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(54) **Title:** CHAT WINDOW PRESENTATION CONTROL METHOD AND SYSTEM

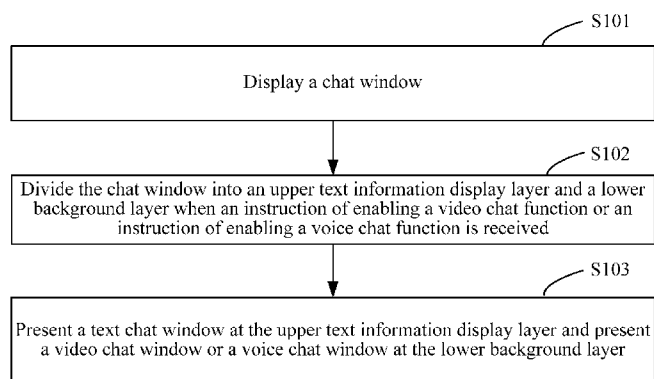


FIG. 4

(57) **Abstract:** The present disclosure provides a chat window presentation control method and system. The method includes the following steps: displaying a chat window; dividing the chat window into an upper text information display layer and a lower background layer when an instruction of enabling a video chat function or an instruction of enabling a voice chat function is received; and presenting a text chat window at the upper text information display layer and presenting a video chat window or a voice chat window at the lower background layer. According to the chat window presentation control method and system of the present disclosure, diversified information presentation manners are integrated effectively, and during a chat using text, voice, or a video, chat windows do not need to be switched frequently, thereby meeting a requirement for multi-scenario use and improving the utilization of an interface resource of a platform device.



CHAT WINDOW PRESENTATION CONTROL METHOD AND SYSTEM

PRIORITY CLAIM AND RELATED APPLICATION

[0001] This application claims priority to Chinese Patent Application No. 201410009221.5, entitled "CHAT WINDOW PRESENTATION CONTROL METHOD AND SYSTEM" filed on January 8, 2014, which is incorporated by reference in its entirety.

FIELD OF THE INVENTION

[0002] The present disclosure relates to the field of instant messaging, and in particular, to a chat window presentation control method and a chat window presentation control system.

BACKGROUND OF THE INVENTION

[0003] At present, in a conventional chat window presentation control method, when a user enters a text chat window interface, as shown in FIG. 1, the interface is provided with function buttons for enabling voice and video chat windows; when a user clicks the function button for enabling a video chat window, as shown in FIG. 2, a video chat window interface pops up, and all function buttons related to a video chat are operated on the interface; in addition, when a voice chat function needs to be implemented, as shown in FIG. 3, a voice chat window interface pops up by clicking the function button for enabling a voice chat window, and all functions related to a voice chat are operated on the interface.

[0004] However, in a conventional solution, window interfaces for a text chat manner, a video chat manner, and a voice chat manner are mutually independent and content of chat information is relatively scattered. If a requirement for multi-scenario use is met, several chat windows inevitably need to be switched frequently, which causes a waste of an interface resource of a platform device.

SUMMARY

[0005] Based on this, the present disclosure provides a chat window presentation control method and system, which can avoid frequent switching of chat windows and improve the utilization of an interface resource of a platform device.

[0006] In order to achieve the foregoing objectives, the present disclosure uses the following technical solutions:

[0007] A chat window presentation control method includes the following steps:

displaying a chat window;

dividing the chat window into an upper text information display layer and a lower background layer when an instruction of enabling a video chat function or an instruction of enabling a voice chat function is received; and

presenting a text chat window at the upper text information display layer and presenting a video chat window or a voice chat window at the lower background layer.

[0008] A chat window presentation control system includes:

a first window presentation module, configured to display a chat window;

a window division module, configured to divide the chat window into an upper text information display layer and a lower background layer when an instruction of enabling a video chat function or an instruction of enabling a voice chat function is received; and

a second window presentation module, configured to present a text chat window at the upper text information display layer and present a video chat window or a voice chat window at the lower background layer.

[0009] It may be seen from the foregoing solutions that, according to the chat window presentation control method and system of the present disclosure, a chat window is divided into an upper text information display layer and a lower background layer, and a video chat window or a voice chat window is presented at the lower background layer and a text chat window is presented at the upper text information display layer according to a demand of a user; in this way, multiple chat windows can be presented on one interface. According to the present disclosure, diversified information presentation manners are integrated effectively, and during a chat using text, voice, or a video, chat windows do not need to be switched frequently, thereby meeting a requirement for multi-scenario use and improving the utilization of an interface resource of a platform device.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] FIG. 1 is a schematic diagram of a text chat window interface in a conventional solution;

[0011] FIG. 2 is a schematic diagram of a video chat window interface in a conventional solution;

- [0012] FIG. 3 is a schematic diagram of a voice chat window interface in a conventional solution;
- [0013] FIG. 4 is a schematic flowchart of a chat window presentation control method according to an embodiment of the present invention;
- [0014] FIG. 5 is a schematic diagram of presenting a video chat window at a lower background layer according to an embodiment of the present invention;
- [0015] FIG. 6 is a schematic diagram of triggering a concealing function of a text information display layer according to an embodiment of the present invention;
- [0016] FIG. 7 is a schematic diagram of triggering a display function of a text information display layer according to an embodiment of the present invention;
- [0017] FIG. 8 is a schematic diagram of displaying a video chat window independently according to an embodiment of the present invention;
- [0018] FIG. 9 is a schematic diagram of combining a text chat window and a video chat window according to an embodiment of the present invention;
- [0019] FIG. 10 is a schematic diagram of presenting a voice chat window at a lower background layer according to an embodiment of the present invention;
- [0020] FIG. 11 is a schematic structural diagram of a chat window presentation control system according to an embodiment of the present invention; and
- [0021] FIG. 12 is a schematic structural diagram of a computer system that can implement an embodiment of the present invention.

DESCRIPTION OF EMBODIMENTS

- [0022] To make the objectives, technical solutions, and advantages of the present disclosure more comprehensible, the following further describes the present disclosure in detail with reference to the accompanying drawings and embodiments. It should be understood that, the specific embodiments described herein are merely intended to explain the present disclosure but are not intended to limit the present disclosure.
- [0023] Referring to FIG. 4, a chat window presentation control method includes the following steps:
- [0024] Step S101: Display a chat window.

[0025] In this embodiment of the present invention, an initially displayed chat window may be a text chat window by default, and as shown in FIG. 1, the text chat window may include a function button for enabling a video chat window and a function button for enabling a voice chat window.

[0026] Step S102: Divide the chat window into an upper text information display layer and a lower background layer when an instruction of enabling a video chat function or an instruction of enabling a voice chat function is received (in a default chat window, when a user clicks the foregoing "function button for enabling a video chat window" or "function button for enabling a voice chat window", it is regarded that "an instruction of enabling a video chat function" or "an instruction of enabling a voice chat function" is sent).

