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(54) **CONTROL METHOD AND DEVICE FOR AIR OUTLET DEVICE AND STORAGE MEDIUM**

(57) The present disclosure relates to a control method and device for an air outlet device, a storage medium and the air outlet device. The method includes that: a target environmental pattern selected by a user from multiple preset environmental patterns is determined; a target environmental parameter corresponding to the target environmental pattern is determined; and the air outlet device is controlled to supply air according to the target environmental parameter.

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Description

TECHNICAL FIELD

[0001] The present disclosure relates to the field of applications of intelligent devices, and particularly to a control method and device for an air outlet device, a storage medium and the air outlet device.

BACKGROUND

[0002] At present, with industrial development and acceleration of an urbanization process, the air is seriously polluted, particularly PM2.5 reaching a hazardous level, which has become an environmental problem attracting extensive attentions of people. In addition, harm caused to human bodies by harmful gases such as formaldehyde produced indoors by decoration and the like cannot be ignored. In order to protect health, air outlet devices have been adopted by many families to purify indoor air.

SUMMARY

[0003] In order to solve the problem of the related art, the present disclosure provides a control method and device for an air outlet device, a storage medium and the air outlet device.

[0004] According to a first aspect of the present invention, a control method for an air outlet device is provided, which includes the following operations. A target environmental pattern selected by a user from multiple preset environmental patterns is determined. A target environmental parameter corresponding to the target environmental pattern is determined. The air outlet device is controlled to supply air according to the target environmental parameter.

[0005] The technical solutions provided in the present invention may have the following beneficial effects. The target environmental pattern selected by the user is determined, and the target environmental parameter corresponding to the target environmental pattern is determined. The air outlet device is controlled to supply air according to the target environmental parameter, thereby a real natural environment can also be simulated during air supply, thereby user experience is improved, and intelligence of the air outlet device is improved.

[0006] In some embodiments, the target environmental parameter may include an air supply pattern of the air outlet device, and the operation that the air outlet device is controlled to supply air according to the target environmental parameter corresponding to the target environmental pattern may include the following action. The air outlet device is controlled to supply air according to the air supply pattern.

[0007] In some embodiments, the method may further include the following operation. An operation of at least one environmental adjustment device is controlled according to the target environmental parameter.

[0008] In some embodiments, the air outlet device may be connected to the environmental adjustment device through a local area network; or the air outlet device may be connected to the environmental adjustment device through a server.

[0009] In some embodiments, the target environmental parameter may include at least one of a target odor, a target sound or target illumination information.

[0010] In some embodiments, when the target environmental parameter includes the target odor, the environmental adjustment device may include at least one fragrance device, and the operation that the operation of at least one environmental adjustment device is controlled according to the target environmental parameter may include the following action. The at least one fragrance device is controlled to emit an odor according to the target odor. Or, when the target environmental parameter includes the target sound, the environmental adjustment device may include at least one sounding device, and the operation that the operation of at least one environmental adjustment device is controlled according to the target environmental parameter may include the following action. The at least one sounding device is controlled to produce sound according to the target sound. Or, when the target environmental parameter includes the target illumination information, the environmental adjustment device may include at least one light-emitting device, and the operation that the operation of at least one environmental adjustment device is controlled according to the target environmental parameter may include that the following action. The at least one light-emitting device is controlled to emit light according to the target illumination information. Or, when the target environmental parameter includes the target illumination information, the environmental adjustment device may include a curtain opening and closing device and a light-emitting device, and the operation that the operation of at least one environmental adjustment device is controlled according to the target environmental parameter may include the following actions. The curtain opening and closing device is controlled to open or close a curtain, and the light-emitting device is controlled to emit light according to the target illumination information.

[0011] In some embodiments, the operation that the target environmental pattern selected by the user from the multiple preset environmental patterns is determined may include the following actions. Other users except the user are determined within a preset range around the air outlet device. Environmental patterns selected by the other users are acquired. The multiple preset environmental patterns recommended to the user to select are determined according to the environmental patterns selected by the other users. The target environmental pattern selected by the user from the multiple preset environmental patterns is acquired.

[0012] According to a second aspect of the present invention, a control device for an air outlet device is provided, which may include a pattern determination mod-

ule, a parameter determination module and an air supply control module. The pattern determination module is configured to determine a target environmental pattern selected by a user from multiple preset environmental patterns. The parameter determination module is configured to determine a target environmental parameter corresponding to the target environmental pattern. The air supply control module is configured to control the air outlet device to supply air according to the target environmental parameter.

[0013] The advantages and technical effects of the device according to the invention correspond to those of the method presented above.

[0014] In some embodiments, the target environmental parameter may include an air supply pattern of the air outlet device, and the air supply control module may be configured to control the air outlet device to supply air according to the air supply pattern.

[0015] In some embodiments, the device may further include an operation control module configured to control an operation of at least one environmental adjustment device according to the target environmental parameter.

