METHOD, APPARATUS, DEVICE AND STORAGE MEDIUM FOR CREATING VIRTUAL OBJECT

[0001] The present application claims priority to Chinese Patent Application No. 202410178029.2, filed on February 08, 2024 and entitled "METHOD, APPARATUS, DEVICE AND STORAGE MEDIUM FOR CREATING VIRTUAL OBJECT ", which is hereby incorporated by reference in its entirety.

TECHNICAL FIELD

[0002] Example embodiments of the present disclosure generally relate to the field of computers, and in particular, to a method, an apparatus, a device, and a computer-readable storage medium for creating a virtual object.

BACKGROUND

[0003] In recent years, with the rapid development of machine learning technologies, virtual objects implemented based on the machine learning technologies are widely used to improve the efficiency of information processing by people. For example, some virtual objects may act as a user's digital assistant to assist the user in processing messages.

SUMMARY

[0004] In a first aspect of the present disclosure, a method for creating a virtual object is provided. The method includes: receiving a request for creating a virtual object associated with a target user; presenting a configuration interface displaying set information of the virtual object, the set information being generated based on reference information associated with the target user, and the set information being associated with at least a dialogue capability of the virtual object; and creating the virtual object associated with the target user based on an editing operation received via the configuration interface.

[0005] In a second aspect of the present disclosure, an apparatus for creating a virtual object is provided. The apparatus includes: a receiving module configured to receive a request for creating a virtual object associated with a target user; a presenting module configured to present a configuration interface displaying set information of the virtual object, the set information being generated based on reference information associated with the target user, and the set information being associated with at least a dialogue capability of the virtual object; and a creating module configured to create the virtual object associated with the target user based on an editing operation received via the configuration interface.

[0006] In a third aspect of the present disclosure, an electronic device is provided. The device includes at least one processor; and at least one memory coupled to the at least one processor and storing instructions executable by the at least one processor, the instructions, when executed by the at least one processor, causing the device to perform the method of the first aspect.

[0007] In a fourth aspect of the present disclosure, a computer-readable storage medium is provided. The computer-readable storage medium has computer-executable instructions stored thereon, the computer-executable instructions being executable by a processor to implement the method of the first aspect.

[0008] It would be appreciated that the content described in the Summary section of the present disclosure is neither intended to identify key or essential features of the embodiments of the present disclosure, nor is it intended to limit the scope of the present disclosure. Other features of the present disclosure will be readily envisaged through the following description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The above and other features, advantages, and aspects of the embodiments of the present disclosure will become more apparent in combination with the drawings and with reference to the following detailed description. In the drawings, the same or similar reference numbers refer to the same or similar elements, where:

[0010] Fig. 1 shows a schematic diagram of an example environment in which the embodiments according to the present disclosure may be implemented;

[0011] Fig. 2A to Fig. 2B show example interfaces according to some embodiments of the present disclosure;

[0012] Fig. 3 shows a flowchart of an example process of creating a virtual object according to some embodiments of the present disclosure;

[0013] Fig. 4 shows a schematic structural block diagram of an example apparatus for creating a virtual object according to some embodiments of the present disclosure; and

[0014] Fig. 5 shows a block diagram of an electronic device capable of implementing multiple embodiments of the present disclosure.

DETAILED DESCRIPTION OF EMBODIMENTS

[0015] The embodiments of the present disclosure will be described in more detail below with reference to the drawings. Although some embodiments of the present disclosure are shown in the drawings, it would be appreciated that the present disclosure may be implemented in various forms and should not be construed as limited to the embodiments set forth herein; on the contrary, these embodiments are provided for a more thorough and complete understanding of the present disclosure. It would be appreciated that the drawings and embodiments of the present disclosure are only for illustrative purposes, and are not intended to limit the protection scope of the present disclosure.

[0016] It should be noted that the titles of any section/subsection provided herein are not restrictive. Various embodiments are described throughout this article, and any type of embodiments may be included under any section/subsection. In addition, the embodiments described in any section/subsection may be combined with any other embodiments described in the same section/subsection and/or different section/subsection in any manner.

[0017] In the description of the embodiments of the present disclosure, the term "include/comprise" and similar terms should be understood as open-ended inclusions, that is, "include/comprise but not limited to". The term "based on" should be understood as "at least partially based on". The term "one embodiment" or "the embodiment" should be understood as "at least one embodiment". The term "some embodiments" should be understood as "at least some embodiments". Other explicit and implicit definitions may also be included below. The terms "first", "second", etc. may refer to different or same objects. Other explicit and implicit definitions may also be included below.

