METHOD AND SYSTEM FOR ESTIMATING AGE OF A USER BASED ON MASS DATA

FIELD OF THE INVENTION

[0001] The present invention relates to mass data processing techniques, and more particularly, to a method and a system for determining age of a user based on mass data.

BACKGROUND OF THE INVENTION

[0002] With popularization of the Internet, network has become one indispensable part of people's daily life. The Internet may provide various kinds of services to users, e.g. e-shopping, acquiring information and entertainment. Age is a basic attribute of a user. With respect to users in different ages, different customized Internet services may be provided. However, the uses generally do not fill their real ages on the virtual Internet. Therefore, it has become a problem that how to determine the real age of the user accurately.

[0003] Currently, an existing method obtains age data provided by the user and estimates the age of the user through simple boundary value filtering. Specifically, an age range of the users is estimated according to experiences, and values outside of the age range are filtered. Thus, the age of the users are estimated. However, this method relies much on the ages provided by the users, thus is inaccurate.

SUMMARY OF THE INVENTION

[0004] Examples of the present invention provide a method for estimating age of a user based on mass data, so as to increase accuracy for determining the age of the user.

[0005] Examples of the present invention also provide a system for

estimating age of a user based on mass data, so as to increase accuracy for determining the age of the user.

[0006] According to an example of the present invention, a method for estimating the age of the user is provided. The method includes:

obtaining basic age data of the user, configuring an initial weight for each kind of basic age data; wherein the configuring the initial weight for each kind of basic age data comprises: obtaining reference age data of the user; comparing the basic age data with the reference age data to obtain an accuracy ratio of the basic age data; and configuring the initial weight for the basic age data according to the accuracy ratio;

obtaining an age weight of the user in each kind of basic age data according to the initial weight and an age similarity of the user in the different kinds of basic age data; and

searching the different kinds of basic age data for an age with a largest age weight, estimating the age of the user according to the age with the largest age weight.

[0007] According to another example of the present invention, a system for estimating the age of the user is provided. The system includes:

a weight configuring unit, to obtain basic age data of the user and configure an initial weight for each kind of basic age data; wherein the weight configuring unit is further to obtain reference age data of the user, compare each kind of basic age data with the reference age data to obtain an accuracy ratio of the kind of the basic age data, and configure the initial weight for the basic age data according to the accuracy ratio;

a weight processing unit, communicatively connected with the weight configuring unit, to obtain an age weight of the user in each kind of basic age data according to the initial weight and an age similarity of the user in the different kinds of basic age data; and

an age estimating unit, communicatively connected with the weight

processing unit, to searching the different kinds of basic age data for an age with a largest age weight, and estimate the age of the user according to the age with the largest age weight.

[0008] According to the method and system for determining the age of the user provided by the examples of the present invention, an initial weight is configured for the basic age data, an age weight of the user in different basic age data is obtained according to the initial weight and age similarity of the user

in different kinds of basic age data, and the age with the largest age weight is determined as the age of the user. Since the multiple kinds of basic age data provided by the user are evaluated in combination, and the age with the largest age weight is closer to real age of the user. Therefore, the accuracy for determining the age of the user is increased.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] **FIG. 1** is a flowchart illustrating a method for determining age of a user based on mass data according to an example of the present invention.

[0010] **FIG. 2** is a flowchart illustrating a method for configuring an initial weight for the basic age data according to an example of the present invention.

[0011] **FIG. 3** is a flowchart illustrating a method for obtaining age weights of the user in different kinds of basic age data according to an example of the present invention.

[0012] **FIG. 4** is a flowchart illustrating a method for determining the age of the user according to classmate relationship data according to an example of the present invention.

[0013] **FIG. 5** is a schematic diagram illustrating a structure of a system for determining the age of a user based on mass data according to an example of the present invention.

[0014] **FIG. 6** is a schematic diagram illustrating a structure of a system for determining the age of a user based on mass data according to another example of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0015] **FIG. 1** is a flowchart illustrating a method for determining age of a user based on mass data according to an example of the present invention. The method includes the following steps.