[0016] In some embodiments, the air outlet device may be connected to the environmental adjustment device through a local area network; or the air outlet device may be connected to the environmental adjustment device through a server.

[0017] In some embodiments, the target environmental parameter may include at least one of a target odor, a target sound or target illumination information.

[0018] In some embodiments, the operation control module may be configured to, when the target environmental parameter includes the target color and the environmental adjustment device includes at least one fragrance device, control the at least one fragrance device to emit an odor according to the target odor.

[0019] The operation control module may be configured to, when the target environmental parameter includes the target sound and the environmental adjustment device includes at least one sounding device, control the at least one sounding device to produce sound according to the target sound.

[0020] The operation control module may be configured to, when the target environmental parameter includes the target illumination information and the environmental adjustment device includes at least one light-emitting device, control the at least one light-emitting device to emit light according to the target illumination information.

[0021] The operation control module may be further configured to, when the target environmental parameter includes the target illumination information and the environmental adjustment device includes a curtain opening and closing device and a light-emitting device, control the curtain opening and closing device to open or close a curtain and control the light-emitting device to emit light according to the target illumination information.

[0022] In some embodiments, the pattern determination module may be further configured to: determine, within a preset range around the air outlet device, other users except the user; acquire environmental patterns selected by the other users; determine, according to the environmental patterns selected by the other users, multiple preset environmental patterns recommended to the user to select; and acquire the target environmental pattern selected by the user from the multiple preset environmental patterns.

[0023] According to a third aspect of the present invention, a computer-readable storage medium is provided, in which computer program instructions may be stored, the program instructions being executed by a processor to implement operations of the method provided in the first aspect of the present disclosure.

[0024] It is to be understood that the above general descriptions and detailed descriptions below are only exemplary and explanatory and not intended to limit the present disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0025] The accompanying drawings are incorporated into the specification and constitute a part of this specification, illustrate embodiments consistent with the present disclosure and, together with the description, are intended to explain the principles of the present disclosure.

FIG. 1 is a flow chart illustrating a control method for an air outlet device according to an exemplary embodiment;

FIG. 2 is a schematic diagram illustrating an application scenario according to an exemplary embodiment;

FIG. 3 is a structure diagram illustrating an air outlet device according to an exemplary embodiment;

FIG. 4 is a flow chart illustrating a control device for an air outlet device according to an exemplary embodiment;

FIG. 5 is a flow chart illustrating another control device for an air outlet device according to an exemplary embodiment; and

FIG. 6 is a block diagram illustrating an air outlet device according to an exemplary embodiment.

DETAILED DESCRIPTION

[0026] Various embodiments of the present disclosure are described below with specific examples, and other advantages and effects of the present disclosure can be easily understood by those skilled in the field of technology from the contents disclosed in this specification. The following description refers to the accompanying drawings in which same numeral references in different drawings may represent the same or similar elements unless otherwise indicated.

[0027] Apparently, the described embodiments are on-

ly a part of embodiments in the present disclosure, rather than all of them. The present disclosure can also be implemented or applied through different specific embodiments, and various details of the specification can also be modified or changed based on different viewpoints and applications without departing from the scope of the present disclosure.

[0028] With improvement of the living standard, air outlet devices used as common home appliances have been used by more and more users. Herein, an air outlet device may include a device capable of supplying air, such as a fan, an air conditioner and an air cooler. Particularly, in a possible embodiment, the air outlet device may also include a fresh air ventilator. The fresh air ventilator can circulate indoor air. Dirty indoor air is discharged outdoors on one hand and, on the other hand, fresh outdoor air is introduced into the room after sterilizing, disinfecting, filtering and the like to keep the indoor air fresh and clean all the time. However, an existing air outlet device has a single function. For example, the fan makes an airflow flow only by blowing air to implement cooling, while the fresh air ventilator may also purify the air only. Therefore, the existing air outlet device has a single function and low intelligence.

[0029] In order to solve the foregoing problem, the present disclosure provides a control method and device for an air outlet device, a storage medium and the air outlet device. According to the method, a target environmental pattern selected by a user is determined, a target environmental parameter corresponding to the target environmental pattern is determined, and the air outlet device is controlled to supply air according to the target environmental parameter, so that a real natural environment can also be simulated during air supply, thereby user experience is improved, and intelligence of the air outlet device is improved.

[0030] The present disclosure will be described below in combination with specific embodiments.

[0031] FIG. 1 illustrates a control method for an air outlet device according to an exemplary embodiment. As illustrated in FIG. 1, the method may be executed by the air outlet device. The method may include the following operations.

[0032] In block 101, a target environmental pattern selected by a user from multiple preset environmental patterns is determined.

[0033] In the block, the multiple preset environmental patterns may be displayed to the user through an intelligent terminal connected to the air outlet device, the user determines the target environmental pattern in the displayed multiple preset environmental patterns, and the air outlet device may acquire the target environmental pattern selected by the user through the intelligent terminal.