[0018] The embodiments of the present disclosure may involve user's data, acquisition and/or use of the data,

etc. These aspects all comply with corresponding laws, regulations and related provisions. In the embodiments of the present disclosure, the collection, acquisition, processing, forwarding and use of all data are carried out on the premise that the user is aware of and confirms. Accordingly, when implementing the embodiments of the present disclosure, the user should be informed of the type, range of use, use scenarios, etc., of possible involved data or information and obtain the user's authorization in an appropriate manner according to relevant laws and regulations. The specific manner of informing and/or authorizing may vary according to actual situations and application scenarios, and the scope of the present disclosure is not limited in this regard.

[0019] The solutions in the specification and embodiments, if involving personal information processing, will be processed on the premise that there is a legal basis (for example, the consent of the personal information subject is obtained, or it is necessary for the performance of a contract, etc.), and will only be processed within the scope of regulations or agreements. If the user refuses to process personal information other than the necessary information required for the basic functions, it will not affect the user's use of the basic functions.

[0020] As mentioned above, the virtual objects implemented based on machine learning technologies are widely used to improve the efficiency of information processing by people. However, for the user, the creation of a virtual object relies on the user's in-depth understanding of machine learning technologies, which requires a high technical threshold.

[0021] The embodiments of the present disclosure provide a solution for creating a virtual object. According to the solution, a request for creating a virtual object associated with a target user may be received. A configuration interface may be presented, wherein the configuration interface displays set information of the virtual object. The set information is generated based on reference information associated with the target user, and the set information is associated with at least a dialogue capability of the virtual object. The virtual object associated with the target user may be created based on an editing operation received via the configuration interface.

[0022] In this way, the embodiments of the present disclosure are capable of supporting the user to create an associated virtual object more conveniently through the reference information, thereby improving the efficiency of creating the virtual object.

[0023] Various example implementations of the solution will be described in detail below in further conjunction with the drawings.

EXAMPLE ENVIRONMENT

[0024] Fig. 1 shows a schematic diagram of an example environment 100 in which the embodiments of the present disclosure may be implemented. As shown in Fig. 1, the example environment 100 may include an electronic device 110.

[0025] In the example environment 100, the electronic device 110 may run an application 120 supporting interface interaction. The application 120 may be any appropriate type of application for interface interaction, examples of which may include but are not limited to: a video application, a social application, or other appropriate applications. A user 140 may interact with the application 120 via the electronic device 110 and/or its attached device.

[0026] In the environment 100 of Fig. 1, if the application 120 is active, the electronic device 110 may present, through the application 120, an interface 150 for supporting the interface interaction.

[0027] In some embodiments, the electronic device 110 communicates with a server 130 to implement the provision of services for the application 120. The electronic device 110 may be any type of mobile terminal, fixed terminal, or portable terminal, including a mobile phone, a desktop computer, a laptop computer, a notebook computer, a netbook computer, a tablet computer, a media computer, a multimedia tablet, a palmtop computer, a portable game terminal, a VR/AR device, a personal communication system (PCS) device, a personal navigation device, a personal digital assistant (PDA), an audio/video player, a digital camera/video camera, a positioning device, a television receiver, a radio broadcast receiver, an e-book device, a game device, or any combination of the foregoing, including the accessories and peripherals of these devices or any combination thereof. In some embodiments, the electronic device 110 may also support any type of user-specific interface (such as a "wearable" circuit, etc.).

[0028] The server 130 may be an independent physical server, a server cluster or distributed system composed of multiple physical servers, or may also be a cloud server that provides basic cloud computing services such as cloud services, cloud databases, cloud computing, cloud functions, cloud storage, network services, cloud communications, middleware services, domain name services, security services, content delivery networks, and big data and artificial intelligence platforms. The server 130 may include, for example, a computing system/server, such as a mainframe, an edge computing node, a computing device in a cloud environment, and so on. The server 130 may provide backstage services for the application 120 supporting the virtual scene in the electronic device 110.

