

SOUND EFFECT PLAYBACK METHOD AND APPARATUS

[1] FIELD OF THE TECHNOLOGY

[2] The present disclosure relates to the field of Internet technologies, and in particular to a sound effect playback method and apparatus.

[3] BACKGROUND OF THE DISCLOSURE

[4] With development of Internet technologies, Internet-type applications become increasingly more. In order to attract more users to use Internet-type applications, a sound effect is often played while an Internet-type application is used. The played sound effect is an important reference for a user to judge pros and cons of an Internet-type application, and therefore, in order to satisfy demands of the user, and increase the number of users of Internet-type applications, how to play a sound effect becomes a problem to which persons skilled in the art pay attention.

[5] When a related technology is used to play a sound effect, in a situation in which a current implementation environment is formed by superposing multiple materials, if a manner of playing a sound effect corresponding to one of the materials is used, because the played sound effect cannot accurately embody the current implementation environment, the sound effect played by using the related technology is lack of timeliness. However, if a manner of adding a sound effect corresponding to a new material into a system resource pack is used, because the added sound effect corresponding to the new material increases an occupation amount of the system resource pack, resource consumption is large when the related technology is used to play the sound effect.

[6] SUMMARY

[7] In view of the above, embodiments of the present invention provide a sound effect playback method and apparatus. The technical solutions are as follows:

[8] According to an aspect, provided is a sound effect playback method, run in a terminal device, the terminal device including a memory, one or more processors, and program instructions stored in the memory and executed by the one or more processors, and the method including: obtaining location information of a current implementation environment, and determining, according to the location information of the current implementation environment, each material for forming the current implementation environment and a proportion occupied by each material; obtaining an initial sound effect value corresponding to each material for forming the current implementation environment, and adjusting the initial sound effect value corresponding to each material

according to the proportion occupied by each material, to obtain an adjusted sound effect value of each material; and combining adjusted sound effect values of all materials, and playing a combined sound effect.

- [9] According to another aspect, provided is a sound effect playback apparatus, the apparatus including:
- [10] a memory;
- [11] one or more processors; and
- [12] one or more program modules, stored in the memory, and executed by the one or more processors, the one or more program modules including:
- [13] a first obtaining module, configured to obtain location information of a current implementation environment; a first determining module, configured to determine, according to the location information of the current implementation environment, each material for forming the current implementation environment and a proportion occupied by each material; a second obtaining module, configured to obtain an initial sound effect value corresponding to each material for forming the current implementation environment; an adjusting module, configured to adjust the initial sound effect value corresponding to each material according to the proportion occupied by each material, to obtain an adjusted sound effect value of each material; a combining module, configured to combine adjusted sound effect values of all materials; and a playback module, configured to play a combined sound effect.
- [14] According to another aspect, provided is a non-transitory computer readable storage medium having stored therein one or more instructions, which, when executed by a terminal device, cause the terminal device to: obtain location information of a current implementation environment, and determine, according to the location information of the current implementation environment, each material for forming the current implementation environment and a proportion occupied by each material; obtain an initial sound effect value corresponding to each material for forming the current implementation environment, and adjust the initial sound effect value corresponding to each material according to the proportion occupied by each material, to obtain an adjusted sound effect value of each material; and combine adjusted sound effect values of all materials, and play a combined sound effect.
- [15] Each material for forming a current implementation environment and a proportion occupied by each material are determined according to location information of the current implementation environment, and an initial sound effect value corresponding to each material for forming the current implementation environment is obtained; then the initial sound effect value corresponding to each material according to the proportion occupied by each material is adjusted, and adjusted sound effect values of all materials are combined and then a combined sound effect is played, so that the current imple-

mentation environment can be accurately embodied without the need of adding a system resource pack, and therefore the played sound effect is more timely.

[16] BRIEF DESCRIPTION OF THE DRAWINGS

[17] To describe the technical solutions of the embodiments of the present invention more clearly, the accompanying drawings for illustrating the embodiments will be introduced briefly in the following. Apparently, the drawings in the following description are only some embodiments of the present invention, and a person of ordinary skill in the art may obtain other drawings based on these accompanying drawings without creative efforts.

[18] FIG. 1 is a flowchart of a sound effect playback method according to an embodiment of the present invention;

[19] FIG. 2 is a flowchart of a sound effect playback method according to another embodiment of the present invention;

[20] FIG. 3 is a schematic diagram of a preset implementation environment according to another embodiment of the present invention;

[21] FIG. 4 is a schematic structural diagram of a sound effect playback apparatus according to another embodiment of the present invention;

[22] FIG. 5 is a schematic structural diagram of a first determining module according to another embodiment of the present invention;

[23] FIG. 6 is a schematic structural diagram of a sound effect playback apparatus according to another embodiment of the present invention;

[24] FIG. 7 is a schematic structural diagram of another sound effect playback apparatus according to another embodiment of the present invention;

[25] FIG. 8 is a schematic structural diagram of an adjusting module according to another embodiment of the present invention; and

[26] FIG. 9 is a schematic structural diagram of a terminal device according to another embodiment of the present invention.

