PUSH RESULT PREDICTION METHOD AND APPARATUS, COMPUTER DEVICE AND STORAGE MEDIUM

This application claims priority for Chinese Patent Application submitted to the National Intellectual Property Administration, PRC on July 24, 2017, Application No. 2017106080944, and titled "Push Result Prediction Method and Apparatus, Computer Device and Storage Medium", with all its contents hereby incorporated by reference.

TECHNICAL FIELD

This application relates to the technical field of information processing, in particular to a push result prediction method and apparatus, a computer device and a storage medium.

BACKGROUND

The rapid development of the Internet technology has made it possible to push all information to users by Internet, so that the users can obtain related information in time. The constant increase of message pushing demands has led to more and more information tasks to be pushed by Internet.

In the traditional pushing process, information is pushed according to preset push parameters as well as preset target user accounts. However, during information pushing, information pushing to certain target user accounts may fail due to the invalidity of these target user accounts, thus decreasing the rate of successful information pushing.

SUMMARY

The embodiments of this application provide a push result prediction method and apparatus, a computer device and a storage medium.

The push result prediction method comprises:

Acquiring an information push task;

Extracting target user accounts from the information push task to obtain a set of target user accounts;

Acquiring historical on-line information corresponding to each user account in the set of target

user accounts;

Selecting on-line user accounts from the set of target user accounts according to the acquired historical on-line information to obtain a set of predicted arrival user accounts;

Acquiring a user interest tag and historical click information corresponding to each user account in the set of predicted arrival user accounts;

Extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the acquired user interest tag and historical click information; and

Generating a push prediction result according to the set of predicted arrival user accounts and the set of predicted click user accounts.

The push result prediction apparatus comprises:

A push task acquisition module used for acquiring an information push task;

A user account extraction module used for extracting target user accounts from the information push task to obtain a set of target user accounts;

A historical information acquisition module used for acquiring historical on-line information corresponding to each user account in the set of target user accounts;

An on-line account selection module used for selecting on-line user accounts from the set of target user accounts according to the acquired historical on-line information to obtain a set of predicted arrival user accounts;

A tag information acquisition module used for acquiring a user interest tag and historical click information corresponding to each user account in the set of predicted arrival user accounts;

A click account selection module used for extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the acquired user interest tag and historical click information; and

A prediction result generation module used for generating a push prediction result according to the set of predicted arrival user accounts and the set of predicted click user accounts.

The computer device comprises a memory and a processor, wherein a computer executable instruction is stored in the memory, and the processor executes the computer executable instruction to

implement the following steps:

Acquiring an information push task;

Extracting target user accounts from the information push task to obtain a set of target user accounts;

Acquiring historical on-line information corresponding to each user account in the set of target user accounts;

Selecting on-line user accounts from the set of target user accounts according to the acquired historical on-line information to obtain a set of predicted arrival user accounts;

Acquiring a user interest tag and historical click information corresponding to each user account in the set of predicted arrival user accounts;

Extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the acquired user interest tag and historical click information; and

Generating a push prediction result according to the set of predicted arrival user accounts and the set of predicted click user accounts.

One or more storage media have a computer executable instruction stored therein, wherein the computer executable instruction is executed by one or more processors to implement the following steps:

Acquiring an information push task;

Extracting target user accounts from the information push task to obtain a set of target user accounts;

Acquiring historical on-line information corresponding to each user account in the set of target user accounts;

Selecting on-line user accounts from the set of target user accounts according to the acquired historical on-line information to obtain a set of predicted arrival user accounts;

Acquiring a user interest tag and historical click information corresponding to each user account in the set of predicted arrival user accounts;

Extracting a set of predicted click user accounts from the set of predicted arrival user accounts

according to the acquired user interest tag and historical click information; and

Generating a push prediction result according to the set of predicted arrival user accounts and the set of predicted click user accounts.

The details of one or more embodiments of this application are given in the following drawings and description. With reference to the specification, accompanying drawings and claims, other characteristics, objectives and advantages of this application can be better understood.

BRIEF DESCRIPTION OF DRAWINGS

For the sake of a clearer explanation of the technical solutions of the embodiments of this application, a brief description of the accompanying drawings required by the embodiments is given below. Clearly, the drawings in the following description are only used for illustrating some embodiments of this application. Those ordinarily skilled in the art can obtain other drawings according to the following ones without creative labor.

FIG. 1 is an application environment diagram of a push result prediction method in one embodiment;

FIG. 2 is a structural diagram of a server in a push result prediction system in one embodiment;

FIG. 3 is a flow diagram of the push result prediction method in one embodiment;

FIG. 4 is a flow diagram of the step of acquiring a set of predicted arrival user accounts in one embodiment;

FIG. 5 is a flow diagram of the step of extracting a set of predicted click user accounts in one embodiment;

FIG. 6 is a flow diagram of the step of extracting user accounts according to a predicted click value in one embodiment;

FIG. 7 is a structural diagram of a push result prediction apparatus in one embodiment;

FIG. 8 is a structural diagram of an on-line account selection module in one embodiment;

FIG. 9 is a structural diagram of a click account selection module in one embodiment;

FIG. 10 is a structural diagram of the push result prediction apparatus in another embodiment.