[0016] Step **S10**, basic age data of the user are obtained, and an initial weight is configured for each kind of basic age data, wherein the basic age data are provided by the user when filling information through various kinds of network products, e.g. instant messaging tool or Social Networking Service (SNS), etc.

[0017] As shown in **FIG. 2**, in an example of the present invention, the method for configuring the initial weight for the basic age data is as follows.

[0018] Step **S100**, reference age data of the user are obtained.

[0019] The reference age data of the user may be obtained through a network questionnaire. Since questions configured by the network questionnaire are relatively precise, the age obtained through the network questionnaire is more accurate than that directly filled by the user.

[0020] Step **S102**, the basic age data are compared with the reference age data, and an accuracy ratio of the basic age data is obtained.

[0021] Search each kind of basic age data for users whose ages conform to corresponding reference ages in the reference age data, and divide the number of the users searched out by a total number of users in the user group to obtain the accuracy ratio of the basic age data.

[0022] In particular, with respect to each kind of basic age data, search a user group corresponding to the basic age data to obtain the number of users whose basic ages conform to their reference ages in the reference age data. And determine the proportion between this number and the total number of users in the user group corresponding to the basic age data as an accuracy ratio of the kind of basic user data. The term "conform" means that the basic age and the reference age are the same or the difference between them is within a certain range, e.g. 3 years.

[0023] Basic age data obtained from different ways belong to different kinds of age data. For example, basic age data obtained through an instant messaging tool belong to one kind of basic age data and basic age data

obtained through SNS belong to another kind of basic age data.

[0024] Step **S104**, configure an initial weight for the basic age data according to the accuracy ratio.

[0025] In one example, the accuracy ratio of the basic age data has three levels: low, medium and high. Corresponding to the accuracy ratio in the three levels, initial weights configured for the basic age data are respectively P1, P2 and P3. For example, P1=1, P2=5 and P3=9. Suppose that basic age data IM1, IM2,..., IMn of n users are obtained through the instant messaging tool; basic age data SNS1, SNS2, ..., SNSn of the n users are obtained through SNS, and reference age data R1, R2, ..., Rn of the n users are obtained by questionnaire. Through comparing IM1, IM2, ..., IMn with R1, R2, ..., Rn, it is possible to obtain the accuracy ratio of the basic age data obtained by the instant messaging tool. Suppose this accuracy ratio is low. Then configure the initial weight of the basic age data obtained by the instant messaging tool as P1. Similarly, the accuracy ratio of the basic age data obtained by the SNS can be obtained. Suppose this accuracy ratio is medium. Then the initial weight configured for the basic age data obtained by the SNS is P2.

[0026] In another example, it is also possible to configure initial weights for different kinds of basic age data according to sources of the basic age data. For example, age data obtained from registration information of a network service such as alumni record is more accurate. Therefore, the initial weight configured for this kind of basic age data may be relatively high than others.

[0027] Step **S12**, obtain an age weight of the user in each kind of basic age data according to the initial weight of the basic age data and an age similarity of the user in different kinds of basic age data.

[0028] As shown in **FIG. 3**, in one example of the present invention, the method for obtaining age weights of the user in different kinds of basic age data is as follows.

[0029] Step **S120**, compare different kinds of basic age data. Specifically, with respect to multiple kinds of basic age data obtained through various

methods, compare ages of the user in the different kinds of basic age data.

[0030] Step **S122**, configure an age weight score for the user according to the initial weights of different kinds of basic age data and an age similarity of the user in different kinds of basic age data. In one example, the age similarity of the user in different kinds of basic age data may be: same age, similar ages and different ages, wherein the age similarity of similar ages means that the difference between the ages is within 3 years, and the age similarity of different ages means that the difference between the ages is larger than 3 years. Compare the initial weights of different kinds of basic age data to obtain a weight relationship between the basic age data. The weight relationship may be: same weight, similar weights and different weights, wherein the weight relationship of same weight means that the two kinds of basic age data have the same weight level (i.e. both of them are high, medium or low); the weight relationship of similar weights means that weights of the two kinds of basic age data have a difference of one level (i.e. the two weight levels are high and medium, or medium and low); the weight relationship of different weights means that the weights of the two kinds of basic age data have a difference of two levels (i.e. the weights are high and low). In one example, age weight scores of the user are configured as table 1.