[0034] Herein, the air outlet device may be wirelessly connected to the intelligent terminal, for example, connected through a local area network such as Bluetooth (BT) or Zigbee or connected through a server. Different environmental patterns correspond to different environments. For example, the environmental pattern may be a forest pattern, an ocean pattern, a grassland pattern and the like. The forest pattern represents that a corresponding environment is a forest environment, the ocean pattern represents that a corresponding environment is an ocean environment, and the grassland pattern represents that a corresponding environment is a grassland environment. Of course, the above examples are adopted only for exemplary description. There are no limits made thereto in the present disclosure.

[0035] It is to be noted that, considering that the user may hesitate about selection of the target environmental pattern, therefore, environmental patterns selected by other users may also be recommended to the user in the embodiment so that the user may determine the target environmental pattern with reference to selection of the other users. In a possible implementation, since the user and other users within a preset range around the air outlet device have closest objective environments, the other users except the user may be determined within the preset range around the air outlet device. Environmental patterns selected by the other users are acquired, multiple preset environmental patterns recommended to the user to select are determined according to the environmental patterns selected by the other users, and the target environmental pattern selected by the user from the multiple preset environmental patterns is acquired. Therefore, it is convenient for the user to select, user experience is improved, and intelligence of the air outlet device is improved.

[0036] Exemplarily, the preset range may be determined in the following manner. A position of the air outlet device is determined at first, and then the preset range is determined according to a preset distance by taking the position of the air outlet device as a center. It is to be noted that there are no specific limits made to the preset distance in the embodiment.

[0037] For example, the preset distance may be 5 kilometers. The air outlet device may acquire environmental patterns selected by other users within 5 kilometers around by taking a geographic position of the air outlet device as the center, and display the environmental patterns selected by the other users to the user. The user selects the target environmental pattern from the displayed environmental patterns.

[0038] In block 102, a target environmental parameter corresponding to the target environmental pattern is determined.

[0039] In the block, correspondences between the preset environmental patterns and preset environmental parameters may be acquired, and the target environmental parameter corresponding to the target environmental pattern is determined from the preset environmental parameters according to the correspondences. The air outlet device supplies air is controlled to supply air according to the target environmental parameter.

[0040] In a possible implementation, the target envi-

ronmental parameter may include an air supply pattern of the air outlet device, and the air supply pattern may include an air supply frequency and air supply intensity. For example, the air supply frequency may include continuous air supply, air supply at preset time intervals and air supply at random time intervals. The air supply intensity may include three types of air supply intensities: strong, medium and weak.

[0041] Exemplarily, descriptions will be made by taking the environmental pattern including a forest pattern, an ocean pattern and a grassland pattern as an example. When the target environmental pattern is the forest pattern, the target environmental parameter is that air is supplied at the preset time intervals and the air supply intensity is weak. When the target environmental pattern is the ocean pattern, the target environmental parameter is that air is continuously supplied and the air supply intensity is medium. When the target environmental pattern is the grassland pattern, the target environmental parameter is that air is continuously supplied and the air supply intensity is strong.

[0042] In another possible implementation, in order to create a more real natural environment during air supply, in the embodiment, the target environmental parameter may further include at least one of a target odor, a target sound or target illumination information.

[0043] Exemplarily, the target odor may include fragrances of different odors, such as a forest fragrance, an ocean fragrance, a grassland fragrance, a flower fragrance and a fruit fragrance. For example, when the target environmental pattern is the forest pattern, a corresponding target odor may be the forest fragrance. When the target environmental pattern is the ocean pattern, a corresponding target odor may be the ocean fragrance. When the target environmental pattern is the grassland pattern, a corresponding target odor may be the grassland fragrance.

[0044] The target sound may include music suitable for various environments, such as soothing music, cheerful music, fresh music, jazz, rock, blues or melancholic music. For example, when the target environmental pattern is the forest pattern, a corresponding target sound may be the soothing music. When the target environmental pattern is the ocean pattern, a corresponding target sound may be the cheerful music. When the target environmental pattern is the grassland pattern, a corresponding target sound may be the fresh music.

[0045] The target illumination information may include a color temperature and brightness. For example, the color temperature may include a cold color and a warm color, and the brightness may include three types of brightness: high, medium and low. For example, when the target environmental pattern is the forest pattern, corresponding target illumination information may be that the color temperature is the cold color and the brightness is low. When the target environmental pattern is the ocean pattern, the corresponding target illumination information may be that the color temperature is that the color temperature is the warm color and the brightness is high. When the target environmental pattern is the grassland pattern, the corresponding target illumination information may be that the color temperature is the warm color and the brightness is medium.

[0046] It is to be noted that the examples are adopted only for exemplary description. There are no limits made thereto in the present disclosure.

[0047] In block 103, the air outlet device is controlled to supply air according to the target environmental pattern.