DESCRIPTION OF EMBODIMENTS

For the sake of a clearer understanding of the objectives, technical solutions and advantages of this application, this application is further expounded below in combination with the accompanying drawings and embodiments. It should be understood that the embodiments in the following description are only used for explaining this application, and are not intended to limit this application.

FIG. 1 is an application environment diagram of a push result prediction method in one embodiment. Referring to FIG. 1, the push result prediction method is applied to a push result prediction system. The push result prediction system comprises a terminal 110 and a server 120, wherein the terminal 110 is connected with the server 120 through a network. The terminal 110 is a fixed terminal or a mobile terminal. Particularly, the fixed terminal is at least one selected from a printer, a scanner and a monitor, and the mobile terminal is at least one selected from a tablet computer, a smartphone, a personal data assistant and a digital camera. The server 120 is a single server or a server cluster consisting of multiple servers.

FIG. 2 is an internal structural diagram of the server 120 in the push result prediction system shown in FIG. 1 in one embodiment. As shown in FIG. 2, the server 120 comprises a processor, a nonvolatile storage medium, an internal memory and a network interface which are connected through a system bus. The processor of the server 120 is used for calculation and control to support running of the whole server 120. The memory is used for storing data, code instructions, and the like. The network interface is used for network communication with the terminal 110. At least one computer executable instruction is stored in the memory, and the computer executable instruction is to be executed by the processor to implement the push result prediction method suitable for the server 120 in the embodiments of this application. The memory comprises a nonvolatile storage medium such as a disk, a CD or a read-only memory (ROM). For instance, in one embodiment, the memory comprises a nonvolatile storage medium and an internal memory, wherein an operating system, a database and a computer executable instruction are stored in the nonvolatile storage medium; historical on-line information, historical click information and user interest tags corresponding to all user accounts are stored in the database; the computer executable instruction is to be executed by the processor to implement the push result prediction method; and the internal memory provides a cache operating environment for the operating system and the computer executable instruction in the

nonvolatile storage medium.

Those skilled in the art would appreciate that the structural diagram shown in FIG. 2 only involves the parts relating to this application, and is not intended to limit the server to which the this application is applied. Particularly, the server may comprise more or less components than the structure shown in FIG. 2, or certain components may be combined, or the components may be configured in different manners.

As shown in FIG. 3, a push result prediction method is provided in one embodiment. In this embodiment, the push result prediction method is explained, as an example, in the case where the method is applied to the server 120 shown in FIG. 1. The push result prediction method particularly comprises:

S302: an information push task is acquired.

In one embodiment, the terminal 110 acquires an operator account input by a pushing operator, generates a push prediction page request according to the acquired operator account, and sends the push prediction page request to the server 120.

The server 120 receives the push prediction page request sent from the terminal 110, analyzes the push prediction page request, extracts the operator account from the push prediction page request by analysis, and verifies whether the extracted operator account has a permission to access a push prediction page. After verifying that the extracted operator account has the permission to access the push prediction page, the server 120 acquires push prediction page data and returns the acquired push prediction page data to the terminal 110 corresponding to the push prediction page request.

The terminal 110 receives the push prediction page data returned from the server 120 and displays the push prediction page according to the push prediction page data. When detecting a push result prediction instruction triggered on the push prediction page by the pushing operator, the terminal 110 acquires an information push task input to the push prediction page by the pushing operator according to the push result prediction instruction and sends the acquired information push task to the server 120. The server 120 receives the information push task sent from the terminal 110.

S304: target user accounts are extracted from the information push task to obtain a set of target user accounts.

In one embodiment, the information push task includes target user accounts, wherein the target user accounts are user accounts corresponding to target users to which information is to be pushed. After acquiring the information push task, the server 120 analyzes the information push task and extracts the target user accounts from the information push task by analysis, and the extracted target user accounts constitute a set of target user accounts.

S306: historical on-line information corresponding to each user account in the set of target user accounts is acquired.

In one embodiment, historical on-line information corresponding to all the user accounts is stored in the database of the server 120. The historical on-line information includes on-line time information and user accounts. The server 120 extracts the user accounts from the set of target user accounts and queries, in the historical on-line information in the database, historical on-line information corresponding to the extracted user accounts.

S308: on-line user accounts are selected from the set of target user accounts according to the acquired historical on-line information to obtain a set of predicted arrival user accounts.

In one embodiment, after acquiring the historical on-line information corresponding to each user account, the server 120 detects, according to the historical on-line information of each user account, whether the user account corresponding to the historical on-line information is on-line. The server 120 detects on-line user accounts in the set of target user accounts and extracts the on-line user accounts, and the extracted on-line user accounts constitute a set of predicted arrival user accounts.

In one embodiment, the server 120 detects off-line user accounts in the set of target user accounts and deletes the off-line user accounts from the set of target user accounts, and the set of target user accounts having the off-line user accounts deleted therefrom is taken as a set of predicted arrival user accounts.

S310: a user interest tag and historical click information corresponding to each user account in the set of predicted arrival user accounts are acquired.

In one embodiment, user interest tags and historical click information corresponding to the user accounts are stored in the database of the server 120. The user interest tags reflect the preferences of users corresponding to the user accounts. For instance, the user interest tags corresponding to the user

accounts of users having a preference for football are football preferences. The historical click information includes click times when the users click a push message and user accounts. After obtaining the set of predicted arrival user accounts, the server 120 extracts the user interest tag and the historical click information corresponding to each user account in the set of predicted arrival user accounts from the database.

