

Virtual Robot Control Method, Apparatus and Device, and Readable Storage Medium

The application claims priority for Chinese Patent Application submitted to the National
5 Intellectual Property Administration, PRC on January 29, 2018, Application No. 201810081997.6,
and titled “Virtual Robot Control Method, Apparatus and Device, and Readable Storage medium”,
with all its contents hereby incorporated by reference.

TECHNICAL FIELD

The application mainly relates to the technical field of communication interaction, in particular
10 to a virtual robot control method, apparatus and device, and a readable storage medium.

BACKGROUND

The development of the network communication technology has led to wider and wider
applications of virtual robots such as various question-answering or chatting virtual robots applied to
various APPs and web pages. However, these virtual robots only support question-answering or
15 chatting with a single user, while cannot be added into a multi-member group for question-answering
or chatting, so that when the virtual robots are used for product-promotion consultations, each
member in the group has to independently consult the virtual robot to acquire product information.
From the aspect of users, consulting details of the users are repeated, operations are complex, and
consequentially, user experience is lowered. From the aspect of the virtual robots, the virtual robots
20 have to answer identical consultation details by querying or calling the same contents, and
consequentially, the data processing quantity is increased, and the processing efficiency is reduced.

SUMMARY

The principal objective of the application is to provide a virtual robot control method, apparatus
and device, and a readable storage medium to solve the problems of incapacity to chat with a group,
25 complex operation and low consulting efficiency of virtual robots in the prior art.

In order to fulfill the above objective, the application provides a virtual robot control method. The virtual robot control method comprises the following steps:

Receiving an account type configuration instruction, and configuring the account type of a virtual robot as an individual account type to support group consulting;

5 When an invitation instruction is received, adding the virtual robot into a target group corresponding to the invitation instruction; and

Receiving consulting information sent by each member in the target group to the virtual robot, and returning reply information corresponding to the consulting information to the target group.

In addition, in order to fulfill the above objective, the application further provides a virtual robot control apparatus. The virtual robot control apparatus comprises:

A configuration module used for receiving an account type configuration instruction and configuring the account type of a virtual robot as an individual account type to support group consulting;

15 An addition module used for adding, when an invitation instruction is received, the virtual robot into a target group corresponding to the invitation instruction; and

A return module used for receiving consulting information sent by each member in the target group to the virtual robot and returning reply information corresponding to the consulting information to the target group.

In addition, in order to fulfill the above objective, the application further provides a virtual robot control device. The virtual robot control device comprises a memory, a processor, a communication bus, and a virtual robot control program stored in the memory, wherein:

The communication bus is used for realizing connection and communication between the processor and the memory;

The processor is used to execute the virtual robot control program to implement the following

steps:

Receiving an account type configuration instruction, and configuring the account type of a virtual robot as an individual account type to support group consulting;

When an invitation instruction is received, adding the virtual robot into a target group
5 corresponding to the invitation instruction; and

Receiving consulting information sent by each member in the target group to the virtual robot, and returning reply information corresponding to the consulting information to the target group.

In addition, in order to fulfill the above objective, the application further provides a readable
10 storage medium. The readable storage medium has one or more programs stored therein, wherein the one or more programs are to be executed by one or more processors to implement the following steps:

Receiving an account type configuration instruction, and configuring the account type of a virtual robot as an individual account type to support group consulting;

When an invitation instruction is received, adding the virtual robot into a target group
15 corresponding to the invitation instruction; and

Receiving consulting information sent by each member in the target group to the virtual robot, and returning reply information corresponding to the consulting information to the target group.

According to the virtual robot control method, apparatus and device, and the readable storage
20 medium of the application, the account type of a virtual robot is configured as an individual account type supporting group consulting; when an invitation instruction for group consulting is received, the virtual robot is added into a target group corresponding to the invitation instruction; and consulting information sent by each member in the target group to the virtual robot is received, corresponding reply information is determined according to the consulting information, and the reply information is returned to the target group to reply to the consulting information of each member in the target group.
25 According to the present solution, the virtual robot is configured as an individual account type

supporting group consulting, and the virtual robot is added into the target group to reply to consulting information of each member in the target group, so that each member in the target group does not need to independently carry out communication consulting with the robot, the consulting operation of users is simplified, and the consulting efficiency is improved.

BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is a flow diagram of a first embodiment of a virtual robot control method of the application;

FIG. 2 is a flow diagram of a second embodiment of the virtual robot control method of the application;

FIG. 3 is a flow diagram of a third embodiment of the virtual robot control method of the application;

FIG. 4 is schematic diagram of functional modules of a first embodiment of a virtual robot control device of the application;

FIG. 5 is a schematic diagram of functional modules of a second embodiment of the virtual robot control device of the application;

FIG. 6 is a device structural diagram of a hardware operating environment involved in the method of the application.