[27] DESCRIPTION OF EMBODIMENTS

[28] Currently, when a related technology is used to play a sound effect, the following manner is used: first, a material of a current implementation environment is determined, where each material of the implementation environment is corresponding to a sound effect; then, a corresponding sound effect is played according to the material of the current implementation environment. Specifically, if the material of the current implementation environment is soil, a sound effect corresponding to the soil is played according to the current implementation environment; if the material of the current implementation environment is grassland, a sound effect corresponding to the grassland is played according to the current implementation environment. Moreover, in a situation in which the current implementation environment is formed by superposing multiple

materials, such as formed by superposing grassland and soil, a related technology is used to play a sound effect corresponding to one of the materials, or a sound effect corresponding to a new material is added into a system resource pack, and then the sound effect corresponding to the original material and the added sound effect corresponding to the new material are played.

- [29] To make the objectives, technical solutions, and advantages of the present disclosure more comprehensible, the following further describes the embodiments of the present invention in detail with reference to the accompanying drawings.
- [30] With development of Internet technologies, both types and the quantity of Internet-type applications become increasingly more. In order to satisfy abundant demands of users for played sound effects, an embodiment of the present invention provides a sound effect playback method. Referring to FIG. 1, the process of the method provided in this embodiment includes:
- [31] 101: Obtain location information of a current implementation environment, and determine, according to the location information of the current implementation environment, each material for forming the current implementation environment and a proportion occupied by each material.
- [32] 102: Obtain an initial sound effect value corresponding to each material for forming the current implementation environment, and adjust the initial sound effect value corresponding to each material according to the proportion occupied by each material, to obtain an adjusted sound effect value of each material.
- [33] 103: Combine adjusted sound effect values of all materials, and play a combined sound effect. Combining herein may also be understood as mixing, that is, various demodulated voices are superposed together and played, and a total sum of volumes is controlled to be at a peak value.
- [34] As an optional embodiment, the determining, according to the location information of the current implementation environment, each material for forming the current implementation environment and a proportion occupied by each material includes:
- [35] determining location units in a preset implementation environment corresponding to the current implementation environment according to the location information of the current implementation environment, any location unit in the preset implementation environment having material data formed by each material in the any location unit and a proportion occupied by each material; and
- [36] extracting the material data had by the location unit corresponding to the current implementation environment, and determining, according to the extracted material data, each material for forming the current implementation environment and the proportion occupied by each material.
- [37] As an optional embodiment, before the extracting the material data had by the

location unit corresponding to the current implementation environment, the method further includes:

- [38] obtaining different materials, and combining the different materials according to different proportions to obtain a preset implementation environment;
- [39] dividing the preset implementation environment into different location units, and setting location information for each location unit, each location unit being corresponding to at least one material;
- [40] determining a proportion occupied by each material corresponding to each location unit, and forming material data by each material corresponding to each location unit and the proportion occupied by each material, to obtain the material data of each location unit; and
- [41] storing the material data and the location information of each location unit of the preset implementation environment.
- [42] The determining location units in a preset implementation environment corresponding to the current implementation environment according to the location information of the current implementation environment includes:
- [43] searching for location information matching the location information of the current implementation environment among stored location information of location units of the preset implementation environment, and using a location unit corresponding to the found location information as a location unit in the preset implementation environment corresponding to the current implementation environment.
- [44] As an optional embodiment, before the obtaining an initial sound effect value corresponding to each material for forming the current implementation environment, the method further includes:
- [45] setting an initial sound effect value for each material, and storing the initial sound effect value of each material.
- [46] The obtaining an initial sound effect value corresponding to each material for forming the current implementation environment includes:
- [47] searching for the initial sound effect value corresponding to each material for forming the current implementation environment among stored initial sound effect values of all material.
- [48] As an optional embodiment, the adjusting the initial sound effect value corresponding to each material according to the proportion occupied by each material includes:
- [49] determining, according to the proportion occupied by each material, a volume for playing each material; and
- [50] adjusting the initial sound effect value corresponding to each material according to the determined volume for playing each material.

- [51] This embodiment of the present invention provides a sound effect playback method, and the method is applied to a network application having an implementation environment. The implementation environment is information about a terrestrial material in a current scenario in the network application. If the current scenario in the network application is soil, the current implementation environment is soil; if the current scenario of the network application is a land of aquatic weed, the current implementation environment is aquatic weed, and the current implementation environment is not specifically limited in any one of the embodiments of the present invention. For convenience of understanding, the sound effect playback method provided in the embodiment of the present invention is explained and described in detail currently with reference to the content of the foregoing embodiment. Referring to FIG. 2, the process of the method provided in this embodiment includes:
- [52] 201: Obtain location information of a current implementation environment.
- [53] The implementation environment includes but is not limited to a terrestrial material and the like, and the implementation environment is not specifically limited in this embodiment. The location information of the current implementation environment includes but is not limited to coordinate information of the current implementation environment and the like, and the coordinate information of the current implementation environment is not specifically limited in this embodiment. In order that the sound effect can be played according to the current implementation environment, and meanwhile the played sound effect is more timely, when the method provided in this embodiment is used to play the sound effect, the location information of the current implementation environment needs to be obtained first.
- [54] The manner of obtaining the location information of the current implementation environment is not specifically limited in this implementation. During specific implementation, the following manner may be used: an execution body in a current implementation environment in an application program is first determined, then information about a location at which the execution body in the current implementation environment in the application program is located is obtained, and the obtained information about the location at which the execution body in the current implementation environment in the application program is located is used as the obtained location information of the current implementation environment. For example, if the current implementation environment in the application program is grassland, and the execution body in the current implementation environment in the application program is a person carrying a knapsack on the back, information about a location of the person carrying the knapsack on the back on the grassland in the application program may be used as the location information of the current implementation environment.
- [55] 202: Determine each material for forming the current implementation environment

and a proportion occupied by each material according to the location information of the current implementation environment.