[0048] In a possible implementation, when the target environmental pattern includes the air supply pattern of the air outlet device, the air outlet device may be controlled to supply air according to the air supply pattern.

[0049] Exemplarily, descriptions are made still by taking the above environmental pattern including the forest pattern, the ocean pattern and the grassland pattern as an example. When the target environmental pattern is the forest pattern, the target environmental parameter is that air is supplied at preset time intervals and air supply intensity is weak, then the air outlet device may be controlled to supply air at the preset time intervals and the air supply intensity is weak. When the target environmental pattern is the ocean pattern, the target environmental parameter is that air is continuously supplied and the air supply intensity is medium, then the air outlet device may be controlled to continuously supply air and the air supply intensity is medium. When the target environmental pattern is the grassland pattern, the target environmental parameter is that air is continuously supplied and the air supply intensity is strong, then the air outlet device may be controlled to continuously supply air and the air supply intensity is strong. In such a manner, an atmosphere of the natural environment is created during air supply, user experience during air supply is improved, and the intelligence of the air outlet device is improved, thereby improving the user experience.

[0050] In another possible implementation, in order to create a more real natural environment during air supply, in the embodiment, when the target environmental parameter may further include at least one of the target odor, the target sound or the target illumination information, an operation of at least one environmental adjustment device may be controlled according to the target environmental parameter. Accordingly, a real natural environment is created in terms of smell, hearing, vision and the like by the environmental adjustment device, and the user experience is improved.

[0051] Herein, as illustrated in FIG. 2, FIG. 2 is a diagram illustrating an application scenario according to the present embodiment. The application scenario includes an air outlet device and at least one environmental adjustment device connected to the air outlet device respectively. The air outlet device may be configured to be connected to the environmental adjustment device through a local area network, for example, connected through Bluetooth or Zigbee. The air outlet device may

be further configured to be connected to the environmental adjustment device through a server, thereby controlling an operation of the environmental adjustment device through the server.

[0052] Herein, the environmental adjustment device may be at least one of a fragrance device, a sounding device, a light-emitting device or a curtain opening and closing device. The sounding device may be a device having a sound playing function such as a speaker, a sound, a mobile phone, a computer and a television. The light-emitting device may be a device capable of emitting light such as an illumination lamp. The fragrance device may be configured to emit different odors. The curtain opening and closing device is configured to control opening and closing of a curtain, thereby adjusting indoor light. Of course, the environmental adjustment device in the disclosure is not limited to the above-mentioned devices and, for example, may also be a temperature control device (such as an electric heater) configured to control an indoor temperature or a humidity control device (such as a humidifier) configured to control an indoor humidity. There are no limits made to a specific type of the environmental adjustment device in the disclosure.

[0053] Herein, different target environmental parameters may correspond to different environmental adjustment devices. For example, the environmental adjustment device corresponding to the target odor may be at least one fragrance device. The environmental adjustment device corresponding to the target sound may be at least one sounding device. The environmental adjustment device corresponding to the target illumination information may be at least one light-emitting device. In such a manner, operations of different environmental adjustment devices may be controlled according to the target environmental parameters corresponding to different target environmental patterns, thereby creating corresponding environmental atmospheres.

[0054] Exemplarily, when the target environmental parameter includes the target odor, the at least one fragrance device is controlled to emit an odor according to the target odor.

[0055] Herein, the target odor may include fragrances of different smells, such as a forest fragrance, an ocean fragrance, a grassland fragrance, a flower fragrance and a fruit fragrance. For example, when the target environmental pattern is the forest pattern, a corresponding target odor may be the forest fragrance, thereby the at least one fragrance device may be controlled to emit the forest fragrance. When the target environmental pattern is the ocean pattern, a corresponding target odor may be the ocean fragrance, thereby the at least one fragrance device may be controlled to emit the ocean fragrance. When the target environmental pattern is the grassland pattern, a corresponding target odor may be the grassland fragrance, thereby the at least one fragrance device may be controlled to emit the grassland fragrance.

[0056] In some embodiments, the plurality of devices and sensors can perform the tasks in a collaborative, coordinated, collective or self-organized manner, and realize artificial intelligence (AI) based environmental control operations. For the example, the scent, smell, or fragrance delivered to the user(s) can be adapted to the user preferences based on user profiles, and/or a machine-learning process taking into account user feedback.

[0057] The features disclosed herein may be implemented as part of a smart home or a smart office design, which may implement individually or integrally various electronic devices in a home or office. For example, control or display functions described above may be realized on a smart environmental control system, or a multi-dimensional (e.g., 4D, 5D) entertainment system that may include a processing circuit configured to integrate Internet connectivity with more traditional television programming sources (e.g., received via cable, satellite, over-the-air, or other signals). The smart entertainment system may be physically incorporated into a television set or may include a separate device such as a set-top box, Blu-ray or other digital media player, game console, hotel television system, and other companion devices. The smart entertainment system may be configured to allow viewers to search and find videos, movies, photos and other content on the web, on a local cable TV channel, on a satellite TV channel, or stored on a local hard drive. The viewers can therefore enjoy not only the conventional audio-visual effects of the entertainment programs, but also the scents associated with various scenes.