[0029] A communication connection may be established between the server 130 and the electronic device 110. The communication connection may be established in a wired or wireless manner. The communication connection may include but is not limited to a Bluetooth connection, a mobile network connection, a universal serial bus (USB) connection, a wireless fidelity (WiFi) connection, etc., and the embodiments of the present disclosure are not limited in this regard. In the embodiments of the present disclosure, the server 130 and the electronic device 110 may implement signaling interaction through the communication connection therebetween.

[0030] It would be appreciated that the structure and function of each element in the environment 100 are described for illustrative purposes only, without suggesting any limitation to the scope of the present disclosure.

[0031] Some example embodiments of the present disclosure will be described below with continued reference to the drawings.

EXAMPLE INTERACTION

[0032] Fig. 2A and Fig. 2B show example interfaces 200A and 200B according to some embodiments of the present disclosure. The interfaces 200A and 200B, for example, may be provided by the electronic device 110 shown in Fig. 1, which is also referred to as a configuration interface for a virtual object.

[0033] In some embodiments, the electronic device 110 may receive a request for creating a virtual object associated with a user. For example, the electronic device 110 may receive the request based on the user's selection of a creation request.

[0034] In some embodiments, after receiving the request, the electronic device 110 may present an interactive window to the user to obtain the user's confirmation of obtaining reference information. For example, a set of preset reference information associated with the user may be obtained based on the user's confirmation.

Alternatively, one or more items of reference information specified by the user may also be obtained based on the user's configuration operation.

[0035] In some embodiments, such reference information may be used to determine the set information of the virtual object to be created. As an example, such reference information may include, for example, identification information of the user. For example, the electronic device 110 may determine the name of the virtual object based on the user's text identification (for example, nickname). Alternatively, the electronic device 110 may determine the visual image of the virtual object based on the user's image identification (for example, avatar).

[0036] In another example, such reference information may include, for example, description information of the user. Such description information may include, for example, a personal profile, authentication information, etc., that are authorized by the user to access.

[0037] In still some examples, such reference information may further include work information authorized by the user to access. For example, such work information may be related to a work posted by the user.

[0038] In still some examples, such reference information may further include interaction information authorized by the user to access. Such interaction information may be, for example, information about the user's participation in interactions (for example, comments, sharing, and likes).

[0039] In still some examples, such reference information may include live streaming information authorized by the user to access. For example, such live streaming information may be associated with one or more live streaming activities initiated by the user.

[0040] As shown in Fig. 2A, the electronic device 110 may present, in the configuration interface 200A for the virtual object, set information automatically generated based on the reference information associated with the user.

[0041] In some embodiments, such set information may include, for example, identification information 205 of the virtual object. As discussed above, the identification information 205 may be determined based on the identification information of the target user.

[0042] In some embodiments, the set information may further include a visual image 210 of the virtual object. In some examples, the visual image 210 may be generated, for example, based on the user's avatar. In some embodiments, if the user's avatar does not meet a requirement, for example, the visual image 210 may be in an unconfigured state.

[0043] In some embodiments, the electronic device 110 may further provide a first configuration entry (for example, an upload button) in association with the visual image 210. The electronic device 110 may receive the user's selection of the upload button to obtain input information from the user. As an example, such input information may include, for example, a picture, a video, a model, etc., uploaded or captured by the user.

[0044] Further, the electronic device 110 may determine the visual image of the virtual object based on the received input information. As an example, the electronic device 110 and/or the server 130 may generate the visual image of the virtual object based on the input information. The present disclosure is not intended to limit a specific generation manner of the visual image.

[0045] Continuing to refer to Fig. 2A, the set information may include dialogue set information 215, which is associated with the dialogue capability of the virtual object. Such dialogue set information 215 may be generated based on the reference information associated with the user.

[0046] In some embodiments, the dialogue set information 215 may include description information corresponding to multiple preset aspects of the virtual object. As an example, the description information may include description content about a character setting, for example, role background information, a dialogue style, etc., of the virtual object.

[0047] In some examples, the description information may further include description content about a skilled field of the virtual object, so that the virtual object has a better processing capability in a specific field.

[0048] In some examples, the description information may further include description content about a dialogue goal of the virtual object. For example, the goal is to provide processing suggestions for other users or provide various reference information for other users, etc.

[0049] In some examples, the description information may further include description content about a dialogue limitation of the virtual object, for example, which type of messages not to reply to.

[0050] In some embodiments, the description information of the above multiple preset aspects may be automatically determined, for example, based on the reference information associated with the user. For example, the description content about the character setting may be generated based on the user's description information, the description content about the dialogue goal or the dialogue limitation may be generated based on the user's work information, live streaming information, etc.