The implementations, functional characteristics and advantages of the application are further described below with reference to the accompanying drawings.

DESCRIPTION OF EMBODIMENTS

It can be understood that the specific embodiments described herein are only used to explain the application, and are not used to limit the application.

The application provides a virtual robot control method.

Please refer to FIG. 1 which is a flow diagram of a first embodiment of the virtual robot control

method of the application. In this embodiment, the virtual robot control method comprises:

S10: an account type configuration instruction is received, and the account type of a virtual robot is configured as an individual account type to support group consulting;

The virtual robot in this embodiment is an intelligent virtual account which is used on an APP for chatting or answering questions, is mainly used for consulting about financial products and loan products of financial institutions, and is managed through a management platform. When purchasing a financial product or carrying out a loan transaction, a user may require consulting information in various aspects, and in this case, the user consults the virtual robot about the basic information of various financial products or loan products on one hand and shares the information obtained by consulting with other professional users to obtain reference opinions about the financial products from these professional users. Considering that the user may forget to consult the virtual robot about certain questions during product consulting or errors may be caused when the user shares the consulting information with other professional users, a chat group consisting of the user, the virtual robot and other professional users is preferably built to share the consulting information so as to avoid consulting omissions or sharing errors. Understandably, during group chatting, the account type of each chatting member should be an individual account type, that is, only a virtual robot of an individual account type can be added into the chat group. In this embodiment, an account type configuration instruction is received to configure the account type of the virtual robot as an individual account type to support group consulting. The account type configuration instruction indicates an account type to be configured. Corresponding to the account type which is an individual account type or a public account type, the account type configuration instruction is an instruction used for configuring the individual account or an instruction used for configuring the public account. When the configuration instruction is received, the type of the configuration instruction is determined; in the case where the type of the configuration instruction is the individual account type, the account type of the virtual robot is configured as the individual account type to support group consulting; and in the case where the type of the configuration instruction is the public account type, it indicates that the virtual robot is of a public service type, and the virtual robot is configured as the public account type.

In this embodiment, the received account type configuration instruction is a configuration instruction judged by the management platform to be of the individual type to configure the account type of the virtual robot as the individual account type to make sure that the virtual robot support group consulting.

5 Step S20: when an invitation instruction is received, the virtual robot is added into a target group corresponding to the invitation instruction.

After the account type of the virtual robot is configured as the individual account type, the virtual support is able to support group consulting. Like individual users, the virtual robot cannot actively and freely join any chat group and needs to be invited by a member in the chat group. For the
 10 sake of an invitation, the inviter and the virtual robot should be friends, and particularly, any member in the chat group adds the virtual robot as a friend and becomes a friend of the virtual robot after the virtual robot accepts the friend addition request from the member. Then, the virtual robot is invited by this member to be added into the chat group to which the member belongs. That is, the member, being a friend of the virtual robot, in the chat group sends an invitation instruction to the virtual robot; when
 15 the invitation instruction is received, the virtual robot is added into the chat group corresponding to the invitation instruction; and with the chat group as a target group, the virtual robot provides a consulting service for members in the target group. For example, the chat group includes a member a1, a member a2 and a member a3, wherein the member a2, as a friend of a virtual robot a, sends an invitation instruction to the virtual robot a to add the virtual robot a into the chat group, so that a target
 20 group including the members a, a1, a2 and a3 is established, and the members a1, a2 and a3 in the target group can consult the virtual robot a.

Step S30: consulting information sent by each member in the target group to the virtual robot is received, and reply information corresponding to the consulting information is returned to the target group.

25 After the virtual robot is added into the target group, all the members in the target group can send consulting information to the virtual robot. The consulting information sent by each member in the

target group to the virtual robot is received, and reply information corresponding to the consulting information is determined and is then returned to the target group. Group charting is carried out in the form of dialog boxes, each member inputs information to the corresponding dialog box and sends the information via the dialog box, and other members can receive and check the information through the corresponding dialog boxes. Because the virtual robot is managed through the management platform, the information sent by each member is transmitted to the management platform correspondingly, and reply information is returned to the dialog box of each member through the management platform. Considering that a large number of members in the target group participate in group chatting and some questions may be not put forward to the virtual robot, a judgment mechanism is set for the received information to avoid chaos of the information received by the management platform when multiple members consult the virtual robot at the same time. Particularly, if the received information is explicitly product consulting information or inquiry information, such as the unit price of a product, put forward to the virtual robot, or explicitly requires a reply from the virtual robot by an indication of “virtual robot” or an indication of “@virtual robot”, the received information is taken as consulting information sent to the virtual robot. Multiple types of reply information are stored in the management platform, and reply information corresponding to the consulting information is determined from the multiple types of reply information according to the consulting information. The corresponding reply information is returned to the target group and is display in the dialog boxes of the members in the target group to be checked by these members, so that the situation that each member independently consults the virtual robot for product information is avoided.