[0058] As illustrated in FIG. 3, the fragrance device may be arranged below an air supply outlet of the air outlet device, in this way, when the air outlet device supplies air, the fragrance emitted by the fragrance device is emitted through the supplied air. The fragrance device may include multiple placement boxes for containing fragrances. Different placement boxes are used to contain fragrances of different smells. Different placement boxes of the fragrance device may be opened according to different target environmental patterns, thereby emitting different fragrances.

[0059] Or, when the target environmental parameter includes the target sound, at least one sounding device is controlled to produce sound according to the target sound.

[0060] Herein, the target sound may include music suitable for various environments, such as soothing music, cheerful music, fresh music, jazz, rock, blues or melancholic music. For example, when the target environmental pattern is the forest pattern, a corresponding target sound may be the soothing music, thereby the at least one sounding device may be controlled to play the soothing music. When the target environmental pattern is the ocean pattern, a corresponding target sound may be the cheerful music, thereby the at least one sounding device may be controlled to play the cheerful music. When the target environmental pattern is the grassland pattern, a corresponding target sound may be the fresh music, thereby the at least one sounding device may be control-

led to play the fresh music.

[0061] Or, when the target environmental parameter includes the target illumination information, at least one light-emitting device is controlled to emit light according to the target illumination information.

[0062] Herein, the target illumination information may include a color temperature and brightness. For example, the color temperature may include a cold color and a warm color, and the brightness may include three types of brightness: high, medium and low brightness. For example, when the target environmental pattern is the forest pattern, corresponding target illumination information may be that the color temperature is the cold color and the brightness is low, thereby the at least one light-emitting device may be controlled to adjust the color temperature to the cold color and adjust the brightness to the low brightness. When the target environmental pattern is the ocean pattern, the corresponding target illumination information is that the color temperature is the warm color and the brightness is high, thereby the at least one light-emitting device may be controlled to adjust the color temperature to the warm color and adjust the brightness to the high brightness. When the target environmental pattern is the grassland pattern, the corresponding target illumination information may be that the color temperature is the warm color and the brightness is medium, thereby the at least one light-emitting device may be controlled to adjust the color temperature to the warm color and adjust the brightness to the medium brightness.

[0063] It is to be noted that, when the target environmental parameter includes the target illumination information of an environment where the air outlet device supplies air, an environmental simulation device may further include a light-emitting device and/or a curtain automatic opening and closing device connected to the air outlet device. In such case, the air outlet device may control the curtain automatic opening and closing device to open or close a curtain and control the light-emitting device to emit light according to the target illumination information. In such a manner, the curtain is controlled to be opened and closed by the curtain automatic opening and closing device to adjust irradiation intensity of outdoor light, thereby assisting the light-emitting device in adjusting the indoor light accurately.

[0064] Of course, the above-mentioned target environmental parameter is not limited to include one of the above-mentioned target odor, the target sound and the target illumination information, and may also include any two or all of the target odor, the target sound and the target illumination information.

[0065] Exemplarily, descriptions will be made by taking the target environmental parameter including all of the target odor, the target sound and the target illumination information as an example.

[0066] When the target environmental pattern is the forest pattern, the target environmental parameter may include that: an odor in an environment where air is supplied is the forest fragrance, a sound in the environment where air is supplied is the soothing music, a color temperature of the environment where air is supplied is the cold color, and brightness of the environment where air is supplied is low. Then the fragrance device may be controlled to emit the forest fragrance, a sounding device connected to the air outlet device may be controlled to play the soothing music, and the light-emitting device connected to the air outlet device may be controlled to adjust the color temperature to the cold color and adjust the brightness to the low brightness.

[0067] When the target environmental pattern is the ocean pattern, the target environmental parameter may include that: an odor in an environment where air is supplied is the ocean fragrance, a sound in the environment where air is supplied is the cheerful music, a color temperature of the environment where air is supplied is the warm color, and brightness of the environment where air is supplied is high. Then the fragrance device may be controlled to emit the ocean fragrance, a sounding device connected to the air outlet device may be controlled to play the cheerful music, and the light-emitting device connected to the air outlet device may be controlled to adjust the color temperature to the warm color and adjust the brightness to the high brightness.

[0068] When the target environmental pattern is the grassland pattern, the target environmental parameter may include that: an odor in an environment where air is supplied is the grassland fragrance, a sound in the environment where air is supplied is the fresh music, a color temperature of the environment where air is supplied is the warm color, and brightness of the environment where air is supplied is medium. Then the fragrance device may be controlled to emit the grassland fragrance, a sounding device connected to the air outlet device may be controlled to play the fresh music, and the light-emitting device connected to the air outlet device may be controlled to adjust the color temperature to the warm color and adjust the brightness to the medium brightness.