[0051] It would be appreciated that, with the user's knowledge and permission, any appropriate manner may be used to generate the set information of the virtual object based on the reference information. For example, an appropriate machine learning model may be used to process the reference information to determine the description content corresponding to one or more preset aspects in the set information.

[0052] In some embodiments, when the description content of certain preset aspects cannot be determined based on the reference information, the electronic device 110 may include default content (for example, empty content or other preset content) corresponding to the preset aspects in the set information.

[0053] Continuing to refer to Fig. 2A, the electronic device 110 may, for example, support the user to edit the dialogue set information 215 provided in the interface 200A. As an example, the electronic device 110 may receive the user's selection of a "dialogue editing" entry, and may accordingly present the configuration interface shown in Fig. 2B.

[0054] As shown in Fig. 2B, the electronic device 110 may provide a first editing area 240 to support the user to modify the set information generated based on the reference information. For example, the user may add new description content, delete existing description content, adjust the wording of the description content, add a new aspect, etc. in the first editing area 240.

[0055] In some embodiments, as shown in Fig. 2B, the electronic device 110 may further provide the user with an access entry 245 for viewing reference set information. After receiving the selection of the access entry 245, the electronic device 110 may present reference set information corresponding to a set of reference virtual objects. Such a set of reference virtual objects may include, for example, a set of preset virtual objects in a platform, or virtual objects created and shared by other users.

[0056] By viewing the corresponding reference set information, the embodiments of the present disclosure are capable of helping the user to better edit the set information, thereby creating a virtual object that better meets the requirements.

[0057] In some embodiments, the electronic device 110 may further provide a second editing area 250 for the user to configure knowledge information of the virtual object. The user may configure knowledge information associated with the virtual object through the second editing area 250, and such knowledge information may be used to guide the virtual object to process an input message associated with the knowledge information.

[0058] In some embodiments, the electronic device 110 may receive a selection operation of the user to select at least one knowledge base from a set of preset knowledge bases, may associate the at least one knowledge base with the virtual object, and may display it in the second editing area 250.

[0059] Additionally or alternatively, the electronic device 110 may further receive an uploading operation by the user to upload a content source corresponding to target knowledge information. Such a content source may include, for example, a user-generated electronic file, a network address entered by the user, etc. In this way, the embodiments of the present disclosure are capable of supporting the user to configure the virtual object more flexibly, so that it has the dialogue capability desired by the user.

[0060] In some embodiments, after completing the editing of the set information, the electronic device 110 may receive the user's selection of a control 260, may return to displaying the interface 200A shown in Fig. 2A, and may update the set information displayed in the interface 200A.

[0061] In some embodiments, the set information may further include, for example, timbre information of the virtual object. The timbre information may indicate a timbre of voice content output by the virtual object. In some embodiments, the timbre information may also be determined based on the reference information associated with the user.

[0062] As an example, with the user's confirmation, the timbre information of the virtual object may be determined based on the user's live streaming audio within a predetermined period of time, so that such timbre information may match the user's style.

[0063] In some embodiments, the electronic device 110 may further provide a configuration entry (not shown) for configuring the timbre information in the interface 200A or the interface 200B. Specifically, the electronic device 110 may obtain input information from the target user based on the selection of the second configuration entry. As an example, such input information may include one or more audio segments recorded by the user, or one or more audio segments uploaded by the user.

[0064] Further, the timbre information of the virtual object may be determined based on the received input information, so that the voice content output by the virtual object has a corresponding timbre.

[0065] In some examples, continuing to refer to Fig. 2A and Fig. 2B, the electronic device 110 may further provide a debugging area 220 in the interface 200A and a debugging area 255 in the interface 200B. The debugging area 220 and the debugging area 255 may be configured to receive test input information and provide corresponding test output information.

[0066] Taking the debugging area 220 as an example, the electronic device 110 may provide an input control 235, and may obtain test input information inputted by the user via the input control 235. Further, the electronic device 110 may display, in the debugging area 220, test output information generated by the virtual object based on the test input information.

[0067] Specifically, the test output information may be generated corresponding to the current set information of the virtual object. As an example, the electronic device 110 may generate, based on the set information, a

guide phrase to a target model corresponding to the virtual object, and may cause the target model to generate the test output information about the test input information based on the guide phrase.