According to the virtual robot control method in this embodiment of the application, the account type of a virtual robot is configured as an individual account type supporting group consulting; when an invitation instruction for group consulting is received, the virtual robot is added into a target group corresponding to the invitation instruction; and consulting information sent by each member in the target group to the virtual robot is received, corresponding reply information is determined according to the consulting information, and the reply information is returned to the target group to reply to the consulting information of each member in the target group. According to the present solution, the

virtual robot is configured as an individual account type supporting group consulting, and the virtual robot is added into the target group to reply to consulting information of each member in the target group, so that each member in the target group does not need to independently carry out communication consulting with the robot, the consulting operation of users is simplified, and the consulting efficiency is improved.

Furthermore, referring to FIG. 2, a second embodiment of the virtual robot control method of the application is provided on the basis of the first embodiment of the virtual robot control method. In the second embodiment, the virtual robot control method further comprises the following steps performed before the step of adding, when an invitation instruction is received, the virtual robot into a target group corresponding to the invitation instruction:

Step S40: product reference information is received, and a target virtual robot serving for a product corresponding to the product reference information is determined to associate the product reference information with the target virtual robot.

Understandably, because the virtual robot in this embodiment is typically used for consulting about various products of financial institutions such as financial products and loan products, before the virtual robot is added by the management platform into the target group to be consulted by the members in the target group, relevant data of these products needs to be configured in the management platform to enable the virtual robot to give replies to consulting information according to the relevant data, and the data used for replying to product consulting information is taken as the product reference information. Considering that the financial institutions may involve many types of products, different virtual robots are set for different products for the purpose of convenient management, that is, each virtual robot serves for one product. For example, product 1 corresponds to virtual robot A, product 2 corresponds to virtual robot B, and product 3 correspond to virtual robot C, so that when the user wants to acquire information about product 1, virtual robot A will be added into the target group. In the case where there are many consulting users at the same time, the users have to wait for a long time if only one virtual robot of each type is configured. In order to avoid such situation, multiple virtual robots of each type can be configured to serve the users. For example,

multiple virtual robots A1, A2 and A3 of type A are configured. The specific number of the virtual robots of each type is determined according to the consulting quantity of products served by this type of virtual robots. When the quantity of consulting information about a product is large, a large number of virtual robots should be configured to serve for this product to meet the consulting requirements of users.

After different products and virtual robots are classified for management, the product reference information is received, a product corresponding to the product reference information is determined first, and then a target virtual robot serving for the product is determined to associate the product reference information with the target virtual robot. In order to distinguish virtual robots and products served by the virtual robots, the virtual robots are represented by unique serial numbers. For example, virtual robot A, virtual robot B and virtual robot C are respectively represented by serial number a, serial number b and serial number c, and correspondingly, product 1, product 2 and product 3 are also respectively represented by serial number a, serial number b and serial number c. When the product reference information is received, a serial number, such as serial number b, carried in the product reference information is acquired, and then a virtual robot having the same serial number, namely virtual robot B, is determined from all the virtual robots, so that the received product reference information is associated with virtual robot B. When the members in the target group consult the virtual robots, a keyword in the consulting information is extracted and is compared with the product reference information to make sure that the reply information is returned to the target group. Or, one virtual robot corresponds all products, and in this case, the received product reference information of any product is associated with the virtual robot so that the virtual robot can reply to the consulting information according to the product reference information. As for the case where different products correspond to different virtual robots, the step of adding the virtual robot into the target group corresponding to the invitation instruction after the product reference information is associated with the target virtual robot comprises:

When the invitation instruction is received, a target virtual robot serving for a product corresponding to the invitation instruction is determined, and the target virtual robot is added into the

target group corresponding to the invitation instruction.