Age similarity / Weight relationship	Same age	similar ages	Different ages
Same weight	+A1	+A4	0
Similar weights	+A2	+A5	0
Different weights	+A3	+A6	0

[0031] For example, A1=1, A2=2, A3=3, A4=4, A5=5 and A6=6.

[0032] Step **S124**, determine an age weight of the user according to a sum of the initial weight and the age weight score. In the above example, compare different kinds of basic age data. As to each kind of basic age data, obtain a weight relationship between it and each other kind of basic age data and an age similarity of the user under the weight relationship. The age weight score of the

user in the basic age data is the sum of all age weight scores obtained by comparing the basic age data with other basic age data.

[0033] In one example, three kinds of basic age data of the user is M, N and O. In the example, suppose the initial weights of the three kinds of basic age data are respectively P1, P2 and P3. With respect to three users a, b and c, suppose the ages of the three users in the basic age data M are respectively Ma, Mb and Mc, the ages of the three users in the basic age data N are respectively Na, Nb and Nc, and the ages of the three users in the basic age data O are respectively Oa, Ob and Oc. Compare the basic age data M, N and O. Suppose the weights of the basic age data M and the basic age data N are similar, the weights of the basic age data M and the basic age data O are different, and the weights of the basic age data N and the basic age data O are similar. As to user a, suppose Ma=25, Na=25 and Oa=23, i.e. Ma and Na have the same age, Ma and Oa have similar ages, and Na and Oa have similar ages. According to the age weight scores configured in table 1, it is obtained that the age weight of Ma is P1+A2+A6, the age weight of Na is P2+A2+A5, and the age weight of Oa is P3+A6+A5. Similarly, the age weights of user b and user c may be obtained following the above method.

[0034] Step **S14**, search different kinds of basic age data for an age with a largest age weight, determine the age with the largest age weight as an estimated age of the user. In the above example, as to user a, determine the age with the largest age weight among Ma, Na and Oa as the estimated age of user a. Since the age with the largest age weight is closer to the real age of the user, the age is determined more accurately.

[0035] In one example, after obtain the estimated age of the user, compare the age weight of the estimated age and initial weight. Classify the age weight of the estimated age of the user into one of three levels: high weight, medium weight and low weight. In one example, suppose the initial weights of three kinds of basic age data are P1, P2 and P3. If the age weight of the estimated age is smaller than or equal to P2, the age weight is low. If the age weight of the estimated age is larger than P2 but is smaller than or equal to P3, the age weight is medium. If the weight of the estimated age is larger than P3,

the age weight is high.

[0036] **FIG. 4** is a flowchart of a method for determining age of a user according to classmate relationship data according to an example of the present invention. The method includes the following steps.

[0037] Step **S20**, search classmate relationship data for the number of users whose age weights of estimated ages are high and have the same estimated age. The classmate relationship data is a collection of data of users having classmate relationship. Users having the classmate relationship usually have the same or similar ages. The classmate relationship data may be obtained from classmate group members and a friend group of the user.

[0038] Step **S22**, determine whether the number meets a re-defined condition. If the number meets the pre-defined condition, proceed to step **S24**; otherwise, the procedure ends. In one example, the pre-defined condition is: m>3 and m/n>=1/4, wherein m denotes the number of users whose age weights of the estimated ages are high and having the same estimated age, n denotes a total number of users in the classmate relationship.

[0039] Step **S24**, adjust estimated ages of uses whose age weights of the estimated ages are medium or low in the classmate relationship to be the estimated age of the users whose age weights of the estimated age are high and having the same estimated age. In one example, if the number of users whose age weights of the estimated age are high and having the same estimated age meets the above pre-defined condition, since the estimated ages of these users are more accurate and ages of users in the classmate relationship are usually the same or similar, the ages of the users whose age weights are low or medium are adjusted according to the estimated age of the users whose age weights are high. Thus, the estimated ages are more accurate.