[0068] In some embodiments, for example, the user's feedback on the test output information may also be received, and the dialogue capability of the virtual object may be updated based on the feedback. For example, in the case that the user approves certain test output information, the feedback information may be provided to the target model to adjust the subsequent output of the target model. As another example, in the case that the user does not approve certain test output information, the feedback information may also be provided to the target model to adjust the subsequent output of the target model. In this way, the embodiments of the present disclosure may further optimize the dialogue capability of the virtual object through dialogues.

[0069] Continuing to refer to Fig. 2A, the electronic device 110 may further provide an adjustment entry 225 in the debugging area 220 to, for example, support the user to configure the visual image of the virtual object.

[0070] Additionally, the electronic device 110 may further provide an editing entry 230 in the debugging area 220 to, for example, trigger the display of the interface 200B for editing the set information.

[0071] In some embodiments, the electronic device 110 may further receive a request of the target user to publish the virtual object, and may accordingly publish the virtual object associated with the target user in a corresponding target application. As an example, such a target application may be, for example, an application specified by the user, or may be a preset application.

[0072] Based on the process described above, the embodiments of the present disclosure are capable of supporting the user to create an associated virtual object more conveniently through the reference information, thereby improving the efficiency of creating the virtual object.

EXAMPLE PROCESS

[0073] Fig. 3 shows a flowchart of an example process 300 of creating a virtual object according to some embodiments of the present disclosure. The process 300 may be implemented at the electronic device 110. The process 300 will be described below with reference to Fig. 1.

[0074] As shown in the figure, at block 310, the electronic device 110 receives a request for creating a virtual object associated with a target user.

[0075] At block 320, the electronic device 110 presents a configuration interface displaying set information of the virtual object, wherein the set information is generated based on reference information associated with the target user, and the set information is associated with at least a dialogue capability of the virtual object.

[0076] At block 330, the electronic device 110 creates the virtual object associated with the target user based on an editing operation received via the configuration interface.

[0077] In some embodiments, the configuration interface includes an editing area for displaying the set information, and creating the virtual object associated with the target user based on the editing operation received via the configuration interface includes: receiving a first editing operation for the set information via the editing area; and creating the virtual object associated with the target user based on the edited set information.

[0078] In some embodiments, the process 300 further includes: displaying, in the configuration interface, reference set information corresponding to a set of reference virtual objects based on a viewing request of the target user.

[0079] In some embodiments, creating the virtual object associated with the target user based on the editing operation received via the configuration interface includes: receiving a second editing operation for setting knowledge information associated with the virtual object; and creating the virtual object associated with the target user based on the knowledge information.

[0080] In some embodiments, the second editing operation includes: a selection operation of selecting at least one knowledge base from a set of preset knowledge bases; or an uploading operation of uploading a content source corresponding to target knowledge information.

[0081] In some embodiments, the configuration interface includes a first configuration entry, and creating the virtual object associated with the target user based on the editing operation received via the configuration interface includes: obtaining first input information from the target user based on a selection of the first configuration entry; and determining a visual image of the virtual object based on the first input information.

[0082] In some embodiments, the configuration interface includes a second configuration entry, and creating the virtual object associated with the target user based on the editing operation received via the configuration interface includes: obtaining second input information from the target user based on a selection of the second configuration entry; and determining timbre information of the virtual object based on the second input information.

[0083] In some embodiments, the set information includes description information corresponding to a plurality of preset aspects of the virtual object.

[0084] In some embodiments, in accordance with that the description information corresponding to at least one preset aspect fails to be determined based on the reference information, the set information includes default content corresponding to the at least one preset aspect.

[0085] In some embodiments, the process 300 further includes: obtaining the reference information associated with the target user based on confirmation of the target user, wherein the reference information includes at least one of: identification information of the target user; description information of the target user; work information of the target user; live streaming information of the target user.

[0086] In some embodiments, the set information further includes timbre information determined based on the reference information, and the timbre information is associated with voice content output by the virtual object.

[0087] In some embodiments, the configuration interface includes a debugging area for receiving test input information and providing corresponding test output information, and the test output information is generated based on current set information of the virtual object.

[0088] In some embodiments, the process 300 further includes: receiving feedback on the test output information; and updating the dialogue capability of the virtual object based on the feedback.