Understandably, because different virtual robots serve for different products, users may consult the virtual robots for multiple products for a comparison of these products, for example, the users want to consult the virtual robots about O2O loan, i loan and housing e loan. In this case, identifiers are set for these products to make sure that the users can accurately invite the virtual robots serving for these products, and the identifiers are displayed on the interfaces of terminals used by the users, so that the users can selectively add the virtual robots as friends and then invite the virtual robots into the group target. For example, the identifier of O2O loan is set as 1, the identifier of i loan is set as 2, and the identifier of housing e loan is set as 3; when the users add the virtual robots as friends, the users add virtual robots serving for O2O loan, i loan and housing e loan as friends respectively by selecting the identifier 1, the identifier 2 and the identifier 3, and the added virtual robots are displayed in friend lists of the users. Similarly, in order to distinguish the virtual robots added into the friend lists, the virtual robots are displayed with the identifiers in the friendly lists. When a virtual robot needs to be invited into the target group for group consulting, the user sends an invitation instruction to the virtual robot corresponding to the identifier of the consulting product, for example, if the user wants to acquire information about O2O loan, the invitation instruction is sent to the virtual robot corresponding to the identifier 1. After the management platform receives the invitation instruction, the corresponding product can be determined according to the assured identifier corresponding to the invitation instruction, and then the virtual robot serving for the product is determined and is added into the target group corresponding to the invitation instruction to be consulted by the members in the target group.

Furthermore, in another embodiment of the virtual robot control method of the application, the step of receiving the consulting information sent by each member in the target group to the virtual robot and returning reply information corresponding to the consulting information to the target group comprises:

Step S31: when the consulting information sent by each member in the target group to the virtual robot is received, whether or not the consulting information is about a product served by the virtual

robot is determined;

After the product reference information of all products is associated with the virtual robot, when the consulting information sent by each member in the target group to the virtual robot is received, whether or not the consulting information is about the product served by the virtual robot is determined, namely whether the consulting information is a parameter about the consulting product is determined. For example, if the product served by the virtual robot added into the target group is financial product A, consulting information about financial product A may include the minimum purchase amount, purchase time limits and interest rates corresponding to the purchase time limits of financial product A. Considering that each member generally inputs a statement for consulting, a keyword, such as “time limit” or “interest rate”, can be extracted from the statement serving as the consulting information to determine whether or not the consulting information is about the product served by the virtual robot.

Step S32: when the consulting information is about the product served by the virtual robot, reply information corresponding to the consulting information is acquired from the product reference information, and the corresponding reply information is returned to the target group.

When it is determined according to the extracted keyword that the consulting information is about the product served by the virtual robot, reply information corresponding to the consulting information is acquired from the product reference information according to the keyword. For example, the consulting information is “how much does it cost to purchase one product” or “what is the purchasing risk of the product”; when the former consulting information is received, the keyword “how much” is extracted, and keywords relating to “money” are searched out from the product reference information. In consideration of different expression habits of different customers, the same intention may be expressed by different words, so that different words expressing the same intention are classified by one word for matching. For example, “how much”, “how to purchase” and “a lot of money” are classified by purchase amount, so that when the keyword is “how much”, the purchase amount will be obtained by matching, and the purchase amount and the corresponding amount of money are taken as reply information. Correspondingly, when the latter consulting information is

received, the keyword “risk” is extracted, a classification word corresponding to “risk” is searched out from the product reference information, and the classification word and corresponding information are taken as reply information. The reply information obtained by searching and matching is returned to the target group and displayed in the dialog boxes of the members in the target group to be checked by the member. When it is determined according to the extracted keyword that the consulting information is not about the product served by the virtual robot, a reply will be given according to preset reference information. Particularly, the virtual robot control method further comprises the following step to be performed after the step of determining whether or not the consulting information is about the product served by the virtual robot:

Step S33: when the consulting information is not about the product served by the virtual robot, preset reference information is called, and reply information corresponding to the consulting information is determined according to the preset reference information.

Considering that the users not only consult the virtual robot for products of financial institutions, but also put forward other questions or only chat, relevant data also needs to be configured to reply to such consulting information, and the relevant data is used as preset reference information to reply to product-independent consulting information. Different from the product reference information which is associated with different virtual robots corresponding to different products, the preset reference information is universal for all different products. When the consulting information sent by users is not about any products, the preset reference information is called to reply to the consulting information. The preset reference information is set for daily questions or chatting, for example, the consulting information “how’s the weather today”. When reply information corresponding to the consulting information is determined according to the called preset reference information, a keyword is extracted from the consulting information, and the extracted keyword is compared with the preset reference information to search for a classification word corresponding to the keyword, and the classification word and corresponding information are taken as reply information. For example, when the consulting information “how’s the weather today” is put forward, the keyword “weather” is extracted, a classification word corresponding to “weather” is searched out from the preset reference

information, and the classification information and corresponding weather information are determined as reply information. By configuring the product-independent preset reference information, different consulting requirements of users can be met; and the preset reference information is suitable for all products, so that management is facilitated.

