SERVICE REQUEST PROCESSING METHOD AND APPARATUS, DEVICE, AND MEDIUM

[0001] This application claims priority to Chinese Patent Application No. 202510215192.6 filed with the China National Intellectual Property Administration (CNIPA) on Feb. 26, 2025, the disclosure of which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] The present application relates to the technical field of artificial intelligence, for example, a service request processing method and apparatus, a device, and a medium.

BACKGROUND

[0003] With the increasing development of artificial intelligence technology, artificial intelligence customer service robots, such as chatbots, are widely applied.

[0004] Currently, with the popularity of graphical workflows for constructing intelligent robots, when diverse requirements and service data are categorized and constructed using common nodes, only fine-grained categorization of the nodes based on specific services and application scenarios can ensure precise embedding into a service system. One of the key techniques to achieve these differentiated services is to summarize and organize services and optimize the attributes of the common nodes for different scenarios.

[0005] For example, when the common nodes are used to construct a customer service robot that recognizes user intents during a conversation workflow, most current implementations require combining model management nodes with other nodes to control the process direction. However, an increase in the number of steps in a flowchart made in this manner means that the process is more complex and the response time is increased. In an instant response workflow, the response time is undoubtedly increased, and the requirement of a fast response cannot be satisfied.

SUMMARY

[0006] The present application provides a service request processing method and apparatus, a device, and a medium so that through a customer service robot formed by corresponding nodes obtained according to the categorization of service functions, the creation of unnecessary nodes can be effectively avoided, and the complexity of a robot work flowchart can be reduced, thereby reducing the execution time of the robot processing process.

[0007] According to an aspect of the present application, a service request processing method is provided. The method includes the steps below.

[0008] A to-be-processed service request is acquired.

[0009] The to-be-processed service request is input into a first customer service robot, and the to-be-processed service request is processed according to a work flowchart in the first customer service robot to obtain a corresponding target processed result, where the work flowchart includes a first number of nodes, and the first number of nodes are categorized according to service functions.

[0010] According to another aspect of the present application, a service request processing apparatus is provided. The apparatus includes the modules below.A request acquisition module is configured to acquire a to-be-processed service request.

[0012] A request processing module is configured to input the to-be-processed service request into a first customer service robot and process the to-be-processed service request according to a work flowchart in the first customer service robot to obtain a corresponding target processed result, where the work flowchart includes a first number of nodes, and the first number of nodes are categorized according to service functions.

[0013] According to another aspect of the present application, an electronic device is provided.

[0014] The electronic device includes at least one processor and a memory communicatively connected to the at least one processor.

[0015] The memory is configured to store a computer program executable by the at least one processor to cause the at least one processor to perform the service request processing method of any embodiment of the present application.

[0016] According to another aspect of the present application, a computer-readable storage medium is provided. The computer-readable storage medium stores computer instructions that, when executed by a processor, are configured to cause the processor to perform the service request processing method of any embodiment of the present application.

[0017] In the technical solution of embodiments of the present application, the to-be-processed service request is acquired; the to-be-processed service request is input into the first customer service robot, and the to-be-processed service request is processed according to the work flowchart in the first customer service robot to obtain the corresponding target processed result, where the work flowchart includes the first number of nodes, and the first number of nodes are categorized according to the service functions. In the technical solution, through the customer service robot formed by the corresponding nodes obtained according to the categorization of the service functions, the creation of unnecessary nodes can be effectively avoided, and the complexity of the robot work flowchart can be reduced, thereby reducing the execution time of the robot processing process.

BRIEF DESCRIPTION OF DRAWINGS

[0018] FIG. 1 is a flowchart of a service request processing method according to embodiment one of the present application.

[0019] FIG. 2 is a flowchart of a service request processing method according to embodiment two of the present application.

[0020] FIG. 3 is a diagram illustrating the structure of a service request processing apparatus according to embodiment three of the present application.

[0021] FIG. 4 is a diagram illustrating the structure of an electronic device according to embodiment four of the present application.