[0027] It should be noted that, the foregoing window may be divided by using an existing technology, which is not described in detail again in this embodiment of the present invention.

[0028] Step S103: Present a text chat window at the upper text information display layer and at the same time, present a video chat window or a voice chat window at the lower background layer. That is, the video chat window is presented at the lower background layer according to the instruction of enabling a video chat function or the voice chat window is presented at the lower background layer according to the instruction of enabling a voice chat function. For example, as shown in FIG. 5, the lower background layer may be switched to a display window for a video chat image and may display a control function button related to a video chat.

[0029] Considering that a video display image in the video chat window sometimes overlaps with a text information display area in the text chat window in this embodiment of the present invention, which affects the quality of a video chat, as a preferred embodiment, after the presenting a video chat window, the present disclosure may further include the following steps:

acquiring a coordinate range of a video display image;

acquiring an operation coordinate of a current interaction;

determining whether the operation coordinate falls within the coordinate range of the video display image; and

if yes, concealing the upper text information display layer.

[0030] For example, a computer platform is used as an example. When a mouse pointer is moved to a video display image, it is regarded that a current operation coordinate of the mouse pointer falls within a coordinate range of the video display image. In this case, as shown in FIG. 6, a

concealing function of an upper text information display layer is triggered. It is convenient for users to perform a video chat operation when the upper text information display layer is concealed.

[0031] In addition, as a preferred embodiment, after it is determined that the operation coordinate falls within the coordinate range of the video display image, a process of concealing the upper text information display layer may specifically include the following steps:

acquiring a coordinate range of a text information display area;

determining whether the operation coordinate also falls within the coordinate range of the text information display area; and

if yes, indicating that the video display image overlaps with the text information display area and the current mouse pointer moves to the overlapped area; in this case, skipping triggering the concealing function of the upper text information display layer; and if not, indicating that the video display image does not overlap with the text information display area or the current mouse pointer is within the video display image and outside the text information display area; in this case, concealing the upper text information display layer. Misoperation can be avoided effectively and true intentions of a user can be acquired by using the foregoing steps.

[0032] After the concealing function of the upper text information display layer is triggered, triggering of a display function of the upper text information display layer is further provided in this embodiment of the present invention. As a preferred embodiment, after the concealing the upper text information display layer, the following step may be further included: when it is detected that the operation coordinate moves out of a coordinate range of the video chat window, triggering the display function of the upper text information display layer, that is, restoring display of the upper text information display layer. Certainly, a function button for enabling text shielding on an interface may be further clicked to conceal or display the upper text information display layer, as shown in FIG. 7.

[0033] As a preferred embodiment, after the presenting a video chat window, the following steps may be further included:

displaying the video chat window independently when an operation of clicking the video display image and dragging the video display image to an area outside the video display image is detected, as shown in FIG. 8, where, in this case, an original chat window is restored to the default text chat window (FIG. 1), that is, there are two windows at this time: the text chat window and the video chat window and both the two windows are controlled independently; and

after displaying the video chat window independently, when an operation of clicking any position of the video display image of the independent video chat window and dragging the video display image to an area of the text chat window is detected, combining the independent video chat window and the text chat window to form a chat window, as shown in FIG. 9.

[0034] In a default interface of the text chat window, a function button for enabling the voice chat window is clicked, a control function button related to a voice chat appears in the text chat window, as shown in FIG. 10; however, because the video chat and the voice chat are mutually exclusive functions in this embodiment of the present invention, if the function button for enabling the voice chat window is clicked in a case in which the video chat is enabled, a prompt about whether to exit the video chat is provided and only after confirmation, the control function button related to the voice chat appears. That is, as a preferred embodiment, after the presenting a video chat window, the following steps may be further included:

when the instruction of enabling a voice chat function is received, providing a prompt about whether to exit a video chat; and

closing the video chat window and presenting the voice chat window when an instruction of confirming to exit the video chat is received.

[0035] Corresponding to the chat window presentation control method, as shown in FIG. 11, an embodiment of the present invention further provides a chat window presentation control system, including:

a first window presentation module 101, configured to display a chat window;

a window division module 102, configured to divide the chat window into an upper text information display layer and a lower background layer when an instruction of enabling a video chat function or an instruction of enabling a voice chat function is received; and

a second window presentation module 103, configured to present a text chat window at the upper text information display layer and present a video chat window or a voice chat window at the lower background layer.

[0036] As a preferred embodiment, the chat window presentation control system in this embodiment of the present invention may further include:

a first coordinate range acquiring module, configured to acquire a coordinate range of a video display image after presenting the video chat window;

an operation coordinate acquiring module, configured to acquire an operation coordinate of a current interaction;

a first determining module, configured to determine whether the operation coordinate falls within the coordinate range of the video display image; and

a concealing module, configured to conceal the upper text information display layer in a case in which a determining result of the first determining module is yes.

[0037] As a preferred embodiment, the concealing module may include:

a second coordinate range acquiring module, configured to acquire a coordinate range of a text information display area;

a second determining module, configured to determine whether the operation coordinate falls within the coordinate range of the text information display area; and

a text information concealing module, configured to conceal the upper text information display layer in a case in which a determining result of the second determining module is not.

[0038] In addition, as a preferred embodiment, the chat window presentation control system in this embodiment of the present invention may further include:

an independent window display module, configured to display the video chat window independently when an operation of clicking the video display image and dragging the video display image to an area outside the video display image is detected; and

a window combination module, configured to: after displaying the video chat window independently, when an operation of clicking any position of the video display image of the independent video chat window and dragging the video display image to an area of the text chat window is detected, combine the independent video chat window and the text chat window to form a chat window.

[0039] Other technical features of the chat window presentation control system are the same as those of the chat window presentation control method in this embodiment of the present invention, which are not described in detail herein again.

[0040] It may be understood that, terms in the present disclosure such as "first" and "second" may be used herein to describe various elements but the elements are not limited by the terms. The terms are only used to differentiate the first element from another element. For example, without departing from the scope of the present disclosure, a first window presentation module may

be referred to as a second window presentation module, and similarly, a second window presentation module may be referred to as a first window presentation module. A first window presentation module and a second window presentation module are both window presentation modules but are not a same window presentation module.

[0041] Unless there are additionally specific and clear descriptions in context, a quantity of elements and components in the present disclosure may be one or more and is not limited in the present disclosure. Although the steps in the present disclosure are arranged by using numbers, the order of the steps is not limited by the numbers. Unless the order of the steps is described clearly or unless that a step is performed based on another step is described clearly, a relative order of the steps can be adjusted.