- [56] Implementation environments required in different application scenarios in an application program are different, and implementation environments obtained according to different materials are also different, and therefore, in order to satisfy demands of different scenarios, in the method provided in this embodiment, before a sound effect is played, a preset implementation environment may be configured, and the specific configuration process includes but is not limited to: obtaining different materials for forming a preset implementation environment, and combining the different materials according to different proportions to obtain the preset implementation environment. For example, that the configured preset implementation environment is grassland is used as an example, and different materials for forming the grassland are separately mud, grass and the like, and therefore the materials such as mud and grass are combined according to different proportions to obtain the preset implementation environment.
- [57] Optionally, the preset implementation environment is obtained by combining different materials according to different proportions, proportions occupied by materials on different locations in the implementation environment are different, and the different proportions occupied by the materials make sound effects played in subsequent steps different, and therefore, in order to enable the played sound effect to be more approximate to the current implementation environment, and meanwhile for convenience of determining each material for forming the current implementation environment and a proportion occupied by each material in the subsequent process, in the method provided in this embodiment, after the preset implementation environment is obtained, a step of dividing the preset implementation environment into different location units is further executed. Specifically, the manner of dividing the preset implementation environment into different location units is not specifically limited in this embodiment. During specific implementation, the preset implementation environment may be divided into location units having a same area, and the preset implementation environment may also be divided into location units having different areas. However, no matter which manner is used, in this embodiment, a combining proportion of a material in each location unit obtained by means of dividing is set to be the same, that is, a proportion occupied by each material in each location unit is unique. The preset implementation environment is divided into location units of different quantities, which may be 8, 9, 16 and the like, and the different quantities of the location units obtained by dividing the preset implementation environment are not specifically limited in this embodiment.
- [58] After the preset implementation environment is divided into different location units,

in the method provided in this embodiment, location information is further set for each location unit. The manner of setting location information for each location unit includes but is not limited to the following manner:

- [59] First step, a coordinate system is established on the basis of the preset implementation environment, and a corresponding coordinate of each location unit in the preset implementation environment in the coordinate system is determined.
- [60] Second step, the corresponding coordinate of each location unit in the coordinate system is used as the location information set for each location unit.
- [61] The proportion occupied by each material corresponding to each location unit has an important effect on a sound effect played in a subsequent step, and therefore, for convenience of playing the sound effect according to the proportion occupied by each material corresponding to each location unit in the subsequent step, in the method provided in this embodiment, the proportion occupied by each material corresponding to each location unit needs to be determined, and each material and the proportion occupied by each material corresponding to each location unit are formed into material data, thereby obtaining the material data of each location unit.
- [62] Material data and location information of each location unit of the preconfigured preset implementation environment continue to be applied in the subsequent sound effect playback process, and therefore, in the method provided in this embodiment, a step of storing the material data and the location information of each location unit of the preset implementation environment is further executed. The manner of storing the material data and the location information of each location unit of the preset implementation environment includes but is not limited to: first, denoting material data and location information of each material according to the proportion occupied by each material and the length of the preset implementation environment in a coordinate system by using a hexadecimal number; secondly, denoting the material data and the location information of each material denoted by using the hexadecimal number by using a double-word value; and thirdly, storing the obtained double-word value in a corresponding storage medium.
- [63] For convenience of understanding, the foregoing process of storing material data and location information of each location unit of the preset implementation environment is explained and described in detail below by using a specific example.
- [64] For example, the length of the preset implementation environment in the coordinate system is set to 255. A location unit A in the preset implementation environment is used as an example. If materials corresponding to the location unit A in the preset implementation environment include grass, soil, sand, and water, where a proportion occupied by grass is 10%, a proportion occupied by soil is 50%, a proportion occupied by sand is 35%, a proportion occupied by water is 5%, a specific calculating process of

denoting material data and location information of each material by using a hexadecimal number is:

[65] grass= $0.10 \times 255 = 25 = 0 \times 19$;

[66] soil= $0.50 \times 255 = 127 = 0 \times 7F$;

[67] sand= $0.35 \times 255 = 89 = 0 \times 59$; and

[68] water= $0.05 \times 255 = 12 = 0 \times 0C$,

[69] where $0 \times$ is a denoting method for a hexadecimal number.

[70] After material data and location information of each material denoted by using a hexadecimal number are obtained, the material data and the location information of each material denoted by using a hexadecimal number may be denoted by using a double-word value $0 \times 197F590C$, and the obtained double-word value is stored in a corresponding storage medium.