[0069] It is to be noted that the above-mentioned two implementations may also be combined, that is, the air supply pattern is combined with at least one of the target odor, the target sound or the target illumination information to supply air. Exemplarily, descriptions will be made by taking the target environmental parameter including the air supply pattern, the target odor, the target sound and the target illumination information as an example.

[0070] When the target environmental pattern is the forest pattern, a corresponding target environmental parameter may include that: an air supply frequency is to supply air at preset time intervals, air supply intensity is weak, an odor in an environment where air is supplied is a forest fragrance, a sound in the environment where air is supplied is soothing music, a color temperature of the environment where air is supplied is a cold color, and brightness of the environment where air is supplied is low. Then the air outlet device may be controlled to supply air at the preset time intervals and the air supply intensity is low, the fragrance device may be controlled to emit the

forest fragrance, a sounding device connected to the air outlet device may be controlled to play the soothing music, and the light-emitting device connected to the air outlet device may be controlled to adjust the color temperature to the cold color and adjust the brightness to the low brightness.

[0071] When the target environmental pattern is the ocean pattern, a corresponding target environmental parameter may include that: an air supply frequency is to supply air continuously, an air supply intensity is medium, an odor in an environment where air is supplied is an ocean fragrance, a sound in the environment where air is supplied is the cheerful music, a color temperature of the environment where air is supplied is a warm color and brightness of the environment where air is supplied is high. Then the air outlet device may be controlled to continuously supply air and the air supply intensity is medium, the fragrance device may be controlled to emit an ocean fragrance, a sounding device connected to the air outlet device may be controlled to play the cheerful music, and the light-emitting device connected to the air outlet device may be controlled to adjust the color temperature to the warm color and adjust the brightness to the high brightness.

[0072] When the target environmental pattern is the grassland pattern, a corresponding target environmental parameter may include that: an air supply frequency is to supply air continuously, air supply intensity is strong, an odor in an environment where air is supplied is a grassland fragrance, a sound in the environment where air is supplied is fresh music, a color temperature of the environment where air is supplied is a warm color and brightness of the environment where air supply is medium. Then the air outlet device may be controlled to continuously supply air and the air supply intensity is strong, a fragrance device may be controlled to emit the grassland fragrance, a sounding device connected to the air outlet device may be controlled to play the fresh music, and a light-emitting device connected to the air outlet device may be controlled to adjust the color temperature to the warm color and adjust the brightness to the medium brightness.

[0073] It is to be noted that the above-mentioned examples are adopted only for exemplary description. There are no limits made thereto in the present disclosure.

[0074] In this way, through the above-mentioned target environmental parameters, a real natural environment can be simulated in terms of smell, hearing, vision and the like, thereby user experience is improved.

[0075] According to the above-mentioned method, the target environmental pattern selected by the user is determined, the target environmental parameter corresponding to the target environmental pattern is determined, and the air outlet device is controlled to supply air according to the target environmental parameter, thereby a real natural environment can also be simulated during air supply, user experience is improved, and the intelligence of the air outlet device is improved.

[0076] FIG. 4 illustrates a control device for an air outlet device according to an embodiment of the present disclosure. As illustrated in FIG. 4, the device includes a pattern determination module 401, a parameter determination module 402 and an air supply control module 403.

[0077] The pattern determination module 401 is configured to determine a target environmental pattern selected by a user from multiple preset environmental patterns.

[0078] The parameter determination module 402 is configured to determine a target environmental parameter corresponding to the target environmental pattern.

[0079] The air supply control module 403 is configured to control the air outlet device to supply air according to the target environmental parameter.

[0080] The various device components, blocks, or portions may have modular configurations, or are composed of discrete components, but nonetheless may be referred to as "modules" in general. In other words, the "modules" referred to herein may or may not be in modular forms.

[0081] In some embodiments, the target environmental parameter may include an air supply pattern of the air outlet device, and the air supply control module is configured to control the air outlet device to supply air according to the air supply pattern.

[0082] In some embodiments, as illustrated in FIG. 5, the device may further include an operation control module 404 configured to control an operation of at least one environmental adjustment device according to the target environmental parameter.

[0083] In some embodiments, the air outlet device may be connected to the environmental adjustment device through a local area network; or the air outlet device is connected to the environmental adjustment device through a server.

[0084] In some embodiments, the target environmental parameter may include at least one of a target odor, a target sound or target illumination information.

[0085] In some embodiments, the operation control module 404 may be configured to, when the target environmental parameter includes the target color and the environmental adjustment device includes at least one fragrance device, control the at least one fragrance device to emit an odor according to the target odor.

[0086] Or, the operation control module 404 may be configured to, when the target environmental parameter includes the target sound and the environmental adjustment device includes at least one sounding device, control the at least one sounding device to produce sound according to the target sound.