5 Furthermore, in another embodiment of the virtual robot control method of the application, the step of determining reply information corresponding to the consulting information according to the preset reference information comprises:

Step S331: whether there is, in the preset reference information, the reply information corresponding to the consulting information is determined; and when there is, in the preset reference
10 information, the reply information corresponding to the consulting information, the corresponding reply information is acquired and returned.

Furthermore, because the consulting contents from different users are different, it is impossible to configure all consulting information into the preset reference information, and thus, when the keyword is extracted from the consulting information to be compared with the preset reference
15 information, a classification word may or may not be searched out. That is, it is normal whether there is or is not, in the preset reference information, the reply information corresponding to the consulting information, but these two phenomena are handled in different ways. Particularly, whether there is, in the preset reference information, the reply information corresponding to the consulting information is determined; when there is, in the preset reference information, the reply information corresponding to
20 the consulting information, it indicates that a classification word corresponding to the keyword in the consulting information can be searched out from the preset reference information, and information corresponding to the classification word is the reply information corresponding to the consulting information; and the reply information is acquired to reply to the consulting information.

Step S332: when there is not, in the preset reference information, the reply information
25 corresponding to the consulting information, a preset interface is called, and information in the preset interface is acquired to be returned to the target group.

When there is not, in the preset reference information, the reply information corresponding to the consulting information, it indicates that a classification word corresponding to the keyword in the consulting information cannot be searched out from the preset reference information, a target reply to the consulting information from the user cannot be given. If this is the case, a preset interface is called,
 5 wherein the preset interface is configured in advance and is connected to a network server. The interface connected to the network server is called to acquire information corresponding to the keyword in the consulting information from the network server, and the acquired information is returned to the target group, so that the members in the target group can screen out information corresponding to the consulting information to avoid failures to reply to the consulting information,
 10 and thus, the user's satisfaction is improved.

Furthermore, referring to FIG. 3, in another embodiment, the virtual robot control method of the application further comprises the following steps to be performed after the step of returning the reply information corresponding to the consulting information to the target group:

Step S50: the consulting information is recorded within a preset time, and information, that is
 15 replied to neither by the product reference information nor by the preset reference information, in the recorded consulting information is determined as target consulting information;

Furthermore, because the consulting contents from different users are different, it is possible that the consulting information from the users is replied to neither by the product reference information nor by the preset reference information. In consideration of such situation, a mechanism is set to
 20 collect and record the consulting information every a preset time in this embodiment, wherein the preset time is a time interval preset as required. Consulting information, that is replied to neither by the product reference information nor by the preset reference information, put forward by users is collected and recorded, and the consulting information that cannot be replied to neither by the product reference information nor by the preset reference information is taken as target consulting
 25 information. In addition, considering that the users may give advices and suggestions to the virtual robot, the collected and recorded consulting information may further include advices and suggestions from the users.

Step S60: reply information corresponding to the target consulting information is added to the product reference information or the preset reference information to update the product reference information or the preset reference information.

After the target consulting information and the advices and suggestions from the users are collected and recorded, the product reference information and the preset reference information are updated according to the target consulting information and the advices and suggestions from the users. As for the target consulting information that is replied to neither by the product reference information nor by the preset reference information, reply information corresponding to the target consulting information is added to the product reference information or the preset reference information, and then the product reference information or the preset reference information is updated, so that subsequent relevant information from users can be replied to. Particularly, whether the reply information is added to the product reference information or the preset reference information is determined according to the type of the target consulting information. If the consulting information is about the product served by the virtual robot, the reply information corresponding to the target consulting information is added to the product reference information. If the target consulting information is not about the product served by the virtual robot, the reply information corresponding to the target consulting information is added to the preset reference information. The product is reasonably updated according to the advices and suggestions about the product, and corresponding updated information is reflected in the product reference information. The updated product reference information or the updated preset reference information is input to the management platform and is associated with the virtual robot to meet different requirements of users, so that user experience is improved.

In addition, referring to FIG. 4, the application provides a virtual robot control apparatus. In a first embodiment of the virtual robot control apparatus of the application, the virtual robot control apparatus comprises:

A configuration module 10 used for receiving an account type configuration instruction and configuring the account type of a virtual robot as an individual account type to support group

consulting;

An addition module 20 used for adding, when an invitation instruction is received, the virtual robot into a target group corresponding to the invitation instruction; and

5 A return module 30 used for receiving consulting information sent by each member in the target group to the virtual robot and returning reply information corresponding to the consulting information to the target group.