[0040] **FIG. 5** is a schematic diagram illustrating a structure of a system for determining age of a user based on mass data according to an example of the present invention. As shown in **FIG. 5**, the system includes: a weight configuring unit **10**, a weight processing unit **20** and an age estimating unit **30**.

[0041] The weight configuring unit **10** is to obtain basic age data of the user and configure an initial weight for each kind of basic age data.

[0042] The weight processing unit **20** is communicatively connected with the weight configuring unit **10**, to obtain an age weight of the user in each kind of basic age data according to the initial weight and an age similarity of the user in different kinds of basic age data.

[0043] The age estimating unit **30** is communicatively connected with the weight processing unit **20**, to search the basic age data for an age with a largest age weight, and determine the age with the largest age weight as the estimated age of the user.

[0044] **FIG. 6** is a schematic diagram illustrating another structure of a system for estimating age of a user based on mass data according to an example of the present invention. As shown in **FIG. 6**, besides the weight configuring unit **10**, the weight processing unit **20** and the age estimating unit **30**, the system further includes an age data storage unit **40** and a classmate relationship data storage unit **50**.

[0045] The age data storage unit **40** is communicatively connected with the weight configuring unit **10**, the weight processing unit **20** and the age estimating unit **30**, to store the basic age data and reference age data. The basic age data are provided by the user through various kinds of network products. And the reference age data are obtained by network questionnaire. Since questions configured by the questionnaire are relatively precise, the reference age data are more accurate than the basic age data.

[0046] The classmate relationship data storage unit **50** is communicatively connected with the age estimating unit **30**, to store the classmate relationship data. Users having the classmate relationship usually have the same or similar ages. It is possible to obtain the classmate relationship data from classmate group members or a friend group of the user.

[0047] In one example, the weight configuring unit **10** is further to obtain the reference age data of the user, compare the basic age data with the

reference age data, obtain an accuracy ratio of the basic age data, configure the initial weight for the basic age data according to accuracy ratio. It is possible to search each kind of basic age data to find users whose basic ages conform to the reference ages. The accuracy ratio is obtained by dividing the number of users whose basic ages conform to the reference ages by the total number of users. The weight configuring unit **10** is further to classify the accuracy ratio into three levels: high, medium and low, and configure the initial weight for the basic age data according to different levels of accuracy ratios.

[0048] In one example, the weight processing unit **20** is further to compare the basic age data, configure an age weight score of the user according to the initial weight and an age similarity of the user in different kinds of basic age data. The age weight of the user is the sum of the initial weight and the age weight score. The weight processing unit **20** compares different kinds of basic age data, as to each kind of basic age data, obtains a weight relationship between it and another basic age data and an age similarity of the user under the weight relationship. The age weight score of the user in the basic age data is the sum of all the age weight scores obtained by comparing the basic age data and other basic age data. After the weight processing unit **20** calculates the age weight, the age estimating unit **30** searches for an age with the largest age weight and determines the age with the largest age weight as the estimated age of the user.

[0049] In one example, after the age estimating unit **30** determines the estimated age of the user, the weight processing unit **20** compares the age weight of the estimated age and the initial weight, and classifies, according to the determined result, the age weight of the estimated age into at least three levels: high weight, medium weight and low weight.

[0050] In one example, the age estimating unit **30** is further to search the classmate relationship data for users whose age weights of the estimated age are high and having the same age, determine whether the number of the users searched out meets a pre-defined condition, if yes, modify the age of the users in the classmate relationship whose age weights are medium or low to be the estimated age of the users whose age weights of the estimated age are high

and having the same age. In one example, the pre-defined condition is: m>3 and m/n>=1/4, wherein m denotes the number of users whose age weights of the estimated age is high and having the same age in the classmate relationship data, n denotes a total number of users in the classmate relationship. Since the ages of users in the classmate relationship are usually the same or similar, the ages of the users whose age weights are low or medium are adjusted according to the estimated age of the users whose age weights are high. Thus, the estimated ages are more accurate.