S312: a set of predicted click user accounts is extracted from the set of predicted arrival user accounts according to the acquired user interest tag and historical click information.

In one embodiment, the server 120 acquires to-be-pushed information corresponding to the information push task and calculates a degree of interest according to the user interest tag corresponding to each user account in the set of predicted arrival user accounts and the acquired to-be-pushed information. The server 120 counts a historical click rate corresponding to each user account according to the historical click information corresponding to each user account in the set of predicted arrival user accounts. The server 120 extracts user accounts with the degree of interest higher than a preset degree of interest and the historical click rate higher than a preset click rate threshold from the set of predicted arrival user accounts, and the extracted user accounts constitute a set of predicted click user accounts.

S314: a push prediction result is generated according to the set of predicted arrival user accounts and the set of predicted click user accounts.

In one embodiment, the server 120 generates a push prediction result corresponding to the information push task according to the set of predicted arrival user accounts and the set of predicted click user accounts.

In one embodiment, the server 120 counts all the user accounts in the set of target user accounts to obtain an information push quantity, the server 120 counts all the user accounts in the set of predicted arrival user accounts to obtain a predicted information arrival quantity, and the server 120 counts all the user accounts in the set of predicted click user accounts to obtain a predicted information click quantity. The server 120 divides the predicted information arrival quantity by the information push quantity to obtain a predicted information arrival rate, and divides the predicted information click quantity by the information push quantity to obtain a predicted information click

rate. The server 120 generates a push prediction result according to the predicted information arrival rate and the predicted information click rate.

In one embodiment, the method particularly further comprises the following steps to be performed after S314: the set of predicted arrival user accounts is extracted from the push prediction result; and a target user account adjustment recommendation corresponding to the information push task is generated according to the extracted set of predicted arrival user accounts.

In one embodiment, the server 120 sends the generated push prediction result to the terminal 110 corresponding to the information push task to allow the terminal 110 to display the push prediction result on the push prediction page. The pushing operator clicks an account adjustment recommendation generation button in the push prediction page by means of an input device of the terminal 110. When detecting that the account adjustment recommendation generation button is clicked, the terminal 110 triggers an account adjustment recommendation generation instruction and sends the account adjustment recommendation generation instruction to the server 120.

After receiving the account adjustment recommendation generation instruction sent from the terminal 110, the server 120 extracts the set of predicted arrival user accounts from the push prediction result and generates a target user account adjustment recommendation corresponding to the information push task according to the user accounts in the set of predicted arrival user accounts. The server 120 sends the generated target user account adjustment recommendation to the terminal 110 to allow the terminal 110 to display the target user account adjustment recommendation on the push prediction page.

When detecting that the pushing operator clicks an account adjustment OK button in the push prediction page by means of the input device, the terminal 110 extracts user accounts from the account adjustment recommendation to obtain a set of predicted arrival user accounts, and the set of predicted arrival user accounts is taken as a set of target user accounts corresponding to the information push task.

In this embodiment, the target user accounts are extracted from the information push task to obtain the set of target user accounts, and the historical on-line information, user interest tags and historical click information corresponding to the user accounts in the set of target user accounts are

analyzed, so that the accuracy of the set of predicted arrival user accounts and the set of predicted click user accounts is guaranteed, thus guaranteeing the accuracy of the generated push prediction result. The target user accounts in the information push task can be adjusted according to the push prediction result, so that the arrival rate and click rate corresponding to the information push task are improved, thus increasing the rate of successful pushing of the information push task.

As shown in FIG. 4, in one embodiment, S308 particularly comprises a step of acquiring a set of predicted arrival user accounts, and this step particularly comprises:

S402: user accounts which are marked as invalid by the acquired historical on-line information are deleted from the set of target user accounts to obtain a set of valid user accounts.

In one embodiment, the server 120 counts user accounts which have no historical on-line information within a preset time period according to the historical on-line information corresponding to each user account and marks the user accounts having no historical on-line information within the preset time period as invalid user accounts. The server 120 queries, in the set of target user accounts, the user accounts marked as invalid and then deletes the queried user accounts from the set of target user accounts, and the user accounts left in the set of target user accounts constitute a set of valid user accounts. The preset time period may be recent one month, two months, three months, or the like.

S404: an on-line frequency of each user account in the set of valid user accounts within the preset time period is counted according to the acquired historical on-line information.

In one embodiment, the server 120 extracts historical on-line information corresponding to each user account in the set of valid user accounts from the acquired historical on-line information and counts the on-line frequency of each user account within the preset time period according to the extracted historical on-line information.

S406: user accounts with the on-line frequency within the preset time period higher than a preset frequency are extracted from the set of valid user accounts to obtain a set of predicted arrival user accounts.

In one embodiment, the server 120 compares the on-line frequency of each user account in the set of valid user accounts within the preset time with a preset frequency to determine user accounts with the on-line frequency within the preset time higher than the preset frequency and extracts the

determined user accounts from the set of valid user accounts to obtain a set of predicted arrival user accounts.

In this embodiment, user accounts marked as invalid are deleted from the set of target user accounts according to the historical on-line information to obtain the set of valid user accounts at first, and then the set of predicted arrival user accounts is extracted from the set of valid user accounts according to the historical on-line information. The set of predicted arrival user accounts is acquired according to the historical on-line information, so that the utilization rate of the historical on-line information is increased, and the selection accuracy of the set of predicted arrival user accounts is improved.