DETAILED DESCRIPTION

[0022] For a better understanding of the solution of the present application by those skilled in the art, the technical solutions in embodiments of the present application are described clearly and completely hereinafter in conjunction with the drawings in the embodiments of the present application. Apparently, the embodiments described hereinafter are part, not all, of embodiments of the present application. Based on the embodiments of the present application, all other embodiments obtained by those of ordinary skill in the art on the premise that no creative work is done are within the scope of the present application.

[0023] It is to be noted that the terms "first", "second", and "target" in the specification, claims, and drawings of the present application are used for distinguishing between similar objects and are not necessarily used for describing a particular order or sequence. It is to be understood that data used in this manner are interchangeable where appropriate so that the embodiments of the present application described herein can be implemented in an order not illustrated or described herein. Additionally, terms "include", "have" and any variations thereof are intended to encompass a non-exclusive inclusion. For example, a process, method, system, product, or device that includes a series of steps or units not only includes the expressly listed steps or units but may also include other steps or units that are not expressly listed or are inherent to such process, method, product, or device.

[0024] Embodiment one

[0025] FIG. 1 is a flowchart of a service request processing method according to embodiment one of the present application. This embodiment is applicable to the case where a customer service robot processes a service request. The method may be executed

by a service request processing apparatus. The service request processing apparatus may be implemented in the form of hardware and/or software. The service request processing apparatus may be configured in an electronic device having a data processing capability. As shown in FIG. 1, the method includes the steps below.

[0026] The technical solution in this embodiment may be applied to a service scenario in the field of car finance. A customer service robot may be preconstructed based on a knowledge base in the field of car finance to process a corresponding service request.

[0027] In S110, a to-be-processed service request is acquired.

[0028] The to-be-processed service request may be considered a service request that requires processing. The to-be-processed service request in this embodiment may be a service request in the field of car finance. Exemplarily, the to-be-processed service request in this embodiment may be a service request related to purchase, financing, insurance, maintenance, and a related service of a car.

[0029] A system control platform in this embodiment may acquire the to-be-processed service request that is input by a caller and related to the purchase, financing, insurance, maintenance, and related services of a car.

[0030] In S120, the to-be-processed service request is input into a first customer service robot, and the to-be-processed service request is processed according to a work flowchart in the first customer service robot to obtain a corresponding target processed result.

[0031] The work flowchart includes a first number of nodes, and the first number of nodes are categorized according to service functions. The first customer service robot may be considered a mainline customer service robot. In this embodiment, the system control platform may include the mainline customer service robot, and other backup tool robots may be nested and called in the mainline customer service robot so that the first customer service robot can call other customer service robots by using a robot calling node, thereby completing the processing of different service requests. The first number may be the

number of nodes included in the work flowchart in the first customer service robot. In this embodiment, the number of nodes for constructing the first customer service robot may be determined according to actual requirements. Exemplarily, the number of nodes of the first customer service robot may be 20 or 30, or a specific number of nodes may be set according to actual service requirements, which is not limited in this embodiment. The first customer service robot in this embodiment may be preconstructed. In this embodiment, multiple nodes may be categorized through a service function dimension to obtain the first number of nodes, and the work flowchart of the first customer service robot may be obtained by graphical construction according to the first number of nodes. The target processed result may be understood as a processed result obtained after the first customer service robot processes the to-be-processed service request. In this embodiment, the to-be-processed service request may be input into the first customer service robot, and the to-be-processed service request may be processed in sequence by using service nodes in the work flowchart in the first customer service robot so that a processed result, that is, the target processed result, can be obtained.

[0032] In this embodiment, optionally, the work flowchart includes a preprocessing layer, a logic processing layer, and a data output layer; the preprocessing layer and the data output layer each include at least one node; the logic processing layer includes a second number of nodes.

[0033] The second number may be the number of nodes included in the logic processing layer. In this embodiment, the second number is smaller than the first number. Exemplarily, if the first number is 20, the second number may be 15, or 12, or may also be set according to actual requirements.