[71] In the sound effect playback method provided in this embodiment, when a sound effect is played, the sound effect is played mainly according to each material of the current implementation environment and a proportion occupied by each material, and different location information of the current implementation environment makes materials of the current implementation environment and proportions occupied by the materials different, and therefore, in order that the sound effect can be played according to each material of the current implementation environment and a proportion occupied by each material, in the method provided in this embodiment, each material for forming the current implementation environment and a proportion occupied by each material need to be determined according to the location information of the current implementation environment. Specifically, the determining, according to the location information of the current implementation environment, each material for forming the current implementation environment and a proportion occupied by each material includes but is not limited to the following steps:

[72] First: Determine location units in a preset implementation environment corresponding to the current implementation environment according to the location information of the current implementation environment,

[73] where any location unit in the preset implementation environment has material data formed by each material in the any location unit and a proportion occupied by each material; the manner of determining location units in a preset implementation environment corresponding to the current implementation environment according to the location information of the current implementation environment includes but is not limited to:

[74] searching for location information matching the location information of the current implementation environment among stored location information of location units of the preset implementation environment, and using a location unit corresponding to the

found location information as a location unit in the preset implementation environment corresponding to the current implementation environment.

[75] Second: Extract the material data had by the location unit corresponding to the current implementation environment, and determine, according to the extracted material data, each material for forming the current implementation environment and the proportion occupied by each material.

[76] For convenience of understanding, the foregoing process is explained and described in detail below by using a specific example.

[77] FIG. 3 shows a preset implementation environment obtained by combining several materials such as grass, water, and soil according to different combining proportions. The preset implementation environment is divided into 4 location units, which are separately a location unit 1, a location unit 2, a location unit 3 and a location unit 4. In the location unit 1, a proportion occupied by grass is 30%, a proportion occupied by water is 20%, and a proportion occupied by soil is 50%; in the location unit 2, a proportion occupied by grass is 50%, a proportion occupied by water is 40%, and a proportion occupied by soil is 10%; in the location unit 3, a proportion occupied by grass is 20%, a proportion occupied by water is 30%, and a proportion occupied by soil is 50%; in the location unit 4, a proportion occupied by grass is 20%, a proportion occupied by water is 60%, and a proportion occupied by soil is 20%. A coordinate system is established according to the preset implementation environment, and location information corresponding to each location unit may be obtained. If the location information of the current implementation environment is (4, 12), it can be determined that the location unit in the preset implementation environment corresponding to the current implementation environment is the location unit 1, then material data had by the location unit 1 corresponding to the current implementation environment is extracted, and it is determined according to the extracted material data that each material for forming the current implementation environment and a proportion occupied by each material are: a proportion occupied by grass is 30%, a proportion occupied by water is 20%, and a proportion occupied by soil is 50%.

[78] 203: Obtain an initial sound effect value corresponding to each material for forming the current implementation environment.

[79] The initial sound effect corresponding to each material includes but is not limited to sound quality of each material and an initial volume for playing each material. In this embodiment, initial volumes for playing all materials are set to a same magnitude.

[80] In order that an initial sound effect value corresponding to each material for forming the current implementation environment can be obtained, in the method provided in this embodiment, before the initial sound effect value corresponding to each material for forming the current implementation environment is obtained, the initial sound

effect value needs to be preset for each material. The manner of presetting the initial sound effect value for each material is not specifically limited in this embodiment.

- [81] The initial sound effect value preset for each material continues to be applied in the subsequent sound effect playback process, and therefore, in the method provided in this embodiment, after the initial sound effect value is preset for each material, the step of storing the initial sound effect value of each material is further executed. The manner of storing the initial sound effect value of each material includes but is not limited to storing the initial sound effect value of each material in a corresponding storage medium.
- [82] Further, after the initial sound effect value of each material is stored in the corresponding storage medium, when the initial sound effect value corresponding to each material for forming the current implementation environment is obtained, the initial sound effect value corresponding to each material for forming the current implementation environment may be searched for among stored initial sound effect values of all materials.
- [83] 204: Adjust the initial sound effect value corresponding to each material according to the proportion occupied by each material, to obtain an adjusted sound effect value of each material.
- [84] The proportion occupied by each material for forming the current implementation environment is already determined according to the location information of the current implementation environment in step 202, and the initial sound effect value corresponding to each material for forming the current implementation environment is obtained in step 203, and therefore, in this step, the initial sound effect value corresponding to each material may be adjusted according to the proportion occupied by each material for forming the current implementation environment and determined in step 202. Specifically, the adjusting the initial sound effect value corresponding to each material according to the proportion occupied by each material includes but is not limited to the following steps:
- [85] First step: Determine, according to the proportion occupied by each material, a volume for playing each material.
- [86] Specifically, after the proportion occupied by each material is determined, a proportion occupied by the volume for playing each material in the initial volume of each material may be set to be the same as the proportion occupied by each material.
- [87] For convenience of understanding, the foregoing process is explained and described in detail below by using a specific example.
- [88] For example, it is determined according to the location information of the current implementation environment that materials for forming the current implementation environment are grass, soil, sand and water, where a proportion occupied by grass in the

current implementation environment is 10%, a proportion occupied by soil in the current implementation environment is 50%, a proportion occupied by sand in the current implementation environment is 20%, and a proportion occupied by water in the current implementation environment is 20%. The determining, according to the proportion occupied by each material, a volume for playing each material is that: the volume for playing grass is 10% of the initial volume of grass, the volume for playing soil is 50% of the initial volume of soil, the volume for playing sand is 20% of the initial volume of sand, and the volume for playing water is 20% of the initial volume of water. If the initial volume of grass, soil, sand and water is 100 decibel, the volume for playing grass is 10 decibel, the volume for playing soil is 50 decibel, the volume for playing sand is 20 decibel, and the volume for playing water is 20 decibel.

