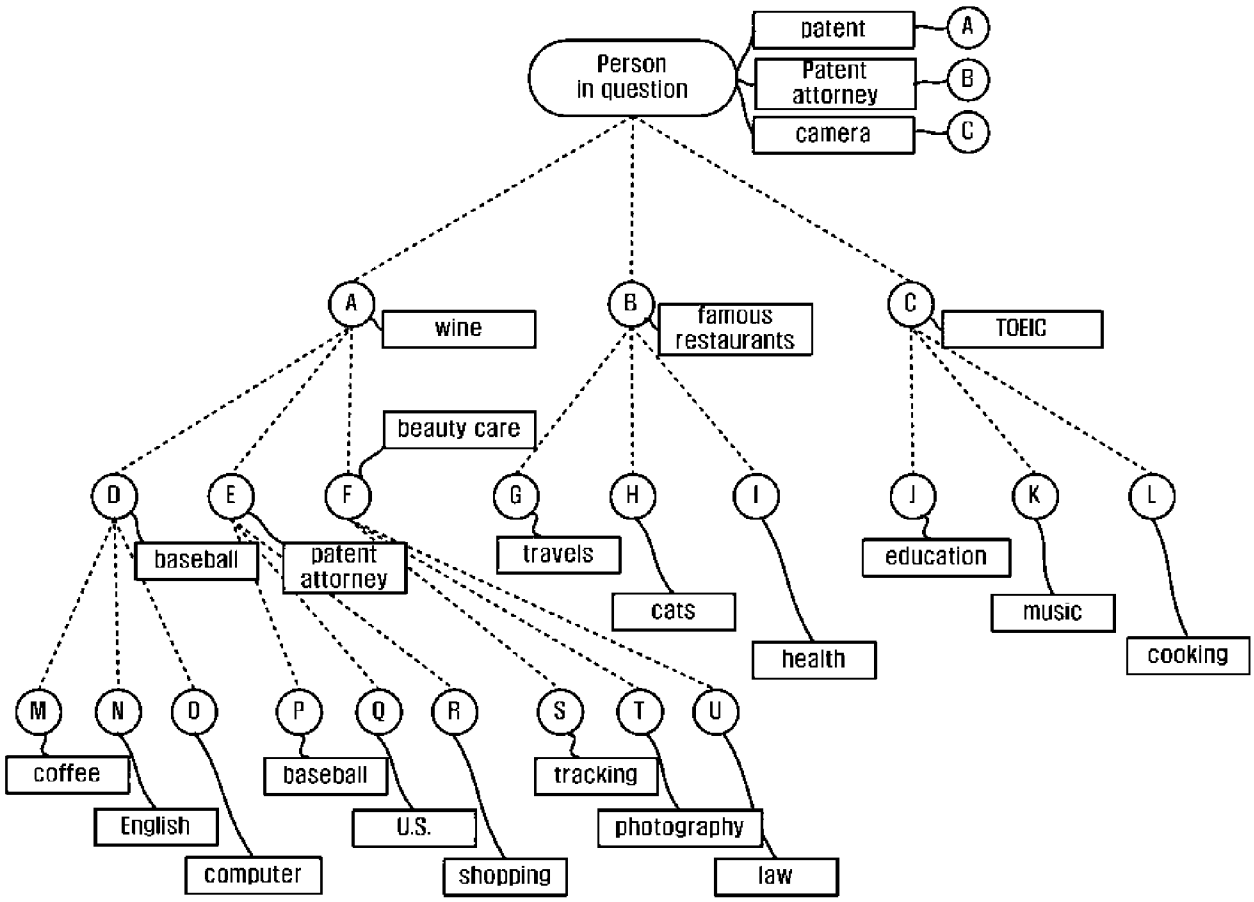
[Fig. 3]


select primary acquaintances
S100
generate tags for selected primary acquaintances
S110
tag generated tags to accounts of primary acquaintances, and store tag information in which information about user who generated tags has been matched to tags
S120

[Fig. 4]


receive question from questioner
S200
extract tags related to question
S210
search primary and secondary acquaintances for answerer to which extracted tag was tagged
S220
send question to answerer
S230
Has answer been received from answerer?
S240
No
Yes
send answer to questioner
S250

[Fig. 5]


Person in question
patent
A
Patent attorney
B
camera
C
A
wine
B
famous restaurants
C
TOEIC
beauty care
D
E
F
G
H
I
J
K
L
baseball
patent attorney
travels
cats
health
education
music
cooking
M
N
O
P
Q
R
S
T
U
coffee
English
computer
baseball
U.S.
shopping
tracking
photography
law

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2011/008062

A. CLASSIFICATION OF SUBJECT MATTER

G06F 17/30(2006.01)i

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)

G06F 17/30; G06Q 30/00; G06F 7/00; G06Q 50/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: question, answer, acquaintance, social network service, search

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	KR 10-2010-0097542 A (JUNG, KWAN SEON) 03 September 2010 See abstract; paragraphs[0030-0058]; figures 2-6 and claims 1-3.	1-18
Y	KR 10-2007-0031720 A (SK TELECOM CO., LTD.) 20 March 2007 See abstract; pages 3-4; figures 2-5.	1-18
A	US 2010-0131489 A1 (CLAUDIA V.GOLDMAN-SHENHAR et al.) 27 May 2010 See abstract; paragraphs[0009-0056]; figures 1-2 and claims 1-12.	1-18
A	KR 10-2003-0040273 A (NHN CORPORATION) 22 May 2003 See abstract; page 7; figure 12 and claim 20.	1-18

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

☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents,such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
26 APRIL 2012 (26.04.2012)	**01 MAY 2012 (01.05.2012)**
Name and mailing address of the ISA/KR Korean Intellectual Property Office Government Complex-Daejeon, 189 Cheongsa-ro, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer LEE, Myung Jin Telephone No. 82-42-481-8474

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

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR2011/008062

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
KR 10-2010-0097542 A	03.09.2010	None	
KR 10-2007-0031720 A	20.03.2007	None	
US 2010-0131489 A1	27.05.2010	KR 10-2010-0058405 A	03.06.2010
KR 10-2003-0040273 A	22.05.2003	KR 10-2004-0087850 A	15.10.2004