[0034] The work flowchart of the first customer service robot in this embodiment may be divided into three layers, namely, the preprocessing layer, the logic processing layer, and the data output layer. The preprocessing layer and the data output layer each have the at least one node, and the logic processing layer may include the second number of nodes. The

preprocessing layer in this embodiment may also include a start node. The preprocessing layer in this embodiment may be formed by the start node and a prologue node, and the function of the preprocessing layer may be responsible for verifying an external parameter and controlling the direction of the flowchart through a branch condition. The logic processing layer in this embodiment may include, but is not limited to, a direct reply node, a knowledge base query node, an intent recognition node, a rewrite node, a speech recognition node, and a speech generation node. The logic processing layer may further include a robot calling node, a large language model (LLM) node, a code execution node, a data processing node, a network search node, a service calling node, and others. The function of the logic processing layer is achieved collectively by the various nodes included in the logic processing layer, which perform the interaction with the knowledge base, an artificial intelligence (AI) model, a third-party application programming interface (API), and an internal service. In this embodiment, due to the increase of certain redundancy in the functions of the nodes, the number of nodes and the node data flow overhead are reduced; since there are many types of questions included in the to-be-processed request of a customer, to improve the answer accuracy, the LLM node and the knowledge base query node may support multi-way recall and call rearrangement models. In the workflow process of an existing robot, as workflows increase, the flowchart becomes more and more complex. Therefore, in the present application, the complexity of the work flowchart can be reduced by the robot calling node. The data output layer may include an LLM node for formatting an answer provided by the customer service robot and returning the formatted answer to the caller.In this embodiment, through this configuration, the number of nodes can be simplified by adjusting the functions of the nodes so that the work flowchart of the first customer service robot can be clearer, thereby improving the response efficiency of the customer service robot.It is to be understood that in this embodiment, when the work flowchart of the first customer service robot is graphically constructed, the functional scope of the nodes is expanded based on the knowledge and service scenarios in the field of car finance, thereby reducing the complexity of the workload flowchart of the first customer service robot, that

is, reducing the number of nodes of the first customer service robot, and professional data references can also be added for the attributes of the nodes, thereby improving the operating efficiency when the first customer service robot processes the service request.

[0037] In the technical solution of the embodiment of the present application, the to-be-processed service request is acquired; the to-be-processed service request is input into the first customer service robot, and the to-be-processed service request is processed according to the work flowchart in the first customer service robot to obtain the corresponding target processed result, where the work flowchart includes the first number of nodes, and the first number of nodes are categorized according to the service functions. In the technical solution, through the customer service robot formed by the corresponding nodes obtained according to the categorization of the service functions, the creation of unnecessary nodes can be effectively avoided, and the complexity of the robot work flowchart can be reduced, thereby reducing the execution time of the robot processing process.

[0038] Embodiment two

[0039] FIG. 2 is a flowchart of a service request processing method according to embodiment two of the present application. This embodiment is optimized based on the preceding embodiment. Specifically, processing the to-be-processed service request according to the work flowchart in the first customer service robot to obtain the corresponding target processed result includes: inputting the to-be-processed service request into the preprocessing layer of the work flowchart in the first customer service robot, using a prologue node in the preprocessing layer to determine and analyze the to-be-processed service request to obtain a corresponding target processing branch; using the second number of nodes in the logic processing layer to process the target processing branch in sequence to obtain at least one processed result; and using the data output layer to fuse the at least one processed result to output the target processed result. As shown in FIG. 2, the method includes the steps below.

[0040] In S210, the to-be-processed service request is acquired.

[0041] The work flowchart includes the first number of nodes, and the first number of nodes are categorized according to the service functions. In this embodiment, the work flowchart of the first customer service robot includes the preprocessing layer, the logic processing layer, and the data output layer; the preprocessing layer and the data output layer each include at least one node; the logic processing layer includes the second number of nodes.

[0042] In S220, the to-be-processed service request is input into the preprocessing layer of the work flowchart in the first customer service robot, and a to-be-processed service is determined and analyzed by using a prologue node in the preprocessing layer to obtain a corresponding target processing branch.

[0043] The prologue node may be a node included in the preprocessing layer. In this embodiment, the prologue node has built-in branch determination, and there is no need to construct a new conditional determination branch as one node. The prologue node in this embodiment may be responsible for verifying a parameter included in the to-be-processed service request and controlling the direction of the work flowchart through the branch condition, so as to continue performing corresponding analysis and processing by using the nodes in the logic processing layer. The target processing branch may be understood as a processing branch obtained after the preprocessing layer preliminarily analyzes and determines the to-be-processed service request.