As shown in FIG. 5, in one embodiment, S312 particularly comprises a step of extracting a set of predicted click user accounts, and this step particularly comprises:

S502: a to-be-pushed message corresponding to the information push task is acquired.

In one embodiment, the server 120 analyzes the information push task and extracts a to-be-pushed message from the information push task by analysis. The to-be-pushed message is a message to be pushed to users corresponding to the user accounts in the set of target user accounts.

S504: a message keyword is extracted from the acquired to-be-pushed message.

In one embodiment, after acquiring the to-be-pushed message, the server 120 analyzes the to-be-pushed message by means of keyword extraction software and extracts a message keyword from the to-be-pushed message by analysis.

In one embodiment, message keywords corresponding to to-be-pushed message are stored in the server 120. After acquiring the to-be-pushed message, the server 120 queries, in the database, a message keyword corresponding to the extracted to-be-pushed message.

S506: a degree of interest corresponding to each user account in the set of predicted arrival user accounts is calculated according to the acquired user interest tag and the extracted message keyword.

In one embodiment, the server 120 calculates the similarity between the user interest tag corresponding to each user account and the extracted message keyword, and the similarity obtained by calculation is used as the degree of interest corresponding to each user account.

S508: a historical click rate corresponding to each user account in the set of predicted arrival

user accounts is counted according to the acquired historical click information.

In one embodiment, the server 120 counts a push message reception frequency and a push message click frequency of each user account in the set of predicted arrival user accounts according to the acquired historical click information and obtains a historical click rate corresponding to each user account by calculation according to the counted push message reception frequency and push message click frequency. Particularly, the server 120 obtains the historical click rate by dividing the push message click frequency by the push message reception frequency.

S510: a set of predicted click user accounts is extracted from the set of predicted arrival user accounts according to the degree of interest and the historical click rate obtained by calculation.

In one embodiment, the server 120 compares the degree of interest corresponding to each user account with a preset degree of interest and compares the historical click rate corresponding to each user account with a preset click rate. The server 120 extracts, by comparison, user accounts with the degree of interest higher than the preset degree of interest and the historical click rate higher than the preset click rate from the set of predicted arrival user accounts, and the extracted user accounts constitute a set of predicted click user accounts.

In this embodiment, the degree of interest corresponding to each user account is calculated according to the user interest tag corresponding to each user account and the message keyword, the historical click rate of each user account is calculated according to the historical click information, and user accounts are extracted according to the degree of interest and the historical click rate to obtain the set of predicted click user accounts, thus greatly improving the prediction accuracy.

As shown in FIG. 6, in one embodiment, S510 particularly comprises a step of extracting user accounts according to a predicted click value, and this step particularly comprises:

S602: a predicted click value corresponding to each user account in the set of predicted arrival user accounts is calculated according to the degree of interest obtained by calculation and the counted historical click rate.

In one embodiment, the server 120 acquires weights corresponding to the degree of interest and the historical click rate and obtains a predicted click value corresponding to each user account by weight summing and calculation according to the degree of interest and the historical click rate

corresponding to each user account, the weight corresponding to the degree of interest, and the weight corresponding to the historical click rate.

S604: user accounts with the predicted click value exceeding a preset threshold are selected from the set of predicted arrival user accounts to obtain a set of predicted click user accounts.

In one embodiment, the server 120 compares the predicted click value corresponding to each user account in the set of predicted arrival user accounts with a preset threshold and selects user accounts with the predicted click value exceeding the preset threshold from the set of predicted arrival user accounts, and the selected user accounts constitute a set of predicted click user accounts.

In this embodiment, the predicted click value corresponding to each user account is calculated according to the degree of interest and the historical click rate obtained by calculation, and the set of predicted click user accounts is extracted from the set of predicted arrival user accounts according to the predicted click value obtained by calculation, so that the extraction accuracy of the set of predicted click user accounts is greatly increased, and the prediction accuracy of the prediction result is improved.

As shown in FIG. 7, a push result prediction apparatus 700 is provided in one embodiment. The push result prediction apparatus particularly comprises a push task acquisition module 702, a user account extraction module 704, a historical information acquisition module 706, an on-line account selection module 708, a tag information acquisition module 710, a click account selection module 712, and a prediction result generation module 714.

The push task acquisition module 702 is used for acquiring an information push task.

The user account extraction module 704 is used for extracting target user accounts from the information push task to obtain a set of target user accounts.

The historical information acquisition module 706 is used for acquiring historical on-line information corresponding to each user account in the set of target user accounts.

The on-line account selection module 708 is used for selecting on-line user accounts from the set of target user accounts according to the acquired historical on-line information to obtain a set of predicted arrival user accounts.

The tag information acquisition module 710 is used for acquiring a user interest tag and historical click information corresponding to each user account in the set of predicted arrival user accounts.

The click account selection module 712 is used for extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the acquired user interest tag and historical click information.

The prediction result generation module 714 is used for generating a push prediction result according to the set of predicted arrival user accounts and the set of predicted click user accounts.