According to the virtual robot control method in this embodiment of the application, the, the account type of a virtual robot is configured as an individual account type supporting group consulting; when an invitation instruction for group consulting is received, the virtual robot is added
10 into a target group corresponding to the invitation instruction; and consulting information sent by each member in the target group to the virtual robot is received, corresponding reply information is determined according to the consulting information, and the reply information is returned to the target group to reply to the consulting information of each member in the target group. According to the present solution, the virtual robot is configured as an individual account type supporting group
15 consulting, and the virtual robot is added into the target group to reply to consulting information of each member in the target group, so that each member in the target group does not need to independently carry out communication consulting with the robot, the consulting operation of users is simplified, and the consulting efficiency is improved.

Furthermore, referring to FIG. 5, in another embodiment of the virtual robot control apparatus of
20 the application, the virtual robot control apparatus further comprises:

A determination module 40 used for receiving product reference information and determining a target virtual robot serving for a product corresponding to the product reference information to associate the product reference information with the target virtual robot, wherein:

The determination module 20 is used for determining, when the invitation instruction is received,
25 the virtual robot corresponding to the invitation instruction, and adding the virtual robot into the target group corresponding to the invitation instruction.

It should be noted that those ordinarily skilled in the art can implement part or all of the steps in the above embodiments by means of hardware or relevant hardware instructed by a program which is stored in a computer-readable storage medium, and the storage medium is a read-only memory, a disk, a CD, or the like.

5 Please refer to FIG. 6 which is a device structural diagram of a hardware operating environment involved in the method of the embodiment of the application.

A virtual robot control device in this embodiment of the application is terminal device such as a PC, a smart phone, a tablet computer, an e-book reader, or a portable computer.

10 As shown in FIG. 6, the virtual robot control device comprises a processor 1001 such as a CPU, a memory 1005, and a communication bus 1002, wherein the communication bus 1002 is used for realizing connection and communication between the processor 1001 and the memory 1005; and the memory 1005 is a high-speed RAM memory, or a stable non-volatile memory such as a disk memory; or, the memory 1005 is preferably a memory device independent of the processor 1001.

15 Optionally, the virtual robot control device may further comprise a user interface, a network interface, a camera, an RF (Radio Frequency) circuit, a sensor, an audio circuit, a WIFI module, and the like. The user interface may comprise a display and an input unit such as a keyboard, and may optionally further comprise a standard wired interface and a wireless interface. The network interface may optionally comprise a standard wired interface and a wireless interface (such as a WIFI-FI interface).

20 Those skilled in the art may appreciate that the structure of the virtual robot control device shown in FIG. 6 is not intended to limit the virtual robot control device, and the virtual robot control device may comprise more or less components against FIG. 6, or some components may be combined, or the components may be configured in different manners.

25 As shown in FIG. 6, the memory 1005, as a computer storage medium, may comprise an operating system, a network communication module and a virtual robot control program. The operating system is a program used for managing and controlling hardware and software resources of

the virtual robot control device and supports running of the virtual robot control program and other software and/or programs. The network communication module is used for realizing communication between all components in the memory 1005 as well as communication between other hardware and software in the virtual robot control device.

5 In the virtual robot control device shown in FIG. 6, the processor 1001 is used to execute the virtual robot control program stored in the memory 1005 to implement the virtual robot control method. The specific implementation of the virtual robot control device of the application is basically identical with that of the embodiments of the virtual robot control method and will not be detailed anymore herein.

10 The application provides a readable storage medium. The readable storage medium has one or more programs stored therein, wherein the one or more programs are to be executed by one or more processors to implement the virtual robot control method. The specific implementation of the readable storage medium of the application is basically identical with that of the embodiments of the virtual robot control method and will not be detailed anymore therein.

15 It should be noted that in the article, the term “comprise” or “include”, or any other variations of this term refer to non-exclusive inclusion, so that a process, method, article or apparatus comprising a series of elements not only comprises these elements listed, but also comprises other elements that are not specifically listed, or comprises inherent elements of the process, method, article or apparatus. Only otherwise clearly specified, an element limited by “comprise a/an...” shall not be exclusive of
20 other identical elements in the process, method, article, or apparatus comprising this element.

The series numbers of the embodiments of the application are only for the purpose of description, and do not indicate the superiority of these embodiments.

25 With reference to the above description of the embodiments, those skilled in the art would clearly appreciate that the method in the above embodiments can be implemented by means of software and a necessary universal hardware platform, or by means of hardware, and in most cases, the former is preferred. On the basis of such appreciation, the essence of the technical solutions of the

preset application or the parts making a contribution to the prior art can be reflected by a software product, which is stored, for example, in the storage medium (such as ROM/RAM disc, or CD) and comprises a plurality of instructions enabling one terminal device (such as mobile phone, computer, server, or network device) to implement the method in the embodiments of the application.