[0089] In some embodiments, the process 300 further includes: publishing the virtual object associated with the target user in a target application based on a publishing request of the target user.

EXAMPLE APPARATUS AND DEVICE

[0090] The embodiments of the present disclosure further provide corresponding apparatuses for implementing the above methods or processes. Fig. 4 shows a schematic structural block diagram of an example apparatus 400 for creating a virtual object according to some embodiments of the present disclosure. The apparatus 400 may

be implemented as or included in the electronic device 110. Each module/component in the apparatus 400 may be implemented by hardware, software, firmware, or any combination thereof.

[0091] As shown in Fig. 4, the apparatus 400 includes a receiving module 410 configured to receive a request for creating a virtual object associated with a target user; a presenting module 420 configured to present a configuration interface displaying set information of the virtual object, the set information being generated based on reference information associated with the target user, and the set information being associated with at least a dialogue capability of the virtual object; and a creating module 430 configured to create the virtual object associated with the target user based on an editing operation received via the dialogue interface.

[0092] In some embodiments, the configuration interface includes an editing area for displaying the set information, and the creating module 430 is further configured to: receive a first editing operation for the set information via the editing area; and create the virtual object associated with the target user based on the edited set information.

[0093] In some embodiments, the apparatus 400 further includes a reference module configured to: display, in the configuration interface, reference set information corresponding to a set of reference virtual objects based on a viewing request of the target user.

[0094] In some embodiments, the creating module 430 is further configured to: receive a second editing operation for setting knowledge information associated with the virtual object; and create the virtual object associated with the target user based on the knowledge information.

[0095] In some embodiments, the second editing operation includes: a selection operation of selecting at least one knowledge base from a set of preset knowledge bases; or an uploading operation of uploading a content source corresponding to target knowledge information.

[0096] In some embodiments, the configuration interface includes a first configuration entry, and the creating module 430 is further configured to: obtain first input information from the target user based on a selection of the first configuration entry; and determine a visual image of the virtual object based on the first input information.

[0097] In some embodiments, the configuration interface includes a second configuration entry, and the creating module 430 is further configured to: obtain second input information from the target user based on a selection of the second configuration entry; and determine timbre information of the virtual object based on the second input information.

[0098] In some embodiments, the set information includes description information corresponding to a plurality of preset aspects of the virtual object.

[0099] In some embodiments, in accordance with that the description information corresponding to at least one preset aspect fails to be determined based on the reference information, the set information includes default content corresponding to the at least one preset aspect.

[0100] In some embodiments, the apparatus 400 further includes a obtaining module configured to: obtain the reference information associated with the target user based on confirmation of the target user, wherein the reference information includes at least one of: identification information of the target user; description information of the target user; work information of the target user; live streaming information of the target user.

[0101] In some embodiments, the set information further includes timbre information determined based on the

reference information, and the timbre information is associated with voice content output by the virtual object.

[0102] In some embodiments, the configuration interface includes a debugging area for receiving test input information and providing corresponding test output information, and the test output information is generated based on current set information of the virtual object.

[0103] In some embodiments, the apparatus 400 further includes an updating module configured to: receive feedback on the test output information; and update the dialogue capability of the virtual object based on the feedback.

[0104] In some embodiments, the apparatus 400 further includes a publishing module configured to: publish the virtual object associated with the target user in a target application based on a publishing request of the target user.

[0105] Fig. 5 shows a block diagram of an electronic device 500 in which one or more embodiments of the present disclosure may be implemented. It would be appreciated that the electronic device 500 shown in Fig. 5 is only exemplary, without suggesting any limitation to the function and scope of the embodiments described herein. The electronic device 500 shown in Fig. 5 may be used to implement the electronic device 110 of Fig. 1.

[0106] As shown in Fig. 5, the electronic device 500 is in the form of a general-purpose electronic device. The components of the electronic device 500 may include, but are not limited to, one or more processors or processors 510, a memory 520, a storage device 530, one or more communication units 540, one or more input devices 550, and one or more output devices 560. The processor 510 may be an actual or virtual processor and may execute various processes based on the program stored in the memory 520. In a multi-processor system, multiple processors execute computer-executable instructions in parallel to improve the parallel processing capability of the electronic device 500.