[0042] FIG. 12 is a module diagram of a computer system 1000 that can implement an embodiment of the present invention. The computer system 1000 is merely an example of a computer environment applicable to the present disclosure and is not considered as providing any limitation to a use scope of the present disclosure. The computer system 1000 cannot be explained as a combination of one or more parts in an exemplary computer system 1000 relying on or having graphics.

[0043] The computer system 1000 shown in FIG. 12 is an example of a computer system applicable to the present disclosure. Other architectures having different subsystem configurations may also be used. For example, a well-known device such as a desktop computer, a notebook computer, a personal digital assistant, a smart phone, a tablet computer, a portable media player, and a set-top box may be applicable to some embodiments of the present invention. However, the present disclosure is not limited to the devices listed above.

[0044] As shown in FIG. 12, the computer system 1000 includes a processor 1010, a memory 1020, and a system bus 1022. Various system components including the memory 1020 and the processor 1010 are connected to the system bus 1022. The processor 1010 is hardware for executing, by means of basic arithmetic and logic operations in a computer system, a computer program instruction. The memory 1020 is a physical device for temporarily or permanently storing computation programs or data (for example, program state information). The system bus 1022 may be any one of the following types of bus structures and includes a memory bus or a storage controller, a peripheral bus, and a local bus. The processor 1010 and the memory 1020 may perform data communication by using the system bus 1022. The memory 1020 includes a read-only memory (ROM) or a flash memory (not shown in the figure) and a random access memory (RAM), where

the RAM generally refers to a main memory loaded with an operating system and an application program.

[0045] The computer system 1000 further includes a display interface 1030 (for example, a graphics processing unit), a display apparatus 1040 (for example, a liquid crystal display), an audio interface 1050 (for example, an audio card), and an audio device 1060 (for example, a loudspeaker). The display apparatus 1040 and the audio device 1060 are media devices for experiencing multi-media content.

[0046] The computer system 1000 generally includes a storage device 1070. The storage device 1070 may be selected from multiple computer readable mediums. The computer readable medium refers to any available medium and can be accessed by using the computer system 1000 and includes a removable medium and a fixed medium. For example, the computer readable medium includes but is not limited to, a flash memory (a miniature SD card), a CD-ROM, a digital versatile disc (DVD) or other compact disc memories, a cassette, a magnetic tape, and a magnetic disk storage or other magnetic storage devices, or any other medium which may be used for storing required information and may be accessed by the computer system 1000.

[0047] The computer system 1000 further includes an input apparatus 1080 and an input interface 1090 (for example, an IO controller). A user may input instructions and information into the computer system 1000 by using the input apparatus 1080, for example, a keyboard, a mouse, or a touch panel device on the display apparatus 1040. The input apparatus 1080 is generally connected to the system bus 1022 by using the input interface 1090, but may also be connected to the system bus by using other interfaces or bus structures, for example, a universal serial bus (USB).

[0048] The computer system 1000 may be logically connected to one or more network devices in a network environment. The network device may be a personal computer, a server, a router, a smart phone, a tablet computer, or another public network node. The computer system 1000 is connected to the network device by using a local area network (LAN) interface 1100 or a mobile communications unit 1110. A LAN refers to a computer network formed through interconnection in a limited area, for example, a house, a school, a computer lab, or an office building in which network media is used. WiFi and twisted pair wiring Ethernet are two most common technologies to construct a LAN. The WiFi is a technology that can enable the computer system 1000 to exchange data or be connected to a wireless network by means of radio waves. The mobile communications unit 1110 can move in a broad geographical area and receive a call and make a call through a radio link at the same time. Besides a call, the mobile communications unit

1110 also supports Internet access in a 2G, 3G, or 4G cellular communications system providing a mobile data service.

[0049] It should be noted that, other computer systems that include more or less subsystems than the computer system 1000 are also applicable to the present disclosure. For example, the computer system 1000 may include a Bluetooth unit that can exchange data within a short distance, an image sensor for photographing, and an accelerometer for measuring an accelerated speed.

[0050] As described in detail above, the computer system 1000 applicable to the present disclosure can execute specified operations of the chat window presentation control method. The computer system 1000 executes the operations in the form of executing, by using the processor 1010, software instructions in a computer readable medium. The software instructions may be read from the storage device 1070 into the memory 1020 or may be read, by using the LAN interface 1100, from another device into the memory 1020. The software instructions stored in the memory 1020 enables the processor 1010 to execute the foregoing chat window presentation control method. In addition, the present disclosure can also be implemented by using a hardware circuit or by combining a hardware circuit with software instructions. Therefore, implementation of the present disclosure is not limited to a combination of any specified hardware circuit and software.

[0051] It may be seen from the foregoing solutions that, according to the chat window presentation control method and system of the present disclosure, a chat window is divided into an upper text information display layer and a lower background layer, and a video chat window or a voice chat window is presented at the lower background layer and a text chat window is presented at the upper text information display layer according to a demand of a user; in this way, multiple chat windows can be presented on one interface. According to the present disclosure, diversified information presentation manners are integrated effectively, and during a chat using text, voice, or a video, chat windows do not need to be switched frequently, thereby meeting a requirement for multi-scenario use and improving the utilization of an interface resource of a platform device.

[0052] The foregoing embodiments merely describe some implementation manners of the present disclosure. Although relatively specific and detailed descriptions on the implementation manners are provided, it should not be understood that the implementation manners are intended to limit the patent scope of the present disclosure. It should be noted that, a person of ordinary skill in the art can make some changes and improvements under the premise of not departing from the ideas of the present disclosure, and these changes and improvements shall fall within the protection scope of the present disclosure. Therefore, the patent protection scope of the present disclosure shall be subject to the claims.

CLAIMS

What is claimed is:

1. A chat window presentation control method, comprising the following steps:
displaying a chat window;
dividing the chat window into an upper text information display layer and a lower background layer when an instruction of enabling a video chat function or an instruction of enabling a voice chat function is received; and
presenting a text chat window at the upper text information display layer and presenting a video chat window or a voice chat window at the lower background layer.
2. The chat window presentation control method according to claim 1, after the presenting a video chat window, further comprising the following steps:
acquiring a coordinate range of a video display image;
acquiring an operation coordinate of a current interaction;
determining whether the operation coordinate falls within the coordinate range of the video display image; and
if yes, concealing the upper text information display layer.
3. The chat window presentation control method according to claim 2, wherein a process of concealing the upper text information display layer comprises:
acquiring a coordinate range of a text information display area;
determining whether the operation coordinate falls within the coordinate range of the text information display area; and
if not, concealing the upper text information display layer.
4. The chat window presentation control method according to claim 2 or 3, after the concealing the upper text information display layer, further comprising the following step:
displaying the upper text information display layer when it is detected that the operation coordinate moves out of a coordinate range of the video chat window.
5. The chat window presentation control method according to claim 2 or 3, after the presenting a video chat window, further comprising the following steps:
displaying the video chat window independently when an operation of clicking the video

display image and dragging the video display image to an area outside the video display image is detected; and

after displaying the video chat window independently, when an operation of clicking any position of the video display image of the independent video chat window and dragging the video display image to an area of the text chat window is detected, combining the independent video chat window and the text chat window to form a chat window.