[0087] Or, the operation control module 404 may be configured to, when the target environmental parameter includes the target illumination information and the environmental adjustment device includes at least one light-emitting device, control the at least one light-emitting device to emit light according to the target illumination information.

[0088] In some embodiments, the operation control module 404 may be further configured to, when the target environmental parameter includes the target illumination information and the environmental adjustment device includes a curtain opening and closing device and a light-emitting device, control the curtain opening and closing device to open or close a curtain and control the light-emitting device to emit light according to the target illumination information.

[0089] In some embodiments, the pattern determination module 401 may be further configured to: determine, within a preset range around the air outlet device, other users except the user; acquire environmental patterns selected by the other users; determine, according to the environmental patterns selected by the other users, multiple preset environmental patterns recommended to the user to select; and acquire the target environmental pattern selected by the user from the multiple preset environmental patterns.

[0090] According to the above-mentioned device, the target environmental pattern selected by the user is determined, the target environmental parameter corresponding to the target environmental pattern is determined, and the air outlet device is controlled to supply air according to the target environmental parameter, thereby a real natural environment can also be simulated during air supply, user experience is improved, and intelligence of the air outlet device is improved.

[0091] With respect to the device in the above embodiment, the specific manners in which the modules perform operations have been described in detail in the embodiment regarding the method, which will not be described in detail herein.

[0092] The present disclosure also provides a computer-readable storage medium, in which computer program instructions are stored, the program instructions being executed by a processor to implement the operations of a control method for an air outlet device provided in the present disclosure.

[0093] FIG. 6 is a block diagram of an air outlet device 600 according to some embodiments. Referring to FIG. 6, the device 600 may include one or more of the following components: a processing component 602, a memory 604, a power component 606, a multimedia component 608, an audio component 610, an Input/Output (I/O) interface 612, a sensor component 614, and a communication component 616.

[0094] The processing component 602 typically controls overall operations of the device 600, such as operations associated with display, a telephone call, data communication, a camera operation, and a recording operation. The processing component 602 may include one or more processors 620 to execute instructions to perform all or part of the operations in the above-mentioned control method for the air outlet device. Moreover, the processing component 602 may include one or more modules which facilitate interactions between the processing component 602 and the other components. For instance, the processing component 602 may include a multimedia module to facilitate an interaction between the multimedia component 608 and the processing component 602.

[0095] The memory 604 is configured to store various types of data to support the operation of the device 600. Examples of such data include instructions for any application program or method operated on the device 600, contact data, phonebook data, messages, pictures, video, etc. The memory 604 may be implemented by any type of volatile or non-volatile memory devices, or a combination thereof, such as a Static Random Access Memory (SRAM), an Electrically Erasable Programmable Read-Only Memory (EEPROM), an Erasable Programmable Read-Only Memory (EPROM), a Programmable Read-Only Memory (PROM), a Read-Only Memory (ROM), a magnetic memory, a flash memory, and a magnetic or an optical disk.

[0096] The power component 606 provides power for various components of the device 600. The power component 606 may include a power management system, one or more power supplies, and other components associated with generation, management and power distribution for the device 600.

[0097] The multimedia component 608 includes a screen providing an output interface between the device 600 and a user. In some embodiments, the screen may include a Liquid Crystal Display (LCD) and a Touch Panel (TP). When the screen includes the TP, the screen may be implemented as a touch screen to receive an input signal from the user. The TP includes one or more touch sensors to sense touch, sliding and gestures on the TP. The touch sensor may not only sense a boundary of touch or a sliding action but also detect duration and a pressure associated with the touch or sliding operation.

[0098] The audio component 610 is configured to output and/or input an audio signal. For example, the audio component 610 includes a Microphone (MIC). The MIC is configured to receive an external audio signal when the device 600 is in an operation mode, such as a call mode, a recording mode and a speech recognition mode. The received audio signal may be further stored in the memory 604 or sent via the communication component 616. In some embodiments, the audio component 610 further includes a speaker configured to output the audio signal.

[0099] The I/O interface 612 provides an interface between the processing component 602 and a peripheral interface module. The above-described peripheral interface module may be a keyboard, a click wheel, a button and the like. The button may include but is not limited to: a home button, a volume button, a starting button and a locking button.

[0100] The sensor component 614 includes one or more sensors configured to provide status for the device 600 in various aspects. For instance, the sensor component 614 may detect an on/off status of the device 600 and relative positioning of components. For example, the

components are a display and a small keyboard of the device 600. The sensor component 614 may further detect a change in a position of the device 600 or a component of the device 600, presence or absence of contact between the user and the device 600, an orientation or acceleration/deceleration of the device 600 and a change in a temperature of the device 600. The sensor component 614 may include a proximity sensor configured to detect presence of a nearby object without any physical contact.