[0107] The electronic device 500 typically includes multiple computer storage medium. Such medium may be any available medium accessible by the electronic device 500, including but not limited to volatile and non-volatile medium, removable and non-removable medium. The memory 520 may be a volatile memory (for example, a register, cache, a random access memory (RAM)), a non-volatile memory (such as a read-only memory (ROM), an electrically erasable programmable read-only memory (EEPROM), a flash memory), or any combination thereof. The storage device 530 may be removable or non-removable medium, and may include a machine-readable medium such as a flash drive, a disk, or any other medium, which may be used to store information and/or data and may be accessed within the electronic device 500.

[0108] The electronic device 500 may further include additional removable/non-removable, volatile/non-volatile memory medium. Although not shown in Fig. 5, it is possible to provide a disk driver for reading from or writing to a removable, non-volatile disk (for example, a "floppy disk"), and an optical disk driver for reading from or writing to a removable, non-volatile optical disk. In these cases, each driver may be connected to a bus (not shown) by one or more data medium interfaces. The memory 520 may include a computer program product 525, which has one or more program modules configured to perform various methods or acts of various embodiments of the present disclosure.

[0109] The communication unit 540 implements communication with other electronic devices through a communication medium. Additionally, the functions of the components of the electronic device 500 may be implemented by a single computing cluster or multiple computing machines, which may communicate through

a communication connection. Therefore, the electronic device 500 may use a logical connection with one or more other servers, a network personal computer (PC), or another network node to operate in a networked environment.

[0110] The input device 550 may be one or more input devices, such as a mouse, a keyboard, a tracking ball, etc. The output device 560 may be one or more output devices, such as a display, a speaker, a printer, etc. The electronic device 500 may further communicate with one or more external devices (not shown) through the communication unit 540 as needed, the external devices such as a storage device, a display device, etc., communicate with one or more devices that enable the user to interact with the electronic device 500, or communicate with any device (for example, a network card, a modem, etc.) that enables the electronic device 500 to communicate with one or more other electronic devices. Such communication may be performed via an input/output (I/O) interface (not shown).

[0111] According to an exemplary implementation of the present disclosure, a computer-readable storage medium is provided, on which computer-executable instructions are stored, the computer-executable instructions being executed by a processor to implement the method described above. According to an exemplary implementation of the present disclosure, there is further provided a computer program product, the computer program product being tangibly stored on a non-transitory computer-readable medium and including computer-executable instructions, the computer-executable instructions being executed by a processor to implement the method described above.

[0112] Various aspects of the present disclosure are described herein with reference to the flowcharts and/or block diagrams of the method, apparatus, device, and computer program product implemented according to the present disclosure. It would be appreciated that each block of the flowchart and/or block diagram, and a combination of each block in the flowchart and/or block diagram may be implemented by computer-readable program instructions.

[0113] These computer-readable program instructions may be provided to a processor of a general-purpose computer, a dedicated computer, or other programmable data processing apparatus, to produce a machine, so that when these instructions are executed by the processor of the computer or other programmable data processing apparatus, an apparatus for implementing the functions/actions specified in one or more blocks in the flowchart and/or block diagram is produced. These computer-readable program instructions may also be stored in the computer-readable storage medium, and these instructions enable the computer, the programmable data processing apparatus, and/or other devices to work in a specific manner, so that the computer-readable medium storing the instructions includes a manufactured product, which includes instructions for implementing various aspects of the functions/actions specified in one or more blocks in the flowchart and/or block diagram.

[0114] The computer-readable program instructions may be loaded onto the computer, other programmable data processing apparatus, or other devices, so that a series of operation steps are performed on the computer, other programmable data processing apparatus, or other devices to produce a computer-implemented process, so that the instructions executed on the computer, other programmable data processing apparatus, or other devices implement the functions/actions specified in one or more blocks in the flowchart and/or block diagram.

[0115] The flowcharts and block diagrams in the drawings show the possibly implemented architectures, functions, and operations of the system, method, and computer program product according to multiple

implementations of the present disclosure. In this regard, each block in the flowchart or block diagram may represent a module, program segment, or part of an instruction, and the module, program segment, or part of the instruction contains one or more executable instructions for implementing the specified logical functions. In some alternative implementations, the functions marked in the block may also occur in an order different from that marked in the drawings. For example, two consecutive blocks may actually be performed substantially in parallel, or they may sometimes be performed in the reverse order, depending on the functions involved. It would also be noted that each block in the block diagram and/or the flowchart, and a combination of the blocks in the block diagram and/or the flowchart may be implemented by a dedicated hardware-based system that executes specified functions or actions, or may be implemented by a combination of dedicated hardware and computer instructions.