[0044] Further, in this embodiment, if there is only a node with one output result, no determination branch is built into the node; if there are nodes with two output results, a determination branch may be built into each node, thereby reducing determination nodes in the work flowchart.

[0045] In this embodiment, the to-be-processed service request may be input into the preprocessing layer of the work flowchart in the first customer service robot to perform

parameter verification on the to-be-processed service through the prologue node included in the preprocessing layer and determine and analyze the to-be-processed service through the branch condition to determine the corresponding target processing branch, thereby controlling the direction of the work flowchart.

[0046] In this embodiment, optionally, using the prologue node in the preprocessing layer to analyze the to-be-processed service to obtain the corresponding target processing branch includes: using the prologue node in the preprocessing layer to determine the corresponding target processing branch for a service scenario in the to-be-processed service request according to a regular matching manner.

[0047] Regular matching is a fixed matching manner that is pre-configured for the service scenario. In this embodiment, the prologue node in the preprocessing layer may predefine a set of regular expressions according to different service scenarios. Each regular expression corresponds to one specific service scenario or one specific processing branch, and a prologue text is extracted from the to-be-processed service request. The prologue text is typically a descriptive text in the request, which can indicate the service scenario. The extracted prologue text may be matched with the predefined regular expression set one by one. According to the matched result, a processing branch corresponding to a regular expression that successfully matches the prologue text is determined, that is, the target processing branch. In this embodiment, if multiple regular expressions are matched successfully, a priority rule may be designed, or the most specific matching item may be selected to determine the final processing branch.

[0048] In this embodiment, the prologue node has the built-in branch determination, and the to-be-processed service request may be preliminarily analyzed by only using a regular matching manner without being processed by a large model. Exemplarily, some fixed words may be configured in the regular matching manner, and if it is detected that a question included in the to-be-processed request sent by a user is "Who are you", a corresponding answer may be provided through the preconfigured fixed words, for example, "I am your

assistant, here to answer your questions."

[0049] With this configuration, in this embodiment, through the preconfigured fixed words in the prologue node, the response efficiency of the customer service robot can be improved, and cumbersome process processing based on other large models can also be avoided.

[0050] In S230, the target processing branch is processed in sequence by using the second number of nodes in the logic processing layer to obtain at least one processed result.

[0051] The second number of nodes may include the knowledge base query node, the intent recognition node, the LLM node, and others. In this embodiment, the knowledge base query node, the intent recognition node, and the LLM node in the logic processing layer are added with the function of calling multiple models and querying multiple data sources by a single node.

[0052] In the process of processing the to-be-processed service request in this embodiment, multiple tools with the same function may be called to perform different processing so that multiple processed results can be obtained. Exemplarily, if the to-be-processed service request is a query service request, multiple data source functions may be queried by using the knowledge base node in the logic processing layer, such as a network data source query, a third-party search query, and a document search query, so that multiple data query results can be obtained, and these multiple data query results are used as the processed results.

[0053] It is to be understood that, in the second number of nodes in this embodiment, each node has a corresponding processing manner or processing flow. Specifically, in this embodiment, the target processing branch may be input into the start node of the logic processing layer, and the processed result may be passed to the next node for processing in sequence according to a preset processing flow. Each node operates on input data according to the processing logic of each node and outputs a processed result.

[0054] In this embodiment, optionally, the second number of nodes include the robot calling node; accordingly, using the second number of nodes in the logic processing layer to process the target processing branch in sequence to obtain the at least one processed result includes: according to the target processing branch, using the robot calling node included in the logic processing layer to call at least one second customer service robot to perform corresponding service processing to output the at least one processed result.