In this embodiment, the target user accounts are extracted from the information push task to obtain the set of target user accounts, and the historical on-line information, user interest tags and historical click information corresponding to the user accounts in the set of target user accounts are analyzed, so that the accuracy of the set of predicted arrival user accounts and the set of predicted click user accounts is guaranteed, thus guaranteeing the accuracy of the generated push prediction result. The target user accounts in the information push task can be adjusted according to the push prediction result, so that the arrival rate and click rate corresponding to the information push task are improved, thus increasing the rate of successful pushing of the information push task.

As shown in FIG. 8, in one embodiment, the on-line account selection module 708 particularly comprises a valid account acquisition module 708a, an on-line frequency counting module 708b, and an on-line frequency comparison module 708c.

The valid account acquisition module 708a is used for deleting user accounts marked as invalid by the acquired historical on-line information from the set of target user accounts to obtain a set of valid user accounts.

The on-line frequency counting module 708b is used for counting an on-line frequency of each user account in the set of valid user accounts within a preset time period according to the acquired historical on-line information.

The on-line frequency comparison module 708c is used for selecting user accounts with the on-line frequency within the preset time period higher than a preset frequency from the set of valid user accounts to obtain a set of predicted arrival user accounts.

In this embodiment, the user accounts marked as invalid are deleted from the set of target user accounts according to the historical on-line information to obtain the set of valid user accounts, and then the set of predicted arrival user accounts is extracted from the set of valid user accounts according to the historical on-line information. The set of predicted arrival user accounts is acquired according to the historical on-line information, so that the utilization rate of the historical on-line information is increased, and the selection accuracy of the set of predicted arrival user accounts is improved.

As shown in FIG. 9, in one embodiment, the click account selection module 712 particularly comprises a push message acquisition module 712a, a keyword extraction module 712b, a degree-of-interest calculation module 712c, a click rate counting module 712d, and a click set extraction module 712e.

The push message acquisition module 712a is used for acquiring a to-be-pushed message corresponding to the information push task.

The keyword extraction module 712b is used for extracting a message keyword from the acquired to-be-pushed message.

The degree-of-interest calculation module 712c is used for calculating a degree of interest corresponding to each user account in the set of predicted arrival user accounts according to the acquired user interest tag and the extracted message keyword.

The click rate counting module 712d is used for counting a historical click rate corresponding to each user account in the set of predicted arrival user accounts according to the acquired historical click information.

The click set extraction module 712e is used for extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the degree of interest obtained by calculation and the counted historical click rate.

In one embodiment, the click set extraction module 712e is also used for calculating a predicted click value corresponding to each user account in the set of predicted arrival user accounts according to the degree of interest obtained by calculation and the counted historical click rate and extracts user accounts with the predicted click value exceeding a preset threshold from the set of predicted arrival

user accounts to obtain a set of predicted click user accounts.

In this embodiment, the degree of interest corresponding to each user account is calculated according to the user interest tag corresponding to each user account and the message keyword, the historical click rate of each user account is calculated according to the historical click information, and user accounts are extracted according to the degree of interest and the historical click rate to obtain the set of predicted click user accounts, thus greatly improving the prediction accuracy.

As shown in FIG. 10, in one embodiment, the push result prediction apparatus 700 particularly further comprises an adjustment recommendation generation module 716.

The adjustment recommendation generation module 716 is used for extracting a set of predicted arrival user accounts from the push prediction result and generating a target user account adjustment recommendation corresponding to the information push task according to the extracted set of predicted arrival user accounts.

In this embodiment, the target user account adjustment recommendation is generated according to the set of predicted arrival user accounts in the push prediction result, and the information push task is executed for users corresponding to user accounts in the set of target user accounts adjusted according to the target user account adjustment recommendation, so that the message arrival rate is increased.

All or part of the modules of the push result prediction apparatus are implemented by means of software, hardware, or the combination of software and hardware. Wherein, the network interface is an Ethernet card or a wireless card. The aforesaid modules are embedded in the processor of the server in a hardware form, or are independent of the processor of the server, or are stored in the memory of the server in a software form, so as to be called by the processor to implement operations corresponding to these modules. The processor is a central processing unit (CPU), a microprocessor, a single-chip microcomputer, or the like.

A computer device comprises a memory and a processor, wherein a computer executable instruction is stored in the memory, and the processor executes the computer executable instruction to implement the following steps: acquiring an information push task; extracting target user accounts

from the information push task to obtain a set of target user accounts; acquiring historical on-line information corresponding to each user account in the set of target user accounts; selecting on-line user accounts from the set of target user accounts according to the acquired historical on-line information to obtain a set of predicted arrival user accounts; acquiring a user interest tag and historical click information corresponding to each user account in the set of predicted arrival user accounts; extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the acquired user interest tag and historical click information; and generating a push prediction result according to the set of predicted arrival user accounts and the set of predicted click user accounts.

In one embodiment, the step of selecting on-line user accounts from the set of target user accounts according to the acquired historical on-line information to obtain a set of predicted arrival user accounts comprises: deleting user accounts marked as invalid by the acquired historical on-line information from the set of target user accounts to obtain a set of valid user accounts; counting an on-line frequency corresponding to each user account in the set of valid user accounts within a preset time period according to the acquired historical on-line information; and selecting user accounts with the on-line frequency within the preset time period higher than a preset frequency from the set of valid user accounts to obtain a set of predicted arrival user accounts.