6. The chat window presentation control method according to claim 1, after the presenting a video chat window, further comprising the following steps:

when the instruction of enabling a voice chat function is received, providing a prompt about whether to exit a video chat; and

closing the video chat window and presenting the voice chat window when an instruction of confirming to exit the video chat is received.

7. A chat window presentation control system, comprising:

a first window presentation module, configured to display a chat window;

a window division module, configured to divide the chat window into an upper text information display layer and a lower background layer when an instruction of enabling a video chat function or an instruction of enabling a voice chat function is received; and

a second window presentation module, configured to present a text chat window at the upper text information display layer and present a video chat window or a voice chat window at the lower background layer.

8. The chat window presentation control system according to claim 7, further comprising:

a first coordinate range acquiring module, configured to acquire a coordinate range of a video display image after presenting the video chat window;

an operation coordinate acquiring module, configured to acquire an operation coordinate of a current interaction;

a first determining module, configured to determine whether the operation coordinate falls within the coordinate range of the video display image; and

a concealing module, configured to conceal the upper text information display layer in a case in which a determining result of the first determining module is yes.

9. The chat window presentation control system according to claim 8, wherein the concealing

module comprises:

a second coordinate range acquiring module, configured to acquire a coordinate range of a text information display area;

a second determining module, configured to determine whether the operation coordinate falls within the coordinate range of the text information display area; and

a text information concealing module, configured to conceal the upper text information display layer in a case in which a determining result of the second determining module is not.

10. The chat window presentation control system according to claim 8 or 9, further comprising:

an independent window display module, configured to display the video chat window independently when an operation of clicking the video display image and dragging the video display image to an area outside the video display image is detected; and

a window combination module, configured to: after displaying the video chat window independently, when an operation of clicking any position of the video display image of the independent video chat window and dragging the video display image to an area of the text chat window is detected, combine the independent video chat window and the text chat window to form a chat window.