[89] Second step: Adjust the initial sound effect value corresponding to each material according to the determined volume for playing each material.

[90] After the volume for playing each material is determined, the volume in the initial sound effect value of each material may be adjusted according to the determined volume for playing each material. By adjusting the sound effect value corresponding to each material, an adjusted sound effect value of each material may be obtained.

[91] 205: Combine adjusted sound effect values of all materials, and play a combined sound effect.

[92] In order to make the played sound effect have timeliness, in the method provided in this embodiment, when the sound effect is played, adjusted sound effect values of all materials need to be combined, and then a combined sound effect is played. The combined sound effect includes adjusted sound effects of all materials, and therefore, the played sound effect can accurately reflect the current implementation environment, thereby enabling a user to obtain better audiovisual experience.

[93] Specifically, when adjusted sound effect values of all materials are combined, that materials for forming the current implementation environment are: grass, water, and soil is used as an example, and if initial sound effect values corresponding to grass, water, and soil are adjusted according to proportions occupied by grass, water, and soil, to obtain adjusted sound effect values of grass, water, and soil, the adjusted sound effect values of grass, water, and soil may be combined, to obtain a combined sound effect. The materials for forming the current implementation environment include grass, water and soil, and the combined sound effect not only includes a sound effect of grass, but also includes sound effects of water and soil, and therefore, the combined sound effect can better embody the current implementation environment, and is more timely.

[94] Referring to FIG. 4, an embodiment of the present invention provides a sound effect playback apparatus, including:

- [95] a first obtaining module 401, configured to obtain location information of a current implementation environment;
- [96] a first determining module 402, configured to determine, according to the location information of the current implementation environment, each material for forming the current implementation environment and a proportion occupied by each material;
- [97] a second obtaining module 403, configured to obtain an initial sound effect value corresponding to each material for forming the current implementation environment;
- [98] an adjusting module 404, configured to adjust the initial sound effect value corresponding to each material according to the proportion occupied by each material, to obtain an adjusted sound effect value of each material;
- [99] a combining module 405, configured to combine adjusted sound effect values of all materials; and
- [100] a playback module 406, configured to play a combined sound effect.
- [101] Referring to FIG. 5, the first determining module 402 includes:
- [102] a first determining unit 4021, configured to determine location units in a preset implementation environment corresponding to the current implementation environment according to the location information of the current implementation environment, any location unit in the preset implementation environment having material data formed by each material in the any location unit and a proportion occupied by each material;
- [103] an extracting unit 4022, configured to extract the material data had by the location unit corresponding to the current implementation environment; and
- [104] a second determining unit 4023, configured to determine, according to the extracted material data, each material for forming the current implementation environment and the proportion occupied by each material.
- [105] Referring to FIG. 6, the apparatus further includes:
- [106] a third obtaining module 407, configured to obtain different materials, and combine the different materials according to different proportions to obtain a preset implementation environment;
- [107] a dividing module 408, configured to divide the preset implementation environment into different location units;
- [108] a setting module 409, configured to set location information for each location unit, each location unit being corresponding to at least one material
- [109] a second determining module 410, configured to determine a proportion occupied by each material corresponding to each location unit;
- [110] a forming module 411, configured to form material data by each material corresponding to each location unit and the proportion occupied by each material, to obtain the material data of each location unit; and
- [111] a storage module 412, configured to store the material data and the location in-

- formation of each location unit of the preset implementation environment, where
- [112] the first determining unit 4021 is configured to search for location information matching the location information of the current implementation environment among stored location information of location units of the preset implementation environment, and use a location unit corresponding to the found location information as a location unit in the preset implementation environment corresponding to the current implementation environment.
- [113] Referring to FIG. 7, the apparatus further includes:
- [114] a processing module 413, configured to set an initial sound effect value for each material, and store the initial sound effect value of each material, where
- [115] the second obtaining module 403 is configured to search for the initial sound effect value corresponding to each material for forming the current implementation environment among stored initial sound effect values of all material.
- [116] Referring to FIG. 8, the adjusting module 404 includes:
- [117] a determining unit 4041, configured to determine, according to the proportion occupied by each material, a volume for playing each material; and
- [118] an adjusting unit 4042, configured to adjust the initial sound effect value corresponding to each material according to the determined volume for playing each material.
- [119] Refer to FIG. 9, which is a schematic structural diagram of a terminal device involved in an embodiment of the present invention, and the terminal device can be configured to implement the sound effect playback method provided in the foregoing embodiment. Specifically:
- [120] The terminal device 900 may include components such as a radio frequency (RF) circuit 110, a memory 120 including one or more computer readable storage media, an input unit 130, a display unit 140, a processor 180 including one or more processing cores, and a power supply 190. The terminal device 900 may further include a sensor 150, an audio circuit 160, and a transmission module 170, such as a Wireless Fidelity (WiFi) module. A person skilled in the art may understand that the structure of the terminal device shown in FIG. 9 does not constitute a limitation to the terminal device, and the terminal device may include more components or fewer components than those shown in the figure, or some components may be combined, or a different component deployment may be used.
- [121] The RF circuit 110 may be configured to receive and send a signal during an information receiving and sending process or a conversation process. Specifically, the RF circuit receives downlink information from a base station, then delivers the downlink information to one or more processors 180 for processing, and sends related uplink data to the base station. Generally, the RF circuit 110 includes, but is not limited

to, an antenna, at least one amplifier, a tuner, one or more oscillators, a subscriber identity module (SIM) card, a transceiver, a coupler, a low noise amplifier (LNA), and a duplexer. In addition, the RF circuit 110 may also communicate with a network and another device by wireless communication. The wireless communication may use any communications standard or protocol, which includes, but is not limited to, Global System for Mobile communications (GSM), General Packet Radio Service (GPRS), Code Division Multiple Access (CDMA), Wideband Code Division Multiple Access (WCDMA), Long Term Evolution (LTE), e-mail, Short Messaging Service (SMS), and the like.