In one embodiment, the step of extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the acquired user interest tag and historical click information comprises: acquiring a to-be-pushed message corresponding to the information push task; extracting a message keyword from the acquired to-be-pushed message; calculating a degree of interest corresponding to each user account in the set of predicted arrival user accounts according to the acquired user interest tag and the extracted message keyword; counting a historical click rate corresponding to each user account in the set of predicted arrival user accounts according to the acquired historical click information; and extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the degree of interest obtained by calculation and the counted historical click rate.

In one embodiment, the step of extracting a set of predicted click user accounts from the set of

predicted arrival user accounts according to the degree of interest obtained by calculation and the counted historical click rate comprises: calculating a predicted click value corresponding to each user account in the set of predicted arrival user accounts according to the degree of interest obtained by calculation and the counted historical click rate; and selecting user accounts with the predicted click value exceeding a preset threshold from the set of predicted arrival user accounts to obtain a set of predicted click user accounts.

In one embodiment, after the step of generating a push prediction result according to the set of predicted arrival user accounts and the set of predicted click user accounts, the processor further implements the following steps: extracting the set of predicted arrival user accounts from the push prediction result; and generating a target user account adjustment recommendation corresponding to the information push task according to the extracted set of predicted arrival user accounts.

In this embodiment, the target user accounts are extracted from the information push task to obtain the set of target user accounts, and the historical on-line information, user interest tags and historical click information corresponding to the user accounts in the set of target user accounts are analyzed, so that the accuracy of the set of predicted arrival user accounts and the set of predicted click user accounts is guaranteed, thus guaranteeing the accuracy of the generated push prediction result. The target user accounts in the information push task can be adjusted according to the push prediction result, so that the arrival rate and click rate corresponding to the information push task are improved, thus increasing the rate of successful pushing of the information push task.

One or more storage media have a computer executable instruction stored therein, wherein the computer executable instruction is executed by one or more processors to implement the following steps: acquiring an information push task; extracting target user accounts from the information push task to obtain a set of target user accounts; acquiring historical on-line information corresponding to each user account in the set of target user accounts; selecting on-line user accounts from the set of target user accounts according to the acquired historical on-line information to obtain a set of predicted arrival user accounts; acquiring a user interest tag and historical click information corresponding to each user account in the set of predicted arrival user accounts; extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the acquired

user interest tag and historical click information; and generating a push prediction result according to the set of predicted arrival user accounts and the set of predicted click user accounts.

In one embodiment, the step of selecting on-line user accounts from the set of target user accounts according to the acquired historical on-line information to obtain a set of predicted arrival user accounts comprises: deleting user accounts marked as invalid by the acquired historical on-line information from the set of target user accounts to obtain a set of valid user accounts; counting an on-line frequency corresponding to each user account in the set of valid user accounts within a preset time period according to the acquired historical on-line information; and selecting user accounts with the on-line frequency within the preset time period higher than a preset frequency from the set of valid user accounts to obtain a set of predicted arrival user accounts.

In one embodiment, the step of extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the acquired user interest tag and historical click information comprises: acquiring a to-be-pushed message corresponding to the information push task; extracting a message keyword from the acquired to-be-pushed message; calculating a degree of interest corresponding to each user account in the set of predicted arrival user accounts according to the acquired user interest tag and the extracted message keyword; counting a historical click rate corresponding to each user account in the set of predicted arrival user accounts according to the acquired historical click information; and extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the degree of interest obtained by calculation and the counted historical click rate.

In one embodiment, the step of extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the degree of interest obtained by calculation and the counted historical click rate comprises: calculating a predicted click value corresponding to each user account in the set of predicted arrival user accounts according to the degree of interest obtained by calculation and the counted historical click rate; and selecting user accounts with the predicted click value exceeding a preset threshold from the set of predicted arrival user accounts to obtain a set of predicted click user accounts.

In one embodiment, after the step of generating a push prediction result according to the set of

predicted arrival user accounts and the set of predicted click user accounts, the processor further implements the following steps: extracting the set of predicted arrival user accounts from the push prediction result; and generating a target user account adjustment recommendation corresponding to the information push task according to the extracted set of predicted arrival user accounts.

In one embodiment, the target user accounts are extracted from the information push task to obtain the set of target user accounts, and the historical on-line information, user interest tags and historical click information corresponding to the user accounts in the set of target user accounts are analyzed, so that the accuracy of the set of predicted arrival user accounts and the set of predicted click user accounts is guaranteed, thus guaranteeing the accuracy of the generated push prediction result. The target user accounts in the information push task can be adjusted according to the push prediction result, so that the arrival rate and click rate corresponding to the information push task are improved, thus increasing the rate of successful pushing of the information push task.

According to one example of this embodiment, part or all of the procedures in above embodiments of the method can be implemented by means of related hardware instructed by the computer executable instruction which is stored in a computer readable storage medium. For instance, in the embodiments of this application, the program is stored in a storage medium of a computer system and is executed by at least one processor in the computer system to implement the procedures in the embodiments of the method. The storage medium includes, but is not limited to, a disk, a USB flash drive, a CD, and a read-only memory (ROM).

The technical characteristics of the above-mentioned embodiments can be randomly combined. For the sake of a brief description, not all possible combinations of these technical characteristics are illustrated. Clearly, all possible combinations of these technical characteristics achieved without causing contradictions should fall within the scope of this specification.