[0055] The robot calling node may be configured to call multiple tool robots. A second customer service robot may be considered a tool robot. In this embodiment, the robot calling node may call one tool robot or may also call two or more tool robots at the same time, and the calling may be performed according to actual requests.In this embodiment, different tool robots may correspond to different functions. Exemplarily, tool robot A may be a robot with a local specific search function, tool robot B may be a robot with a polishing function, and tool robot C may be a robot with a text writing function.In this embodiment, the first customer service robot may call a second customer service robot by using the robot calling node to perform corresponding service processing. It is to be understood that the first customer service robot is the mainline customer service robot, and the second customer service robot may be considered a tool robot for assisting the mainline customer service robot. Therefore, in this embodiment, the first customer service robot may call a corresponding second customer service robot by using the robot calling node.

[0058] In this embodiment, according to the service functions required in the target processing branch, the robot calling node included in the logic processing layer in the first customer service robot is used to call the one or more second customer service robots to perform the corresponding service processing, thereby outputting the at least one corresponding processed result.

[0059] In this embodiment, this configuration can process different service functions by using only the robot calling node, thereby simplifying the nodes of the work flowchart of the first customer service robot.

[0060] In S240, the at least one processed result is fused through the data output layer to output the target processed result.

[0061] The fusion may be a fusion of multiple processed results. In this embodiment, the at least one processed result may be fused through the data output layer to form a complete and comprehensive result, and the finally formed result is output as the target processed result.

[0062] In this embodiment, optionally, the second number of nodes include the knowledge base query node; the knowledge base query node is preconfigured with information about car configuration, a car sales location, and a car activity.

[0063] In this embodiment, when the work flowchart of the first customer service robot is constructed, the knowledge base in the field of car finance is first constructed, corresponding car data information is acquired from various official car websites and is integrated with book data to form the information about the car configuration, a sales store, and a recent activity, so as to preconfigure the information in the knowledge base node. In this embodiment, the knowledge base of the knowledge base query node may also be updated regularly. Specifically, in this embodiment, the integrated information may be formed into a corresponding document and stored in the knowledge base for easy query of the database. For example, when the user asks about store information of a certain type of car, the knowledge base query node finds detailed information corresponding to a car store from the document to reply to the user.

[0064] In this embodiment, through this configuration, the accuracy of a knowledge base query is improved so that the user can get a satisfactory reply, and the user experience can be improved.

[0065] In this embodiment, optionally, the method further includes acquiring a log record of the first customer service robot and user feedback information of the first customer service robot; optimizing the work flowchart in the first customer service robot according to

the log record and the user feedback information.

[0066] The log record may be actual operation data that records the work flowchart of the first customer service robot. The user feedback information may be information acquired through dedicated feedback channels. For example, the user feedback information includes, but is not limited to, feedback information acquired through channels such as a customer service chat window, an online questionnaire, a user satisfaction rating, and a social media comment.

[0067] The system control platform in this embodiment may also be configured with a log and marking feedback function which is configured to acquire the log record of the first customer service robot and the user feedback information of the first customer service robot, so as to continuously optimize and adjust the work flowchart of the first customer service robot based on the log record and the user feedback information, thereby assisting in improving the robot process.

[0068] In this embodiment, through this configuration, the work flowchart of the first customer service robot can be optimized and adjusted by combining the actual operation data of the first customer service robot and the user feedback information of the first customer service robot, and the operation condition and user needs of the customer service robot can be fully understood, thereby improving the service quality and efficiency of the first customer service robot.

[0069] In the technical solution of the embodiment of the present application, the work flowchart of the mainline customer service robot can be simplified. The nodes can be categorized according to the dimensions of the service functions, thereby simplifying the nodes of the work flowchart of the first customer service robot. For example, the first customer service robot originally needs the work flowchart of 200 nodes to achieve the corresponding service processing. Through the categorization of the nodes and the adjustment of the function range of the nodes, the first customer service robot now only

needs 20 nodes to achieve the service processing originally achieved by 200 nodes.