5 The above embodiments are only preferred ones of the application, and are not intended to limit the patent scope of the application. Any equivalent structural transformations achieved on the basis of the contents in the specification and accompanying drawings without deviating from the concept of the application, or direct/indirection applications to other related technical fields should also fall within the patent protection scope of the application.

CLAIMS

1. 1. A virtual robot control method, comprising the following steps:

receiving an account type configuration instruction, and configuring an account type of a virtual robot as an individual account type to support group consulting;

5 when an invitation instruction is received, adding the virtual robot into a target group corresponding to the invitation instruction; and

receiving consulting information sent by each member in the target group to the virtual robot, and returning reply information corresponding to the consulting information to the target group.

2. The virtual robot control method according to Claim 1, wherein the method further
10 comprises the following step performed before the step of adding, when an invitation instruction is received, the virtual robot into a target group corresponding to the invitation instruction:

receiving product reference information and determining a target virtual robot serving for a product corresponding to the product reference information to associate the product reference information with the target virtual robot;

15 the step of adding, when an invitation instruction is received, the virtual robot into a target group corresponding to the invitation instruction comprises:

when the invitation instruction is received, determining a virtual robot serving for a product corresponding to the invitation instruction, and adding the virtual robot into the target group corresponding to the invitation instruction.

20 3. The virtual robot control method according to Claim 2, wherein the step of receiving consulting information sent by each member in the target group to the virtual robot and returning reply information corresponding to the consulting information to the target group comprises:

when the consulting information sent by each member in the target group to the virtual robot is received, determining whether or not the consulting information is about a product served by the

virtual robot; and

in the case where the consulting information is about the product served by the virtual robot, acquiring reply information corresponding to the consulting information from the product reference information, and returning the corresponding reply information to the target group.

5 4. The virtual robot control method according to Claim 3, wherein the virtual robot control method further comprises the following step to be performed after the step of determining whether or not the consulting information is about a product served by the virtual robot:

in the case where the consulting information is not about the product served by the virtual robot, calling preset reference information, and determining reply information corresponding to the consulting information according to the preset reference information.

10 5. The virtual robot control method according to Claim 4, wherein the step of determining reply information corresponding to the consulting information according to the preset reference information comprises:

determining whether there is, in the preset reference information, reply information
15 corresponding to the consulting information, and when there is, in the preset reference information, the reply information corresponding to the consulting information, acquiring and returning the corresponding reply information; and

when there is not, in the preset reference information, reply information corresponding to the consulting information, calling a preset interface, acquiring information in the preset interface, and
20 returning the information acquired from the preset interface to the target group.

6. The virtual robot control method according to Claim 4, wherein the virtual robot control method further comprises the following steps to be performed after the step of returning reply information corresponding to the consulting information to the target group:

recording the consulting information within a preset time, and determining information, that is
25 replied to neither by the product reference information nor by the preset reference information, in the

recorded consulting information as target consulting information; and

adding reply information of the target consulting information into the product reference information or the preset reference information to update the product reference information or the preset reference information.

5 7. A virtual robot control apparatus, comprising:

a configuration module used for receiving an account type configuration instruction and configuring an account type of a virtual robot as an individual account type to support group consulting;

10 an addition module used for adding, when an invitation instruction is received, the virtual robot into a target group corresponding to the invitation instruction; and

a return module used for receiving consulting information sent by each member in the target group to the virtual robot and returning reply information corresponding to the consulting information to the target group.

15 8. The virtual robot control apparatus according to Claim 7, wherein the virtual robot control apparatus further comprises:

a determination module used for receiving product reference information and determining a target virtual robot serving for a product corresponding to the product reference information to associate the product reference information with the target virtual robot, wherein:

20 the addition module is used for determining, when the invitation instruction is received, a virtual robot serving for a product corresponding to the invitation instruction and adding the virtual robot into the target group corresponding to the invitation instruction.

9. A virtual robot control device, comprising a memory, a processor, a communication bus, and a virtual robot control program stored in the memory, wherein:

the communication bus is used for realizing connection and communication between the

processor and the memory;

the processor is used to execute the virtual robot control program to implement the following steps:

receiving an account type configuration instruction, and configuring an account type of a virtual
5 robot as an individual account type to support group consulting;

when an invitation instruction is received, adding the virtual robot into a target group corresponding to the invitation instruction; and

receiving consulting information sent by each member in the target group to the virtual robot, and returning reply information corresponding to the consulting information to the target group.