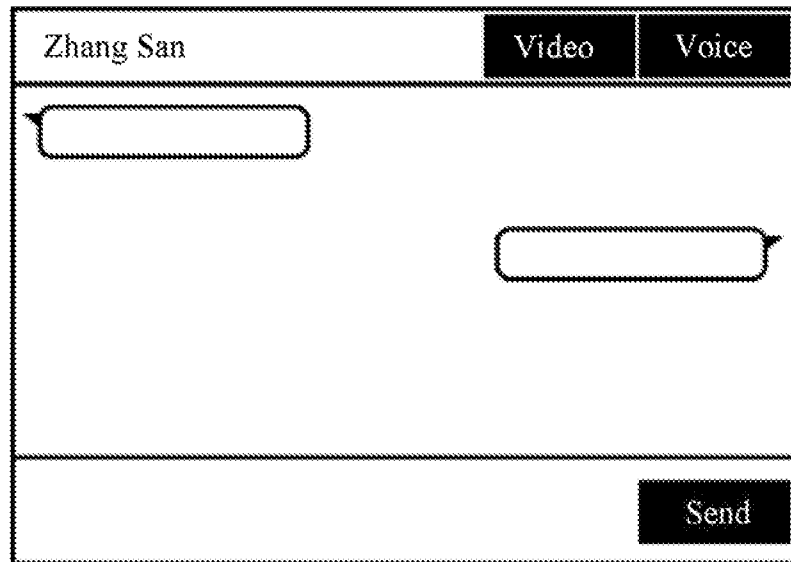


FIG. 1

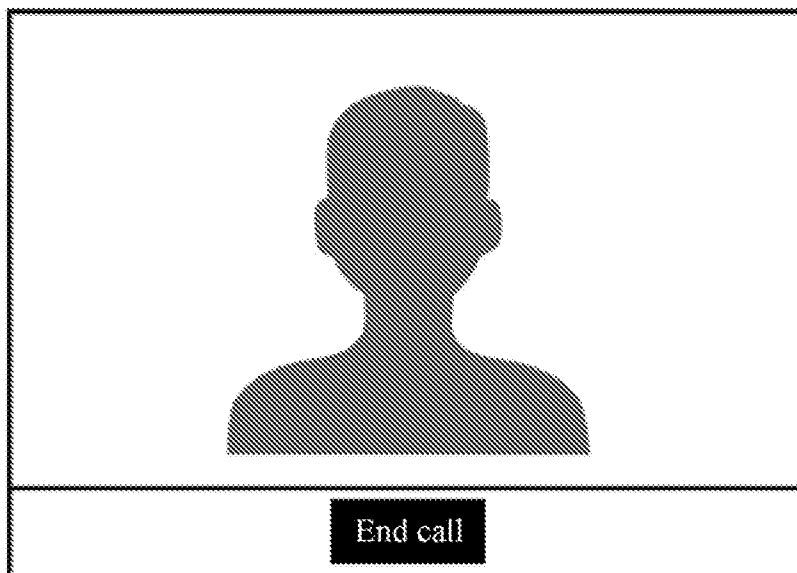


FIG. 2

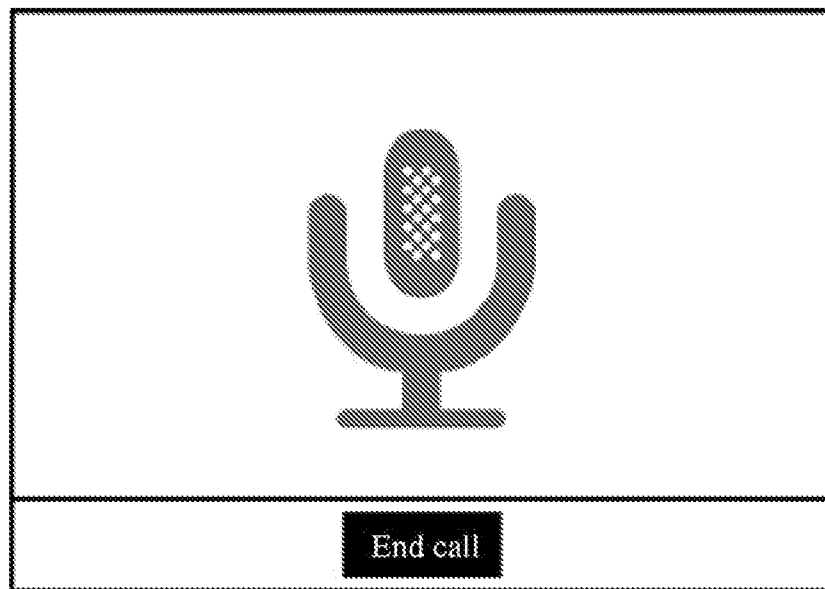


FIG. 3

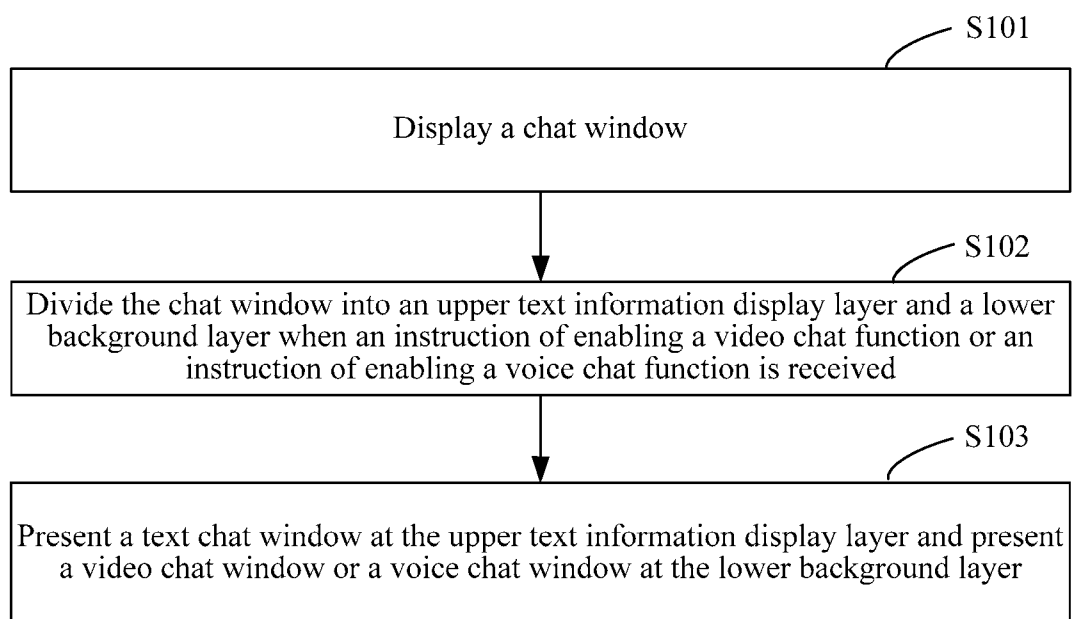


FIG. 4

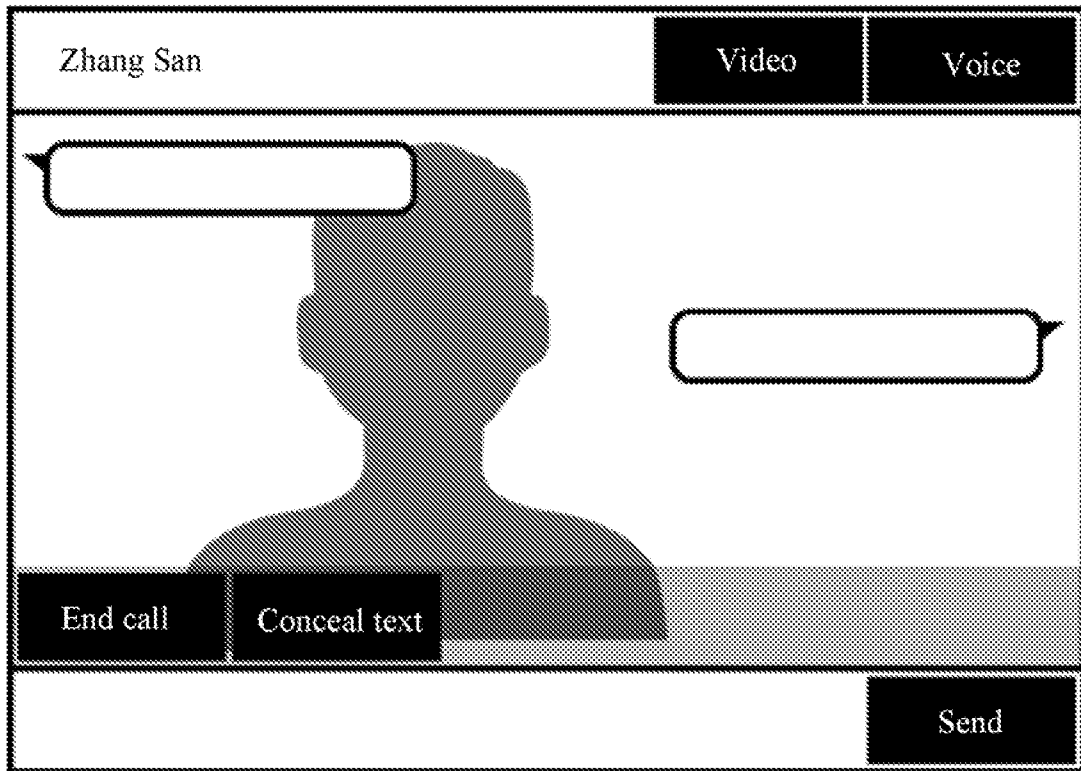


FIG. 5

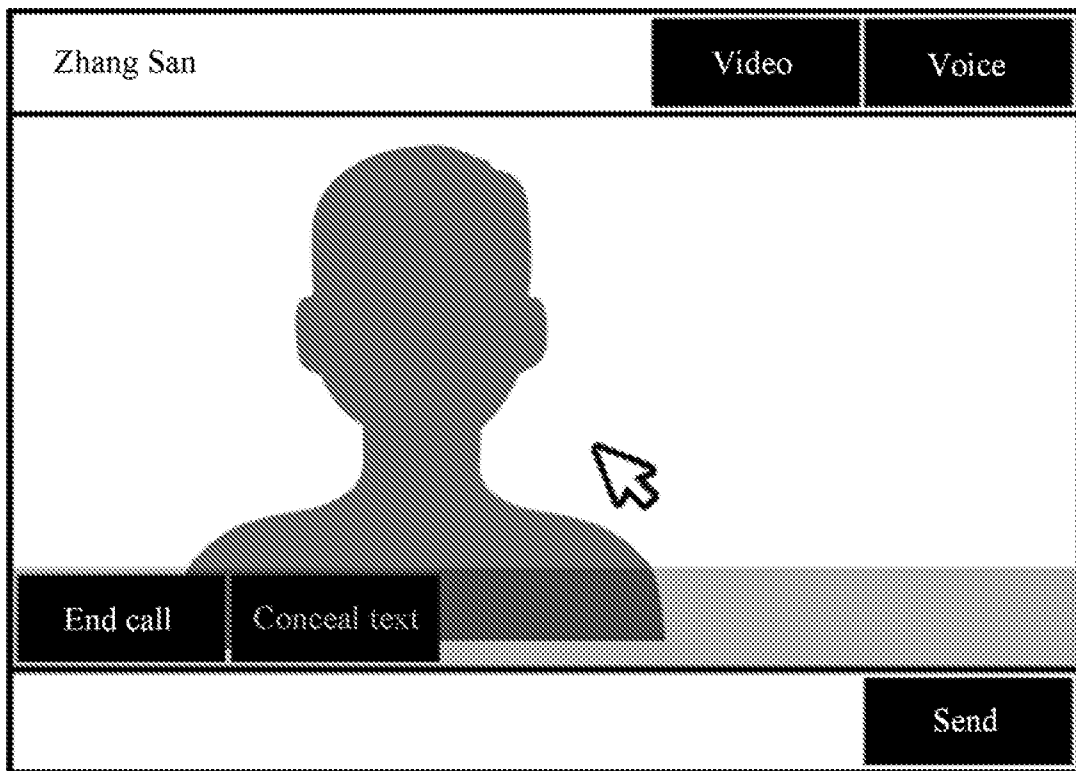


FIG. 6

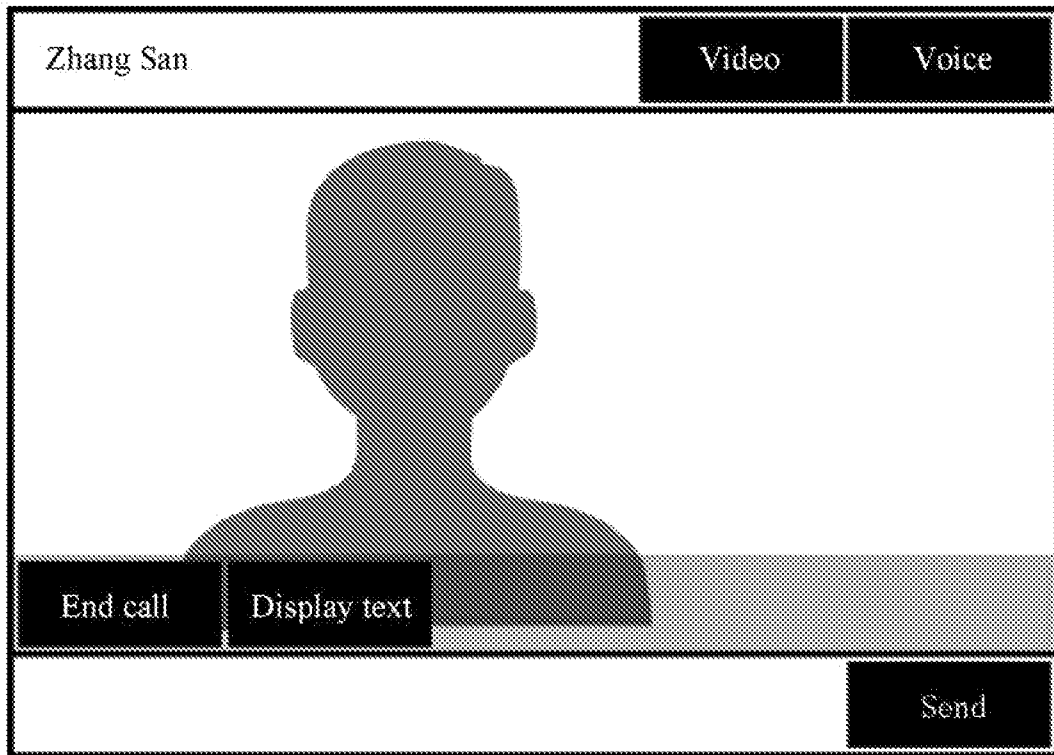


FIG. 7

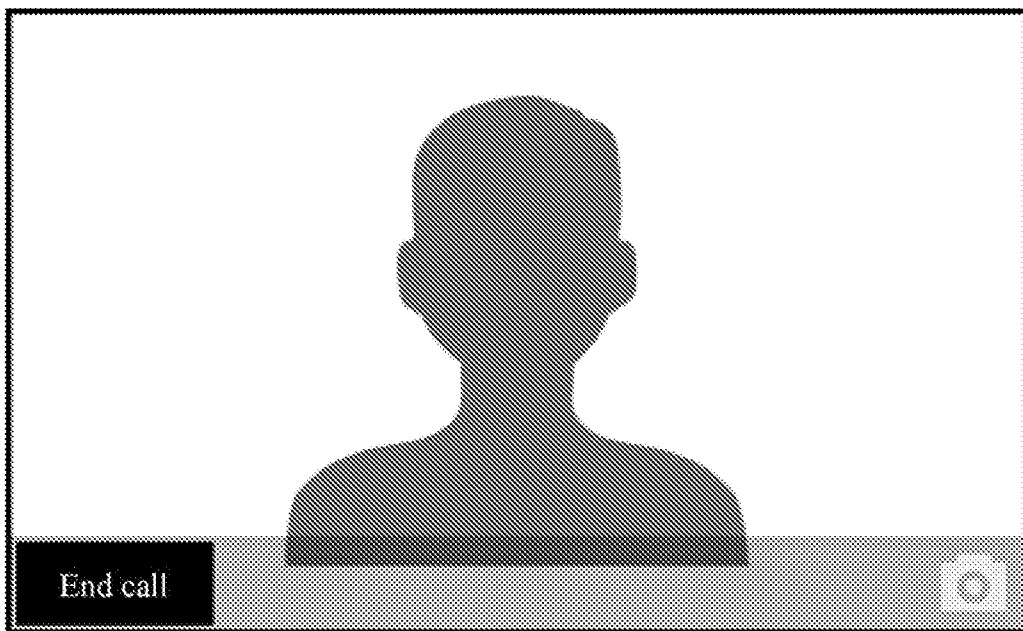


FIG. 8

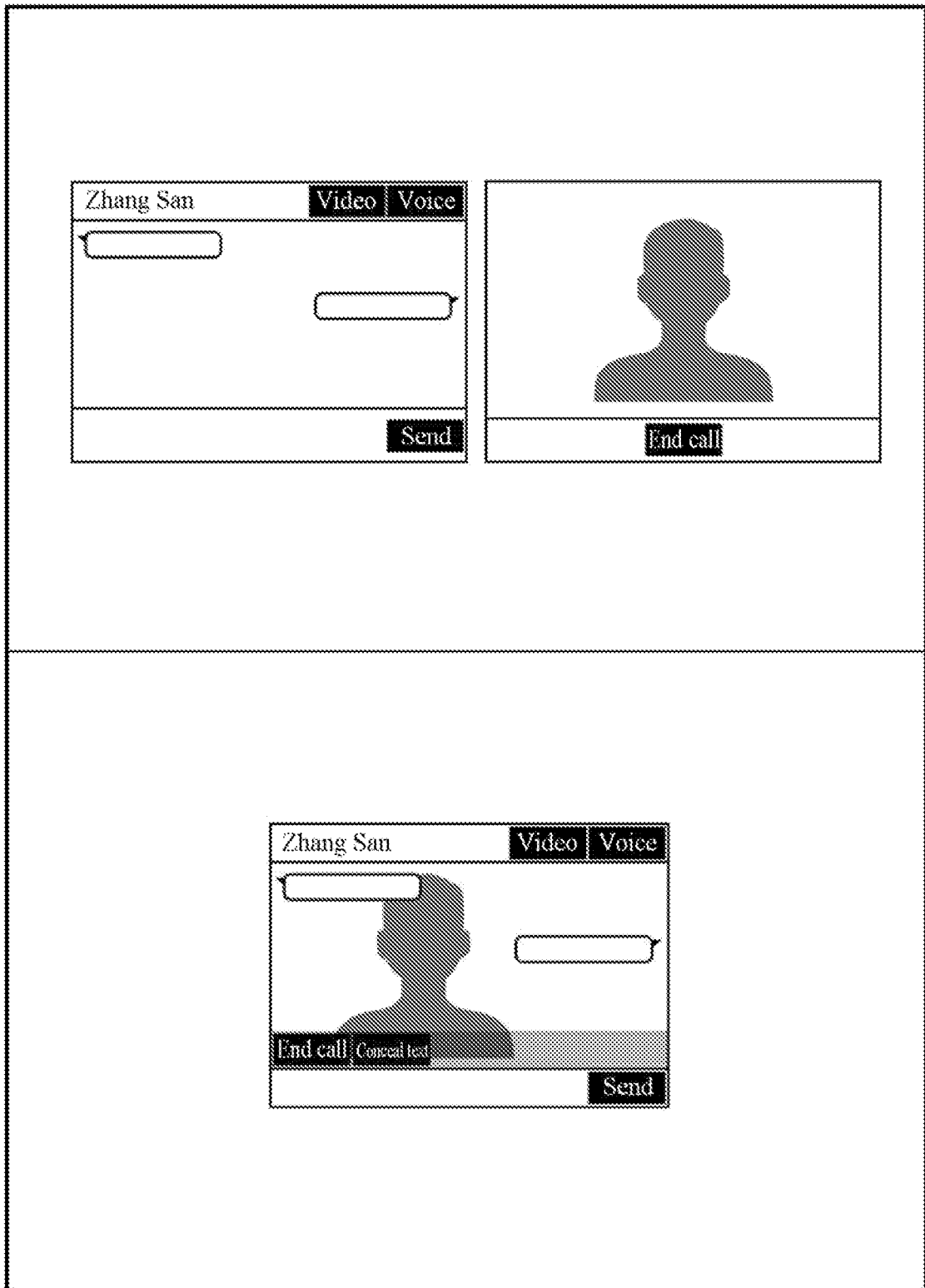


FIG. 9

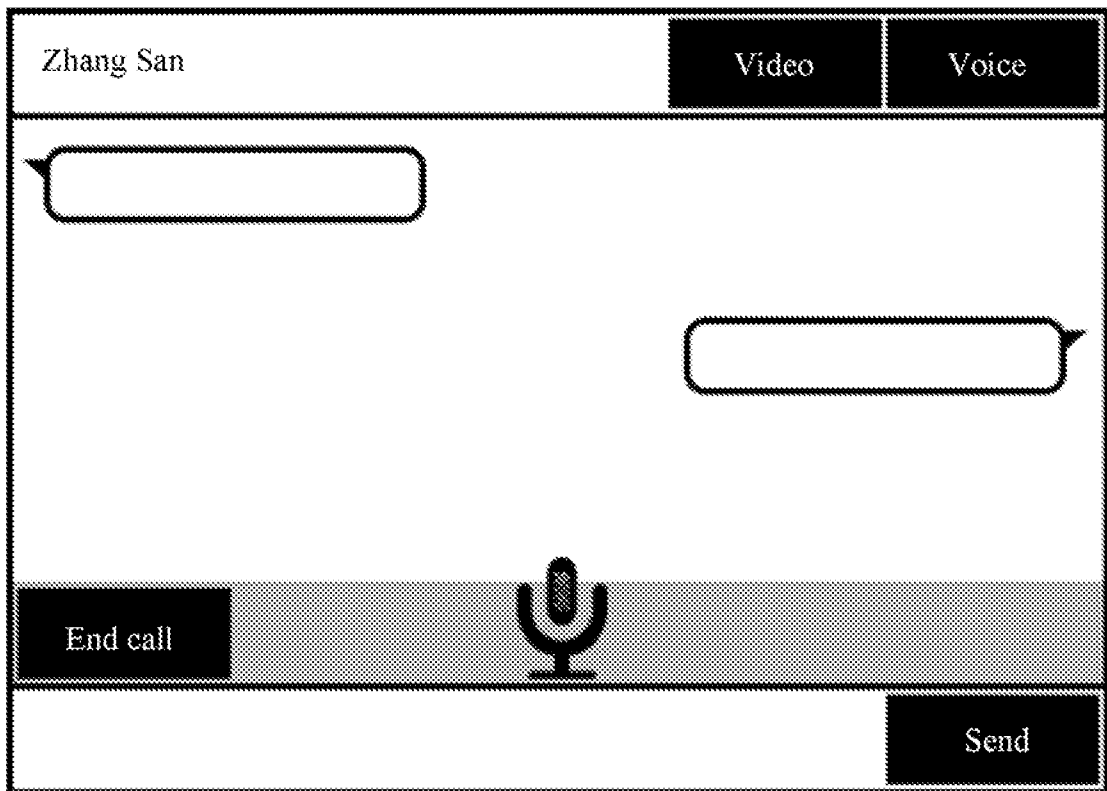


FIG. 10

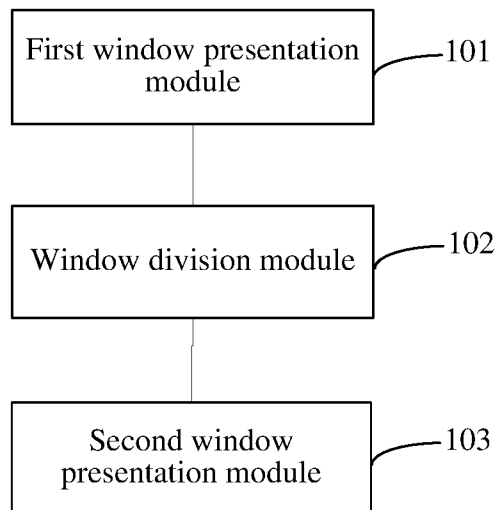


FIG. 11

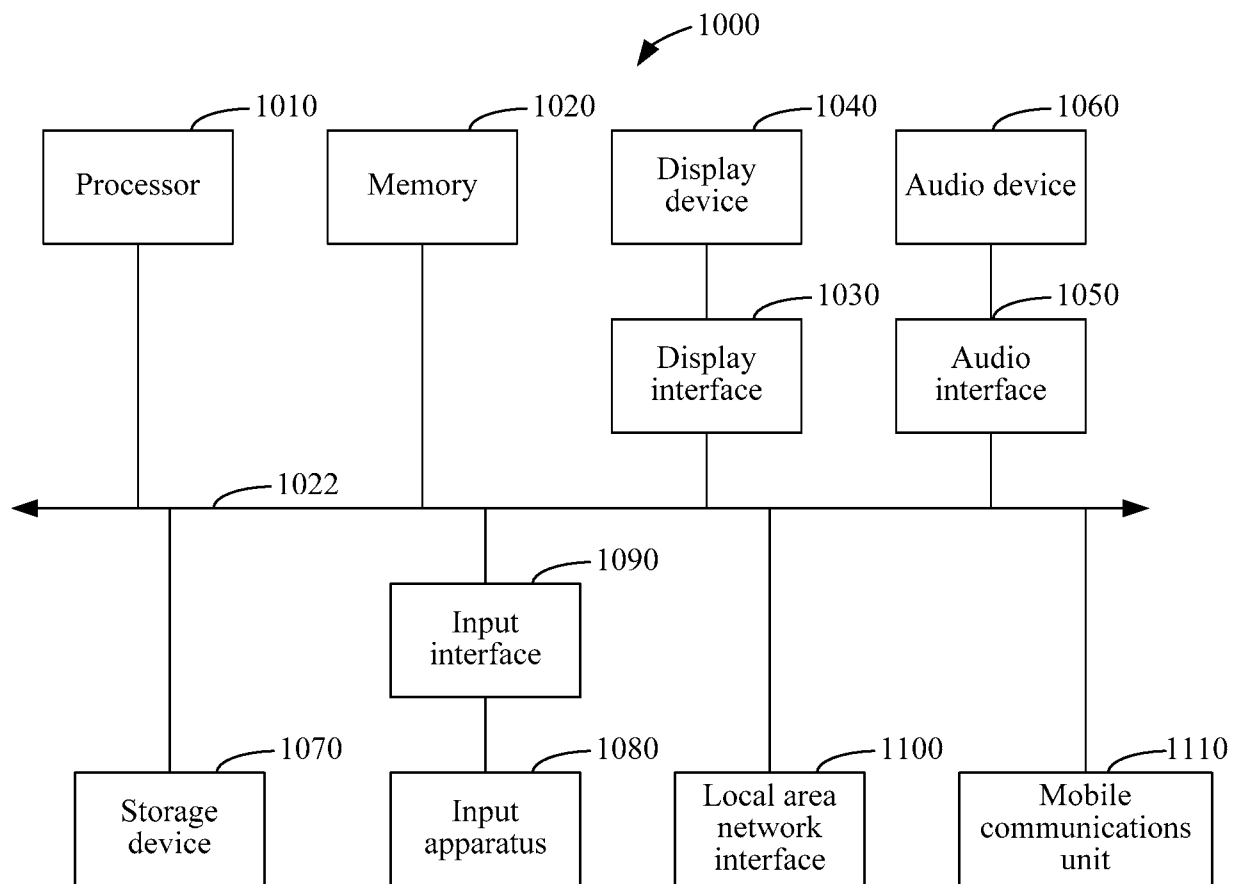


FIG. 12

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2015/070438

A. CLASSIFICATION OF SUBJECT MATTER

G06F 3/0484(2013.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G06F; H04L; H04W; H04Q; H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNPAT,CNKI,WPI,EPODOC:chat, interconnection, communication, message, dialogue, screen, window, display, text, character, passage, literal, context, video,image, multimedia, upper, lower, top, layer, floor, stratum, tier, background, superimpose, superpose, overlay, overlap

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KR 101339944 B1 (D & T INC.) 10 December 2013 (2013-12-10) description, paragraphs [0053]-[0064], figure 3 and abstract	1, 6, 7
Y	KR 101339944 B1 (D & T INC.) 10 December 2013 (2013-12-10) description, paragraphs [0053]-[0064], figure 3 and abstract	2-5, 8-10
Y	CN 103186321 A (SHANGHAI BOTAIYUEZHEN POWER EQUIP. MFG. CO.) 03 July 2013 (2013-07-03) description, paragraphs [0026]-[0028], [0031]-[0060], figures 1, 2a, 2b	2-5, 8-10
PX	US 2014240440 A1 (LG UPLUS CORP.) 28 August 2014 (2014-08-28) description, paragraphs [0258]-[0262], figures 13 and 14	1, 7
E	CN 104394480 A (GUIZHOU LONGMASTER INFORMATION & TECHNOLOGY CO., LTD.) 04 March 2015 (2015-03-04) description, paragraphs [0034]-[0038] and [0049]-[0053]	1, 7
A	US 2003101450 A1 (DAVIDSSON, MARCUS ET AL.) 29 May 2003 (2003-05-29) the whole document	1-10

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

“A” document defining the general state of the art which is not considered to be of particular relevance

“E” earlier application or patent but published on or after the international filing date

“L” document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

“O” document referring to an oral disclosure, use, exhibition or other means

“P” document published prior to the international filing date but later than the priority date claimed

“T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

“X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

“Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

“&” document member of the same patent family

Date of the actual completion of the international search

26 March 2015

Date of mailing of the international search report

16 April 2015

Name and mailing address of the ISA/CN

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2015/070438

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
KR	101339944	B1	10 December 2013	None			
CN	103186321	A	03 July 2013	None			
US	2014240440	A1	28 August 2014	JP	2014170524	A	18 September 2014
				KR	20140108480	A	11 September 2014
				KR	20150009103	A	26 January 2015
				KR	20150009645	A	27 January 2015
				KR	20150009644	A	27 January 2015
				KR	20150009643	A	27 January 2015
				KR	101425755	B1	04 August 2014
CN	104394480	A	04 March 2015	None			
US	2003101450	A1	29 May 2003	EP	1446949	A1	18 August 2004
				ES	2272414	T3	01 May 2007
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				WO	03045058	A1	30 May 2003
				DE	60123851	E	23 November 2006