[122] The memory 120 may be configured to store a software program and module. The processor 180 runs the software program and module stored in the memory 120, to implement various functional applications and data processing. The memory 120 may mainly include a program storage area and a data storage area. The program storage area may store an operating system, an application program required by at least one function (such as a sound playback function and an image display function), and the like. The data storage area may store data (such as audio data and an address book) created according to use of the terminal device 900, and the like. In addition, the memory 120 may include a high speed random access memory, and may also include a non-volatile memory, such as at least one magnetic disk storage device, a flash memory, or another volatile solid storage device. Accordingly, the memory 120 may further include a memory controller, so that the processor 180 and the input unit 130 access the memory 120.

[123] The input unit 130 may be configured to receive input digit or character information, and generate keyboard, mouse, joystick, optical, or track ball signal input related to the user setting and function control. Specifically, the input unit 130 may include a touch-sensitive surface 131 and another input device 132. The touch-sensitive surface 131 may also be referred to as a touch display screen or a touch panel, and may collect a touch operation of a user on or near the touch-sensitive surface (such as an operation of a user on or near the touch-sensitive surface 131 by using any suitable object or attachment, such as a finger or a touch pen), and drive a corresponding connection apparatus according to a preset program. Optionally, the touch-sensitive surface 131 may include two parts: a touch detection apparatus and a touch controller. The touch detection apparatus detects a touch position of the user, detects a signal generated by the touch operation, and transfers the signal to the touch controller. The touch controller receives the touch information from the touch detection apparatus, converts the touch information into touch point coordinates, and sends the touch point coordinates to the processor 180. Moreover, the touch controller can receive and execute a command sent from the processor 180. In addition, the touch-sensitive surface 131

may be implemented by using various types, such as a resistive type, a capacitance type, an infrared type, and a surface sound wave type. In addition to the touch-sensitive surface 131, the input unit 130 may further include the another input device 132. Specifically, the another input device 132 may include, but is not limited to, one or more of a physical keyboard, a functional key (such as a volume control key or a switch key), a track ball, a mouse, a joystick, and the like.

[124] The display unit 140 may be configured to display information input by the user or information provided for the user, and various graphical user interfaces of the terminal device 900. The graphical user interfaces may be formed by a graph, a text, an icon, a video, and any combination thereof. The display unit 140 may include a display panel 141. Optionally, the display panel 141 may be configured by using a liquid crystal display (LCD), an organic light-emitting diode (OLED), or the like. Further, the touch-sensitive surface 131 may cover the display panel 141. After detecting a touch operation on or near the touch-sensitive surface 131, the touch-sensitive surface 131 transfers the touch operation to the processor 180, so as to determine a type of a touch event. Then, the processor 180 provides corresponding visual output on the display panel 141 according to the type of the touch event. Although, in FIG. 9, the touch-sensitive surface 131 and the display panel 141 are used as two separate parts to implement input and output functions, in some embodiments, the touch-sensitive surface 131 and the display panel 141 may be integrated to implement the input and output functions.

[125] The terminal device 900 may further include at least one sensor 150, such as an optical sensor, a motion sensor, and other sensors. Specifically, the optical sensor may include an ambient light sensor and a proximity sensor. The ambient light sensor may adjust luminance of the display panel 141 according to brightness of the ambient light. The proximity sensor may switch off the display panel 141 and/or backlight when the terminal device 900 is moved to the ear. As one type of motion sensor, a gravity acceleration sensor may detect magnitude of accelerations at various directions (which generally are triaxial), may detect magnitude and a direction of the gravity when static, and may be configured to identify an application of a mobile phone gesture (such as switchover between horizontal and vertical screens, a related game, and gesture calibration of a magnetometer), a related function of vibration identification (such as a pedometer and a knock). Other sensors, such as a gyroscope, a barometer, a hygrometer, a thermometer, and an infrared sensor, which may be configured in the terminal device 900 are not further described herein.

[126] The audio circuit 160, a loudspeaker 161, and a microphone 162 may provide audio interfaces between the user and the terminal device 900. The audio circuit 160 may transmit, to the loudspeaker 161, an electric signal converted from received audio data.

The loudspeaker 161 converts the electric signal into a sound signal for output. On the other hand, the microphone 162 converts a collected sound signal into an electric signal. The audio circuit 160 receives the electric signal and converts the electric signal into audio data, and outputs the audio data to the processor 180 for processing. Then, the processor 180 sends the audio data to, for example, another terminal device by using the RF circuit 110, or outputs the audio data to the memory 120 for further processing. The audio circuit 160 may further include an earplug jack, so as to provide communication between a peripheral earphone and the terminal device 900.