The aforesaid embodiments which are specifically described in detail are only several illustrative ones of this application, and should not be regarded as limitations of the patent scope of the present invention. It should be noted that various transformations and improvements can be made by those ordinarily skilled in the art without deviating from the concept of this application, and all these transformations and improvements should also fall within the protection scope of this

application. Therefore, the patent protection scope of this application should be subject to the appended claims.

CLAIMS

1. A push result prediction method, comprising:

acquiring an information push task;

extracting target user accounts from the information push task to obtain a set of target user accounts;

acquiring historical on-line information corresponding to each user account in the set of target user accounts;

selecting on-line user accounts from the set of target user accounts according to the acquired historical on-line information to obtain a set of predicted arrival user accounts;

acquiring a user interest tag and historical click information corresponding to each user account in the set of predicted arrival user accounts;

extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the acquired user interest tag and historical click information; and

generating a push prediction result according to the set of predicted arrival user accounts and the set of predicted click user accounts.

2. The method according to Claim 1, wherein the step of selecting on-line user accounts from the set of target user accounts according to the acquired historical on-line information to obtain a set of predicted arrival user accounts comprises:

deleting user accounts marked as invalid by the acquired historical on-line information from the set of target user accounts to obtain a set of valid user accounts;

counting an on-line frequency corresponding to each user account in the set of valid user accounts within a preset time period according to the acquired historical on-line information; and

selecting user accounts with the on-line frequency within the preset time period higher than a preset frequency from the set of valid user accounts to obtain a set of predicted arrival user accounts.

3. The method according to Claim 1, wherein the step of extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the acquired user interest tag and historical click information comprises:

acquiring a to-be-pushed message corresponding to the information push task;

extracting a message keyword from the acquired to-be-pushed message;

calculating a degree of interest corresponding to each user account in the set of predicted arrival user accounts according to the acquired user interest tag and the extracted message keyword;

counting a historical click rate corresponding to each user account in the set of predicted arrival user accounts according to the acquired historical click information; and

extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the degree of interest obtained by calculation and the counted historical click rate.

4. The method according to Claim 3, wherein the step of extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the degree of interest obtained by calculation and the counted historical click rate comprises:

calculating a predicted click value corresponding to each user account in the set of predicted arrival user accounts according to the degree of interest obtained by calculation and the counted historical click rate; and

selecting user accounts with the predicted click value exceeding a preset threshold from the set of predicted arrival user accounts to obtain a set of predicted click user accounts.

5. The method according to Claim 1, wherein after the step of generating a push prediction result according to the set of predicted arrival user accounts and the set of predicted click user accounts, the method further comprises:

extracting the set of predicted arrival user accounts from the push prediction result; and

generating a target user account adjustment recommendation corresponding to the information push task according to the extracted set of predicted arrival user accounts.

6. A push result prediction apparatus, comprising:

a push task acquisition module used for acquiring an information push task;

a user account extraction module used for extracting target user accounts from the information push task to obtain a set of target user accounts;

a historical information acquisition module used for acquiring historical on-line information corresponding to each user account in the set of target user accounts;

an on-line account selection module used for selecting on-line user accounts from the set of target user accounts according to the acquired historical on-line information to obtain a set of predicted arrival user accounts;

a tag information acquisition module used for acquiring a user interest tag and historical click information corresponding to each user account in the set of predicted arrival user accounts;

a click account selection module used for extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the acquired user interest tag and historical click information; and

a prediction result generation module used for generating a push prediction result according to the set of predicted arrival user accounts and the set of predicted click user accounts.

7. The apparatus according to Claim 6, wherein the on-line account selection module comprises:

a valid account acquisition module used for deleting user accounts marked as invalid by the acquired historical on-line information from the set of target user accounts to obtain a set of valid user accounts;

an on-line frequency counting module used for counting an on-line frequency of each user account in the set of valid user accounts within a preset time period according to the acquired historical on-line information;

an on-line frequency comparison module used for selecting user accounts with the on-line frequency within the preset time period higher than a preset frequency from the set of valid user accounts to obtain a set of predicted arrival user accounts.

8. The apparatus according to Claim 6, wherein the click account selection module comprises:

a push message acquisition module used for acquiring a to-be-pushed message corresponding to the information push task;

a keyword extraction module used for extracting a message keyword from the acquired to-be-pushed message

a degree-of-interest calculation module used for calculating a degree of interest corresponding to

each user account in the set of predicted arrival user accounts according to the acquired user interest tag and the extracted message keyword;

a click rate counting module used for counting a historical click rate corresponding to each user account in the set of predicted arrival user accounts according to the acquired historical click information; and

a click set extraction module used for extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the degree of interest obtained by calculation and the counted historical click rate.

9. The apparatus according to Claim 8, wherein the click set extraction module is also used for calculating a predicted click value corresponding to each user account in the set of predicted arrival user accounts according to the degree of interest obtained by calculation and the counted historical click rate and extracting user accounts with the predicted click value exceeding a preset threshold from the set of predicted arrival user accounts to obtain a set of predicted click user accounts.

10. The apparatus according to Claim 6, wherein the apparatus further comprises:

an adjustment recommendation generation module used for extracting a set of predicted arrival user accounts from a push prediction result and generating a target user account adjustment recommendation corresponding to the information push task according to the extracted set of predicted arrival user accounts.