10 10. The virtual robot control device according to Claim 9, wherein the following step is performed before the step of adding, when an invitation instruction is received, the virtual robot into a target group corresponding to the invitation instruction:

receiving product reference information and determining a target virtual robot serving for a product corresponding to the product reference information to associate the product reference
15 information with the target virtual robot;

the step of adding, when an invitation instruction is received, the virtual robot into a target group corresponding to the invitation instruction comprises:

when the invitation instruction is received, determining a virtual robot serving for a product corresponding to the invitation instruction, and adding the virtual robot into the target group
20 corresponding to the invitation instruction.

11. The virtual robot control device according to Claim 10, wherein the step of receiving consulting information sent by each member in the target group to the virtual robot and returning reply information corresponding to the consulting information to the target group comprises:

when the consulting information sent by each member in the target group to the virtual robot is

received, determining whether or not the consulting information is about a product served by the virtual robot; and

in the case where the consulting information is about the product served by the virtual robot, acquiring reply information corresponding to the consulting information from the product reference information, and returning the corresponding reply information to the target group.

12. The virtual robot control device according to Claim 11, wherein the following step is to be performed after the step of determining whether or not the consulting information is about a product served by the virtual robot:

in the case where the consulting information is not about the product served by the virtual robot, calling preset reference information, and determining reply information corresponding to the consulting information according to the preset reference information.

13. The virtual robot control device according to Claim 12, wherein the step of determining reply information corresponding to the consulting information according to the preset reference information comprises:

determining whether there is, in the preset reference information, reply information corresponding to the consulting information, and when there is, in the preset reference information, the reply information corresponding to the consulting information, acquiring and returning the corresponding reply information; and

when there is not, in the preset reference information, reply information corresponding to the consulting information, calling a preset interface, acquiring information in the preset interface, and returning the information acquired from the preset interface to the target group.

14. The virtual robot control device according to Claim 12, wherein the following steps are to be performed after the step of returning reply information corresponding to the consulting information to the target group:

recording the consulting information within a preset time, and determining information, that is

replied to neither by the product reference information nor by the preset reference information, in the recorded consulting information as target consulting information; and

adding reply information of the target consulting information into the product reference information or the preset reference information to update the product reference information or the
5 preset reference information.

15. A readable storage medium, having a virtual robot control program stored therein, wherein the virtual robot control program is to be executed by a processor to implement the following steps:

receiving an account type configuration instruction, and configuring an account type of a virtual robot as an individual account type to support group consulting;

10 when an invitation instruction is received, adding the virtual robot into a target group corresponding to the invitation instruction; and

receiving consulting information sent by each member in the target group to the virtual robot, and returning reply information corresponding to the consulting information to the target group.

16. The readable storage medium according to Claim 15, wherein the following step is
15 performed before the step of adding, when an invitation instruction is received, the virtual robot into a target group corresponding to the invitation instruction:

receiving product reference information and determining a target virtual robot serving for a product corresponding to the product reference information to associate the product reference information with the target virtual robot;

20 the step of adding, when an invitation instruction is received, the virtual robot into a target group corresponding to the invitation instruction comprises:

when the invitation instruction is received, determining a virtual robot serving for a product corresponding to the invitation instruction, and adding the virtual robot into the target group corresponding to the invitation instruction.

17. The readable storage medium according to Claim 16, wherein the step of receiving consulting information sent by each member in the target group to the virtual robot and returning reply information corresponding to the consulting information to the target group comprises:

when the consulting information sent by each member in the target group to the virtual robot is received, determining whether or not the consulting information is about a product served by the virtual robot; and

in the case where the consulting information is about the product served by the virtual robot, acquiring reply information corresponding to the consulting information from the product reference information, and returning the corresponding reply information to the target group.

18. The readable storage medium according to Claim 17, wherein the following step is to be performed after the step of determining whether or not the consulting information is about a product served by the virtual robot:

in the case where the consulting information is not about the product served by the virtual robot, calling preset reference information, and determining reply information corresponding to the consulting information according to the preset reference information.

19. The readable storage medium according to Claim 18, wherein the step of determining reply information corresponding to the consulting information according to the preset reference information comprises:

determining whether there is, in the preset reference information, reply information corresponding to the consulting information, and when there is, in the preset reference information, the reply information corresponding to the consulting information, acquiring and returning the corresponding reply information; and

when there is not, in the preset reference information, reply information corresponding to the consulting information, calling a preset interface, acquiring information in the preset interface, and returning the information acquired from the preset interface to the target group.

20. The readable storage medium according to Claim 18, wherein the following steps are to be performed after the step of returning reply information corresponding to the consulting information to the target group:

5 recording the consulting information within a preset time, and determining information, that is replied to neither by the product reference information nor by the preset reference information, in the recorded consulting information as target consulting information; and

adding reply information of the target consulting information into the product reference information or the preset reference information to update the product reference information or the preset reference information.