[127] WiFi belongs to a short distance wireless transmission technology. The terminal device 900 may help, by using the WiFi module 170, a user to receive and send an e-mail, browse a webpage, access stream media, and the like, which provides wireless broadband Internet access for the user. Although FIG. 9 shows the WiFi module 170, it may be understood that, the WiFi module 170 does not belong to a necessary constitution of the terminal device 900, and can be ignored according to demands without changing the scope of the essence of the present disclosure.

[128] The processor 180 is a control center of the terminal device 900, and connects to various parts of the entire mobile phone by using various interfaces and lines. By running or executing the software program and/or module stored in the memory 120, and invoking data stored in the memory 120, the processor 180 performs various functions and data processing of the terminal device 900, thereby performing overall monitoring on the mobile phone. Optionally, the processor 180 may include one or more processing cores. Optionally, the processor 180 may integrate an application processor and a modem. The application processor mainly processes an operating system, a user interface, an application program, and the like. The modem mainly processes wireless communication. It may be understood that, the foregoing modem may also not be integrated into the processor 180.

[129] The terminal device 900 further includes the power supply 190 (such as a battery) for supplying power to the components. Preferably, the power supply may logically connect to the processor 180 by using a power supply management system, thereby implementing functions, such as charging, discharging, and power consumption management, by using the power supply management system. The power supply 190 may further include any component, such as one or more direct current or alternate current power supplies, a re-charging system, a power supply fault detection circuit, a power supply converter or an inverter, and a power supply state indicator.

[130] Although not shown in the figure, the terminal device 900 may further include a camera, a Bluetooth module, and the like, which are not further described herein. Specifically, in this embodiment, the display unit of the terminal device 900 is a touch screen display, and the terminal device 900 further includes a memory and one or more

programs. The one or more programs are stored in the memory and configured to be executed by one or more processors. The one or more programs are configured to execute the method shown in FIG. 1 and FIG. 2.

- [131] An embodiment of the present invention further provides a computer readable storage medium, and the computer readable storage medium may be the computer readable storage medium included in the memory in the foregoing embodiment; and may also a computer readable storage medium existing individually and not installed in the terminal device. The computer readable storage medium stores one or more programs, and the one or more programs are used by one or more processors to execute the sound effect playback method.
- [132] An embodiment of the present invention provides a graphical user interface, the graphical user interface is used on a display terminal device for playing a sound effect, and the confirming terminal device for executing an operation includes a touch screen display, a memory and one or more processors configured to execute one or more programs; the graphical user interface includes:
- [133] obtaining location information of a current implementation environment, and determining, according to the location information of the current implementation environment, each material for forming the current implementation environment and a proportion occupied by each material;
- [134] obtaining an initial sound effect value corresponding to each material for forming the current implementation environment, and adjusting the initial sound effect value corresponding to each material according to the proportion occupied by each material, to obtain an adjusted sound effect value of each material; and
- [135] combining adjusted sound effect values of all materials, and playing a combined sound effect.
- [136] In the graphical user interface provided in this embodiment of the present invention, each material for forming a current implementation environment and a proportion occupied by each material are determined according to location information of the current implementation environment, and an initial sound effect value corresponding to each material for forming the current implementation environment is obtained; then the initial sound effect value corresponding to each material according to the proportion occupied by each material is adjusted, and adjusted sound effect values of all materials are combined and then a combined sound effect is played, so that the current implementation environment can be accurately embodied without the need of adding a system resource pack, and therefore the played sound effect is more timely.
- [137] It should be noted that when the sound effect playback apparatus provided by the embodiment plays a sound effect, description is made only through examples of division of the functional modules. In an actual application, the functions may be assigned

according to needs to be implemented by different functional modules, that is, the internal structure of the sound effect playback apparatus is divided into different functional modules, so as to implement all or a part of the functions described above. Furthermore, the embodiment of the sound effect playback apparatus provided by the embodiments belongs to the same idea as the embodiment of the sound effect playback method, and the method embodiment may serve as a reference for details of a specific implementation process thereof, which are not repeated herein.

[138] The sequence numbers of the preceding embodiments of the present invention are merely for description purpose but do not indicate the preference of the embodiments.

[139] Persons of ordinary skill in the art may understand that all or a part of the steps of the foregoing embodiments may be implemented through hardware, or may be implemented by a program instructing relevant hardware. The program may be stored in a computer readable storage medium. The storage medium may be a read-only memory, a magnetic disk, or an optical disc.

[140] The foregoing descriptions are merely exemplary embodiments of the present invention, but are not intended to limit the present disclosure. Any modification, equivalent replacement, or improvement derived within the spirit and principle of the present disclosure shall fall within the protection scope of the present disclosure.