[0070] In the technical solution of the embodiment of the present application, the to-be-processed service request is acquired; the to-be-processed service request is input into the preprocessing layer of the work flowchart in the first customer service robot, and the prologue node in the preprocessing layer is used to determine and analyze the to-be-processed service to obtain the corresponding target processing branch; the second number of nodes in the logic processing layer are used to process the target processing branch in sequence to obtain the at least one processed result; the data output layer is used to fuse the at least one processed result to output the target processed result. The work flowchart includes the first number of nodes, and the first number of nodes are categorized according to the service functions. In the technical solution, through the customer service robot formed by the corresponding nodes obtained according to the categorization of the service functions, the creation of unnecessary nodes can be effectively avoided, and the complexity of the robot work flowchart can be reduced, thereby reducing the execution time of the robot processing process.

[0071] Embodiment three

[0072] FIG. 3 is a diagram illustrating the structure of a service request processing apparatus according to embodiment three of the present application. As shown in FIG. 3, the apparatus includes the modules below.

[0073] A request acquisition module 310 is configured to acquire a to-be-processed service request.

[0074] A request processing module 320 is configured to input the to-be-processed service request into a first customer service robot and process the to-be-processed service request according to a work flowchart in the first customer service robot to obtain a corresponding target processed result, where the work flowchart includes a first number of nodes, and the first number of nodes are categorized according to service functions.

[0075] Optionally, the work flowchart includes a preprocessing layer, a logic processing layer, and a data output layer; the preprocessing layer and the data output layer each include at least one node; the logic processing layer includes a second number of nodes.

[0076] Optionally, the request processing module 320 includes the units below.

[0077] A target processing branch acquisition unit is configured to input the to-be-processed service request into the preprocessing layer of the work flowchart in the first customer service robot, use a prologue node in the preprocessing layer to determine and analyze a to-be-processed service to obtain a corresponding target processing branch.

[0078] A processed result acquisition unit is configured to use the second number of nodes in the logic processing layer to process the target processing branch in sequence to obtain at least one processed result.

[0079] A target processed result output unit is configured to fuse the at least one processed result through the data output layer to output the target processed result.

[0080] Optionally, the second number of nodes include a robot calling node.

[0081] Correspondingly, the processed result acquisition unit is specifically configured to, according to the target processing branch, use the robot calling node included in the logic processing layer to call at least one second customer service robot to perform corresponding service processing to output the at least one processed result.

[0082] Optionally, the second number of nodes include a knowledge base query node; the knowledge base query node is preconfigured with information about car configuration, a car sales location, and a car activity.

[0083] Optionally, the target processing branch acquisition unit is specifically configured to use the prologue node in the preprocessing layer to determine the corresponding target processing branch for a service scenario in the to-be-processed service request according to a regular matching manner.

[0084] Optionally, the apparatus further includes an optimization module configured to acquire a log record of the first customer service robot and user feedback information of the first customer service robot and optimize the work flowchart in the first customer service robot according to the log record and the user feedback information.

[0085] The service request processing apparatus provided in the embodiment of the present application may perform the service request processing method provided in any embodiment of the present application and has functional modules and beneficial effects that correspond to the performed method.

[0086] Embodiment four

[0087] FIG. 4 is a diagram illustrating the structure of an electronic device according to embodiment four of the present application. The electronic device 10 is intended to represent various forms of digital computers, for example, a laptop computer, a desktop computer, a worktable, a personal digital assistant, a server, a blade server, a mainframe computer, and another applicable computer. The electronic device may also represent various forms of mobile apparatuses, for example, a personal digital assistant, a cellphone, a smartphone, a wearable device (such as a helmet, glasses, or a watch), and another similar computing apparatus. Herein the shown components, the connections and relationships between these components, and the functions of these components are illustrative and are not intended to limit the implementation of the present application as described and/or claimed herein.

[0088] As shown in FIG. 4, the electronic device 10 includes at least one processor 11 and a memory, such as a read-only memory (ROM) 12 or a random-access memory (RAM) 13, communicatively connected to the at least one processor 11. The memory stores a computer program executable by the at least one processor. The at least one processor 11 may perform various types of appropriate operations and processing according to a computer program stored in the read-only memory (ROM) 12 or a computer program loaded from a storage

unit 18 to the random-access memory (RAM) 13. Various programs and data required for the operation of the electronic device 10 may also be stored in the RAM 13. The at least one processor 11, the ROM 12, and the RAM 13 are connected to each other through a bus 14. An input/output (I/O) interface 15 is also connected to the bus 14.