11. A computer device, comprising a memory and a processor, wherein a computer executable instruction is stored in the memory, and the processor executes the computer executable instruction to implement the following steps:

acquiring an information push task;

extracting target user accounts from the information push task to obtain a set of target user accounts;

acquiring historical on-line information corresponding to each user account in the set of target user accounts;

selecting on-line user accounts from the set of target user accounts according to the acquired

historical on-line information to obtain a set of predicted arrival user accounts;

acquiring a user interest tag and historical click information corresponding to each user account in the set of predicted arrival user accounts;

extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the acquired user interest tag and historical click information; and

generating a push prediction result according to the set of predicted arrival user accounts and the set of predicted click user accounts.

12. The computer device according to Claim 11, wherein the step of selecting on-line user accounts from the set of target user accounts according to the acquired historical on-line information to obtain a set of predicted arrival user accounts comprises:

deleting user accounts marked as invalid by the acquired historical on-line information from the set of target user accounts to obtain a set of valid user accounts;

counting an on-line frequency corresponding to each user account in the set of valid user accounts within a preset time period according to the acquired historical on-line information; and

selecting user accounts with the on-line frequency within the preset time period higher than a preset frequency from the set of valid user accounts to obtain a set of predicted arrival user accounts.

13. The computer device according to Claim 11, wherein the step of extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the acquired user interest tag and historical click information comprises:

acquiring a to-be-pushed message corresponding to the information push task;

extracting a message keyword from the acquired to-be-pushed message;

calculating a degree of interest corresponding to each user account in the set of predicted arrival user accounts according to the acquired user interest tag and the extracted message keyword;

counting a historical click rate corresponding to each user account in the set of predicted arrival user accounts according to the acquired historical click information; and

extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the degree of interest obtained by calculation and the counted historical click rate.

14. The computer device according to Claim 13, wherein the step of extracting a set of

predicted click user accounts from the set of predicted arrival user accounts according to the degree of interest obtained by calculation and the counted historical click rate comprises:

calculating a predicted click value corresponding to each user account in the set of predicted arrival user accounts according to the degree of interest obtained by calculation and the counted historical click rate; and

selecting user accounts with the predicted click value exceeding a preset threshold from the set of predicted arrival user accounts to obtain a set of predicted click user accounts.

15. The computer device according to Claim 11, wherein after the step of generating a push prediction result according to the set of predicted arrival user accounts and the set of predicted click user accounts, the processor further implements the following steps:

extracting the set of predicted arrival user accounts from the push prediction result; and

generating a target user account adjustment recommendation corresponding to the information push task according to the extracted set of predicted arrival user accounts.

16. One or more storage media, having a computer executable instruction stored therein, wherein the computer executable instruction is executed by one or more processors to implement the following steps:

acquiring an information push task;

extracting target user accounts from the information push task to obtain a set of target user accounts;

acquiring historical on-line information corresponding to each user account in the set of target user accounts;

selecting on-line user accounts from the set of target user accounts according to the acquired historical on-line information to obtain a set of predicted arrival user accounts;

acquiring a user interest tag and historical click information corresponding to each user account in the set of predicted arrival user accounts;

extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the acquired user interest tag and historical click information; and

generating a push prediction result according to the set of predicted arrival user accounts and the

set of predicted click user accounts.

17. The storage medium according to Claim 16, wherein the step of selecting on-line user accounts from the set of target user accounts according to the acquired historical on-line information to obtain a set of predicted arrival user accounts comprises:

deleting user accounts marked as invalid by the acquired historical on-line information from the set of target user accounts to obtain a set of valid user accounts;

counting an on-line frequency corresponding to each user account in the set of valid user accounts within a preset time period according to the acquired historical on-line information; and

selecting user accounts with the on-line frequency within the preset time period higher than a preset frequency from the set of valid user accounts to obtain a set of predicted arrival user accounts.

18. The storage medium according to Claim 16, wherein the step of extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the acquired user interest tag and historical click information comprises:

acquiring a to-be-pushed message corresponding to the information push task;

extracting a message keyword from the acquired to-be-pushed message;

calculating a degree of interest corresponding to each user account in the set of predicted arrival user accounts according to the acquired user interest tag and the extracted message keyword;

counting a historical click rate corresponding to each user account in the set of predicted arrival user accounts according to the acquired historical click information; and

extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the degree of interest obtained by calculation and the counted historical click rate.

19. The storage medium according to Claim 18, wherein the step of extracting a set of predicted click user accounts from the set of predicted arrival user accounts according to the degree of interest obtained by calculation and the counted historical click rate comprises:

calculating a predicted click value corresponding to each user account in the set of predicted arrival user accounts according to the degree of interest obtained by calculation and the counted historical click rate; and

selecting user accounts with the predicted click value exceeding a preset threshold from the set

of predicted arrival user accounts to obtain a set of predicted click user accounts.

20. The storage medium according to Claim 16, wherein after the step of generating a push prediction result according to the set of predicted arrival user accounts and the set of predicted click user accounts, the processor further implements the following steps:

extracting the set of predicted arrival user accounts from the push prediction result; and

generating a target user account adjustment recommendation corresponding to the information push task according to the extracted set of predicted arrival user accounts.