[0051] What has been described and illustrated herein is a preferred example of the disclosure along with some of its variations. The terms, descriptions and figures used herein are set forth by way of illustration only and are not meant as limitations. Many variations are possible within the spirit and scope of the disclosure, which is intended to be defined by the following claims -- and their equivalents -- in which all terms are meant in their broadest reasonable sense unless otherwise indicated.

CLAIMS

What is claimed is:

1. A method for estimating age of a user, comprising:

obtaining basic age data of the user, configuring an initial weight for each kind of basic age data; wherein the configuring the initial weight for each kind of basic age data comprises: obtaining reference age data of the user; comparing the basic age data with the reference age data to obtain an accuracy ratio of the basic age data; and configuring the initial weight for the basic age data according to the accuracy ratio;

obtaining an age weight of the user in each kind of basic age data according to the initial weight and an age similarity of the user in the different kinds of basic age data; and

searching the different kinds of basic age data for an age with a largest age weight, estimating the age of the user according to the age with the largest age weight.

2. The method of claim 1, wherein the obtaining the accuracy ratio of the basic age data comprises:

searching the basic age data for users whose ages conform to the reference age data, dividing the number of the uses searched out by a total number of users in the basic age data, and determining the divided result as the accuracy ratio of the basic age data.

3. The method of claim 1, wherein the obtaining an age weight of the user in each kind of basic age data comprises:

compare different kinds of basic age data;

configuring an age weight score for the user according to the initial weight and an age similarity of the user in different kinds of basic age data; and

determining the age weight of the user according to the initial weight and

the age weight score.

4. The method of claim 1, further comprising:

obtaining an estimated age of the user in classmate relationship data, and adjusting estimated ages of other users in the classmate relationship data according to estimated age of the user and the age weight of the user.

5. The method of claim 1 or 4, further comprising:

comparing the age weight of the estimated age of the user and the initial weight, classifying, according to a compared result, the age weight of the estimated age into three levels: high weight, medium weight and low weight

6. The method of claim 5, further comprising:

searching classmate relationship data for users whose age weights of estimated age are high and having the same age, determining whether the number of the user searched out meets a pre-defined condition, if the number meets the pre-defined condition, adjusting ages of users in the classmate relationship data whose age weights of estimated ages are medium and low to the estimated age of the users whose age weights of the estimated age are high and having the same age.

7. A system for estimating age of a user, comprising:

a weight configuring unit, to obtain basic age data of the user and configure an initial weight for each kind of basic age data; wherein the weight configuring unit is further to obtain reference age data of the user, compare each kind of basic age data with the reference age data to obtain an accuracy ratio of the kind of the basic age data, and configure the initial weight for the basic age data according to the accuracy ratio;

a weight processing unit, communicatively connected with the weight configuring unit, to obtain an age weight of the user in each kind of basic age data according to the initial weight and an age similarity of the user in the different kinds of basic age data; and

an age estimating unit, communicatively connected with the weight processing unit, to searching the different kinds of basic age data for an age with a largest age weight, and estimate the age of the user according to the age with the largest age weight.

8. The system of claim 7, wherein the weight processing unit is further to compare different kinds of basic age data of the user, configure an age weight score for the user according to the initial weight and an age similarity in the different kinds of basic age data, and determine a sum of the initial weight and the age weight score as the age weight of the user.

9. The system of claim 7, wherein the weight processing unit is further to compare the estimated age of the user with the initial weight, and classify, according to a compared result, the age weight of the estimated age into one of three levels: high weight, medium weight and high weight.

10. The system of claim 9, wherein the age estimating unit is further to search classmate relationship data for users whose age weights of estimated age are high and having the same age, determine whether the number of the user searched out meets a pre-defined condition, if the number meets the pre-defined condition, adjust ages of users in the classmate relationship data whose age weights of estimated ages are medium and low to the estimated age of the users whose age weights of the estimated age are high and having the same age.

11. The system of claim 7, further comprising:

an age data storage unit, communicatively connected with the weight configuring unit, the weight processing unit and the age estimating unit, to store the basic age data and reference age data; and

a classmate relationship data storage unit, communicatively connected with the age estimating unit, to store classmate relationship data.