[0089] Multiple components in the electronic device 10 are connected to the I/O interface 15. The multiple components include an input unit 16 such as a keyboard or a mouse, an output unit 17 such as various types of display or speaker, the storage unit 18 such as a magnetic disk or an optical disk, and a communication unit 19 such as a network card, a modem, or a wireless communication transceiver. The communication unit 19 allows the electronic device 10 to exchange information/data with other devices over a computer network such as the Internet and/or various telecommunications networks.

[0090] The at least one processor 11 may be various general-purpose and/or special-purpose processing components having processing and computing capabilities. Examples of a processor 11 include, but are not limited to, a central processing unit (CPU), a graphics processing unit (GPU), a special-purpose artificial intelligence (AI) computing chip, a processor executing machine learning models and algorithms, a digital signal processor (DSP), and any appropriate processor, controller, and microcontroller. The processor 11 performs the various methods and processing described in the preceding, such as the service request processing method.

[0091] In some embodiments, the service request processing method may be implemented as computer programs tangibly contained in a computer-readable storage medium such as the storage unit 18. In some embodiments, part or all of the computer programs may be loaded and/or installed onto the electronic device 10 via the ROM 12 and/or the communication unit 19. When the computer programs are loaded to the RAM 13 and executed by the processor 11, one or more steps of the preceding service request processing method may be performed. Alternatively, in other embodiments, the processor 11 may be configured, in any other appropriate manner (for example, by means of firmware), to

perform the service request processing method.

[0092] Herein various embodiments of the preceding systems and techniques may be implemented in digital electronic circuitry, integrated circuitry, field-programmable gate arrays (FPGAs), application-specific integrated circuits (ASICs), application-specific standard products (ASSPs), systems on chips (SoCs), complex programmable logic devices (CPLDs), computer hardware, firmware, software, and/or combinations thereof. The various embodiments may include implementations in one or more computer programs. The one or more computer programs are executable and/or interpretable on a programmable system including at least one programmable processor. A programmable processor may be a special-purpose or general-purpose programmable processor for receiving data and instructions from a memory system, at least one input apparatus, and at least one output apparatus and transmitting data and instructions to the memory system, the at least one input apparatus, and the at least one output apparatus.

[0093] Computer programs for implementation of the methods of the present application may be written in one programming language or any combination of multiple programming languages. The computer programs may be provided for a processor of a general-purpose computer, a special-purpose computer, or another programmable data processing apparatus to enable functions/operations specified in a flowchart and/or a block diagram to be implemented when the computer programs are executed by the processor. The computer programs may be executed entirely on a machine, partly on a machine, as a stand-alone software package, partly on a machine and partly on a remote machine, or entirely on a remote machine or a server.

[0094] In the context of the present application, the computer-readable storage medium may be a tangible medium that may include or store a computer program used by or in conjunction with an instruction execution system, apparatus, or device. The computer-readable storage medium may include, but is not limited to, an electronic, magnetic, optical, electromagnetic, infrared, or semiconductor system, apparatus, or device,

or any appropriate combination thereof. Alternatively, the computer-readable storage medium may be a machine-readable signal medium. Examples of a machine-readable storage medium include an electrical connection based on one or more wires, a portable computer disk, a hard disk, a RAM, a ROM, an erasable programmable read-only memory (EPROM), a flash memory, an optical fiber, a portable compact disc read-only memory (CD-ROM), an optical storage device, a magnetic storage device, or any appropriate combination thereof.

[0095] In order that interaction with a user is provided, the systems and techniques described herein may be implemented on the electronic device. The electronic device has a display apparatus (for example, a cathode-ray tube (CRT) or a liquid-crystal display (LCD) monitor) for displaying information to the user; and a keyboard and a pointing apparatus (for example, a mouse or a trackball) through which the user can provide input for the electronic device. Other types of apparatuses may also be used for providing interaction with the user. For example, feedback provided for the user may be sensory feedback in any form (for example, visual feedback, auditory feedback, or tactile feedback); and input from the user may be received in any form (including acoustic input, voice input, or tactile input).