Claims

- [Claim 1] A sound effect playback method, run in a terminal device, the terminal device comprising a memory, one or more processors, and program instructions stored in the memory and executed by the one or more processors, and the method comprising:
- obtaining location information of a current implementation environment, and determining, according to the location information of the current implementation environment, each material for forming the current implementation environment and a proportion occupied by each material;
 - obtaining an initial sound effect value corresponding to each material for forming the current implementation environment, and adjusting the initial sound effect value corresponding to each material according to the proportion occupied by each material, to obtain an adjusted sound effect value of each material; and
 - combining adjusted sound effect values of all materials, and playing a combined sound effect.
- [Claim 2] The method according to claim 1, comprising:
- determining location units in a preset implementation environment corresponding to the current implementation environment according to the location information of the current implementation environment, any location unit in the preset implementation environment having material data formed by each material in the any location unit and a proportion occupied by each material; and
 - extracting the material data of the location unit corresponding to the current implementation environment, and determining, according to the extracted material data, each material for forming the current implementation environment and the proportion occupied by each material.
- [Claim 3] The method according to claim 2, wherein before the extracting the material data had by the location unit corresponding to the current implementation environment, the method further comprises:
- obtaining different materials, and combining the different materials according to different proportions to obtain a preset implementation environment;
 - dividing the preset implementation environment into different location units, and setting location information for each location unit, each location unit being corresponding to at least one material;

determining a proportion occupied by each material corresponding to each location unit, and forming material data by each material corresponding to each location unit and the proportion occupied by each material, to obtain the material data of each location unit; and storing the material data and the location information of each location unit of the preset implementation environment.

[Claim 4] The method according to claim 3, wherein the determining location units in a preset implementation environment corresponding to the current implementation environment according to the location information of the current implementation environment comprises: searching for location information matching the location information of the current implementation environment among stored location information of location units of the preset implementation environment, and using a location unit corresponding to the found location information as a location unit in the preset implementation environment corresponding to the current implementation environment.

[Claim 5] The method according to claim 1, comprising: setting an initial sound effect value for each material, and storing the initial sound effect value of each material.

[Claim 6] The method according to claim 5, wherein the obtaining an initial sound effect value corresponding to each material for forming the current implementation environment comprises: searching for the initial sound effect value corresponding to each material for forming the current implementation environment among stored initial sound effect values of all material.

[Claim 7] The method according to claim 1, wherein the adjusting the initial sound effect value corresponding to each material according to the proportion occupied by each material comprises: determining, according to the proportion occupied by each material, a volume for playing each material; and adjusting the initial sound effect value corresponding to each material according to the determined volume for playing each material.

[Claim 8] A sound effect playback apparatus, comprising:
a memory;
one or more processors; and
one or more program modules, stored in the memory, and executed by the one or more processors, the one or more program modules comprising:

a first obtaining module, configured to obtain location information of a current implementation environment;
a first determining module, configured to determine, according to the location information of the current implementation environment, each material for forming the current implementation environment and a proportion occupied by each material;
a second obtaining module, configured to obtain an initial sound effect value corresponding to each material for forming the current implementation environment;
an adjusting module, configured to adjust the initial sound effect value corresponding to each material according to the proportion occupied by each material, to obtain an adjusted sound effect value of each material;
a combining module, configured to combine adjusted sound effect values of all materials; and
a playback module, configured to play a combined sound effect.

[Claim 9]

The apparatus according to claim 8, wherein the first determining module comprises:

a first determining unit, configured to determine location units in a preset implementation environment corresponding to the current implementation environment according to the location information of the current implementation environment, any location unit in the preset implementation environment having material data formed by each material in the any location unit and a proportion occupied by each material;
an extracting unit, configured to extract the material data had by the location unit corresponding to the current implementation environment;
and

a second determining unit, configured to determine, according to the extracted material data, each material for forming the current implementation environment and the proportion occupied by each material.

[Claim 10]

The apparatus according to claim 9, comprising:

a third obtaining module, configured to obtain different materials, and combine the different materials according to different proportions to obtain a preset implementation environment;
a dividing module, configured to divide the preset implementation environment into different location units;
a setting module, configured to set location information for each location unit, each location unit being corresponding to at least one

material

a second determining module, configured to determine a proportion occupied by each material corresponding to each location unit;

a forming module, configured to form material data by each material corresponding to each location unit and the proportion occupied by each material, to obtain the material data of each location unit; and

a storage module, configured to store the material data and the location information of each location unit of the preset implementation environment.

[Claim 11] The apparatus according to claim 10, wherein the first determining unit is configured to search for location information matching the location information of the current implementation environment among stored location information of location units of the preset implementation environment, and use a location unit corresponding to the found location information as a location unit in the preset implementation environment corresponding to the current implementation environment.

[Claim 12] The apparatus according to claim 8, comprising:
a processing module, configured to set an initial sound effect value for each material, and store the initial sound effect value of each material, wherein
the second obtaining module is configured to search for the initial sound effect value corresponding to each material for forming the current implementation environment among stored initial sound effect values of all material.

[Claim 13] The apparatus according to claim 8, wherein the adjusting module comprises:
a determining unit, configured to determine, according to the proportion occupied by each material, a volume for playing each material; and
an adjusting unit, configured to adjust the initial sound effect value corresponding to each material according to the determined volume for playing each material.

[Claim 14] A non-transitory computer readable storage medium having stored therein one or more instructions, which, when executed by a terminal device, cause the terminal device to:
obtain location information of a current implementation environment, and determine, according to the location information of the current implementation environment, each material for forming the current imple-

mentation environment and a proportion occupied by each material; obtain an initial sound effect value corresponding to each material for forming the current implementation environment, and adjust the initial sound effect value corresponding to each material according to the proportion occupied by each material, to obtain an adjusted sound effect value of each material; and combine adjusted sound effect values of all materials, and play a combined sound effect.