[0116] The implementations of the present disclosure have been described above, and the above description is exemplary, non-exhaustive, and not limited to the disclosed implementations. Without departing from the scope and spirit of the described implementations, many modifications and changes will be apparent to those of ordinary skill in the art. The selection of terms used herein is intended to best explain the principles of the implementations, the practical applications, or the improvements to the technologies in the market, or to enable other ordinary skilled persons in the art to understand the implementations disclosed herein.

CLAIMS

1. A method for creating a virtual object, comprising:

receiving a request for creating a virtual object associated with a target user;

presenting a configuration interface displaying set information of the virtual object, the set information being generated based on reference information associated with the target user, and the set information being associated with at least a dialogue capability of the virtual object; and

creating the virtual object associated with the target user based on an editing operation received via the configuration interface.

2. The method of claim 1, wherein the configuration interface comprises an editing area for displaying the set information, and creating the virtual object associated with the target user based on the editing operation received via the configuration interface comprises:

receiving a first editing operation for the set information via the editing area; and

creating the virtual object associated with the target user based on the edited set information.

3. The method of claim 1, further comprising:

displaying, in the configuration interface, reference set information corresponding to a set of reference virtual objects based on a viewing request of the target user.

4. The method of claim 1, wherein creating the virtual object associated with the target user based on the editing operation received via the configuration interface comprises:

receiving a second editing operation for setting knowledge information associated with the virtual object; and

creating the virtual object associated with the target user based on the knowledge information.

5. The method of claim 4, wherein the second editing operation comprises:

a selection operation of selecting at least one knowledge base from a set of preset knowledge bases; or

an uploading operation of uploading a content source corresponding to target knowledge information.

6. The method of claim 1, wherein the configuration interface comprises a first configuration entry, and creating the virtual object associated with the target user based on the editing operation received via the configuration interface comprises:

obtaining first input information from the target user based on a selection of the first configuration entry; and

determining a visual image of the virtual object based on the first input information.

7. The method of claim 1, wherein the configuration interface comprises a second configuration entry, and creating the virtual object associated with the target user based on the editing operation received via the

configuration interface comprises:

obtaining second input information from the target user based on a selection of the second configuration entry; and

determining timbre information of the virtual object based on the second input information.

8. The method of claim 1, wherein the set information comprises description information corresponding to a plurality of preset aspects of the virtual object.

9. The method of claim 8, wherein in accordance with that the description information corresponding to at least one preset aspect fails to be determined based on the reference information, the set information comprises default content corresponding to the at least one preset aspect.

10. The method of claim 1, further comprising:

obtaining the reference information associated with the target user based on confirmation of the target user, wherein the reference information comprises at least one of:

identification information of the target user;

description information of the target user;

work information of the target user;

live streaming information of the target user.

11. The method of claim 1, wherein the set information further comprises timbre information determined based on the reference information, and the timbre information is associated with voice content output by the virtual object.

12. The method of claim 1, wherein the configuration interface comprises a debugging area for receiving test input information and providing corresponding test output information, and the test output information is generated based on current set information of the virtual object.

13. The method of claim 12, further comprising:

receiving feedback on the test output information; and

updating the dialogue capability of the virtual object based on the feedback.

14. The method of claim 1, further comprising:

publishing the virtual object associated with the target user in a target application based on a publishing request of the target user.

15. An apparatus for creating a virtual object, comprising:

a receiving module configured to receive a request for creating a virtual object associated with a target user;

a presenting module configured to present a configuration interface displaying set information of the virtual object, the set information being generated based on reference information associated with the target user, and the set information being associated with at least a dialogue capability of the virtual object; and

a creating module configured to create the virtual object associated with the target user based on an editing operation received via the configuration interface.

16. An electronic device, comprising:

at least one processor; and

at least one memory coupled to the at least one processor and storing instructions executable by the at least one processor, the instructions, when executed by the at least one processor, causing the electronic device to perform the method of any of claims 1 to 14.

17. A computer-readable storage medium having computer-executable instructions stored thereon, the computer-executable instructions being executable by a processor to implement the method of any of claims 1 to 14.

18. A computer program product tangibly stored in a computer storage medium and comprising computer-executable instructions which, when executed by a device, cause the device to perform the method of any of claims 1 to 14.