[0096] The systems and techniques described herein may be implemented in a computing system including a back-end component (for example, a data server), a computing system including a middleware component (for example, an application server), a computing system including a front-end component (for example, a client computer having a graphical user interface or a web browser through which the user can interact with embodiments of the systems and techniques described herein), or a computing system including any combination of such back-end, middleware, or front-end components. Components of a system may be interconnected by any form or medium of digital data communication (for example, a communication network). Examples of the communication network include a local area network (LAN), a wide area network (WAN), a blockchain network, and the Internet.

[0097] The computing system may include clients and servers. A client and a server are generally remote from each other and typically interact through a communication network. The relationship between the client and the server arises by virtue of computer programs running on respective computers and having a client-server relationship with each other. The server may be a cloud server, also referred to as a cloud computing server or a cloud host. As a host product in a cloud computing service system, the server solves the defects of difficult management and weak service scalability in a related physical host and a related virtual private server (VPS).

[0098] It is to be understood that various forms of the preceding flows may be used with steps reordered, added, or deleted. For example, the steps described in the present application may be executed in parallel, in sequence, or in a different order, as long as the desired results of the technical solutions of the present application can be achieved. The execution sequence of the steps is not limited herein.

CLAIMS

1. A service request processing method, comprising:

acquiring a to-be-processed service request; and

inputting the to-be-processed service request into a first customer service robot and processing the to-be-processed service request according to a work flowchart in the first customer service robot to obtain a corresponding target processed result, wherein the work flowchart comprises a first number of nodes, and the first number of nodes are categorized according to service functions.

2. The service request processing method of claim 1, wherein the work flowchart comprises a preprocessing layer, a logic processing layer, and a data output layer; the preprocessing layer and the data output layer each comprise at least one node; and the logic processing layer comprises a second number of nodes.

3. The service request processing method of claim 2, wherein processing the to-be-processed service request according to the work flowchart in the first customer service robot to obtain the corresponding target processed result comprises:

inputting the to-be-processed service request into the preprocessing layer of the work flowchart in the first customer service robot, using a prologue node in the preprocessing layer to determine and analyze the to-be-processed service request to obtain a corresponding target processing branch;

using the second number of nodes in the logic processing layer to process the target processing branch in sequence to obtain at least one processed result; and

using the data output layer to fuse the at least one processed result to output the target processed result.

4. The service request processing method of claim 3, wherein the second number of nodes comprise a robot calling node; and

using the second number of nodes in the logic processing layer to process the target processing branch in sequence to obtain the at least one processed result comprises:

according to the target processing branch, using the robot calling node comprised in the

logic processing layer to call at least one second customer service robot to perform corresponding service processing to output the at least one processed result.

5. The service request processing method of claim 3, wherein the second number of nodes comprise a knowledge base query node; the knowledge base query node is preconfigured with information about car configuration, a car sales location, and a car activity.

6. The service request processing method of claim 3, wherein using the prologue node in the preprocessing layer to determine and analyze the to-be-processed service request to obtain the corresponding target processing branch comprises:

according to a regular matching manner, using he prologue node in the preprocessing layer to determine the corresponding target processing branch for a service scenario in the to-be-processed service request.

7. The service request processing method of claim 1, further comprising:

acquiring a log record of the first customer service robot and user feedback information of the first customer service robot; and

optimizing the work flowchart in the first customer service robot according to the log record and the user feedback information.

8. A service request processing apparatus, comprising:

a request acquisition module configured to acquire a to-be-processed service request; and

a request processing module configured to input the to-be-processed service request into a first customer service robot and process the to-be-processed service request according to a work flowchart in the first customer service robot to obtain a corresponding target processed result, wherein the work flowchart comprises a first number of nodes, and the first number of nodes are categorized according to service functions.

9. An electronic device, comprising:

at least one processor; and

a memory communicatively connected to the at least one processor,

wherein the memory is configured to store a computer program executable by the at least one processor to cause the at least one processor to perform the service request processing method of any one of claims 1 to 7.

10. A computer-readable storage medium storing computer instructions that, when executed by a processor, are configured to cause the processor to perform the service request processing method of any one of claims 1 to 7.