[0101] The communication component 616 is configured to perform wired or wireless communication between the device 600 and other devices. The device 600 may access to a wireless network based on a communication standard, such as a Wireless Fidelity (WiFi) network, a 2nd-Generation (2G) or 3rd-Generation (3G) network or a combination thereof. In some embodiments, the communication component 616 receives a broadcast signal or broadcast related information from an external broadcast management system via a broadcast channel. In some embodiments, the communication component 616 further includes a Near Field Communication (NFC) module to perform short-range communication. For example, the NFC module may be implemented on the basis of a Radio Frequency Identification (RFID) technology, Infrared Data Association (IrDA) technology, Ultra-WideBand (UWB) technology, Bluetooth (BT) technology and other technologies.

[0102] In some embodiments, the device 600 may be implemented with one or more Application Specific Integrated Circuits (ASICs), Digital Signal Processors (DSPs), Digital Signal Processing Devices (DSPDs), Programmable Logic Devices (PLDs), Field Programmable Gate Arrays (FPGAs), controllers, micro-controllers, microprocessors or other electronic components to execute the above-mentioned control method for the air outlet device.

[0103] The terms "first" and "second" are used for descriptive purposes only and are not to be construed as indicating or implying a relative importance or implicitly indicating the number of technical features indicated. Thus, elements referred to as "first" and "second" may include one or more of the features either explicitly or implicitly. In the description of the present disclosure, "a plurality" indicates two or more unless specifically defined otherwise.

[0104] In the present disclosure, the terms "installed," "connected," "coupled," "fixed" and the like shall be understood broadly, and may be either a fixed connection or a detachable connection, or integrated, unless otherwise explicitly defined. These terms can refer to mechanical or electrical connections, or both. Such connections can be direct connections or indirect connections through an intermediate medium. These terms can also refer to the internal connections or the interactions between elements. The specific meanings of the above terms in the present disclosure can be understood by those of ordinary skill in the art on a case-by-case basis.

[0105] In the description of the present disclosure, the terms "one embodiment," "some embodiments," "example," "specific example," or "some examples," and the like may indicate a specific feature described in connection with the embodiment or example, a structure, a material or feature included in at least one embodiment or example. In the present disclosure, the schematic representation of the above terms is not necessarily directed to the same embodiment or example.

[0106] Moreover, the particular features, structures, materials, or characteristics described may be combined in a suitable manner in any one or more embodiments or examples. In addition, various embodiments or examples described in the specification, as well as features of various embodiments or examples, may be combined and reorganized.

[0107] In some embodiments, the control and/or interface software or app can be provided in a form of a non-transitory computer-readable storage medium having instructions stored thereon is further provided. For example, the non-transitory computer-readable storage medium may be a ROM, a RAM, a CD-ROM, a magnetic tape, a floppy disk, optical data storage equipment, a flash drive such as a USB drive or an SD card, and the like.

[0108] Implementations of the subject matter and the operations described in this disclosure can be implemented in digital electronic circuitry, or in computer software, firmware, or hardware, including the structures disclosed herein and their structural equivalents, or in combinations of one or more of them. Implementations of the subject matter described in this disclosure can be implemented as one or more computer programs, i.e., one or more portions of computer program instructions, encoded on one or more computer storage medium for execution by, or to control the operation of, data processing apparatus.

[0109] Alternatively, or in addition, the program instructions can be encoded on an artificially-generated propagated signal, e.g., a machine-generated electrical, optical, or electromagnetic signal, which is generated to encode information for transmission to suitable receiver apparatus for execution by a data processing apparatus. A computer storage medium can be, or be included in, a computer-readable storage device, a computer-readable storage substrate, a random or serial access memory array or device, or a combination of one or more of them.

[0110] Moreover, while a computer storage medium is not a propagated signal, a computer storage medium can be a source or destination of computer program instructions encoded in an artificially-generated propagated signal. The computer storage medium can also be, or be included in, one or more separate components or media (e.g., multiple CDs, disks, drives, or other storage devices). Accordingly, the computer storage medium may be tangible.

[0111] The operations described in this disclosure can be implemented as operations performed by a data processing apparatus on data stored on one or more

computer-readable storage devices or received from other sources.

[0112] The devices in this disclosure can include special purpose logic circuitry, e.g., an FPGA (field-programmable gate array), or an ASIC (application-specific integrated circuit). The device can also include, in addition to hardware, code that creates an execution environment for the computer program in question, e.g., code that constitutes processor firmware, a protocol stack, a database management system, an operating system, a cross-platform runtime environment, a virtual machine, or a combination of one or more of them. The devices and execution environment can realize various different computing model infrastructures, such as web services, distributed computing, and grid computing infrastructures.

[0113] A computer program (also known as a program, software, software application, app, script, or code) can be written in any form of programming language, including compiled or interpreted languages, declarative or procedural languages, and it can be deployed in any form, including as a stand-alone program or as a portion, component, subroutine, object, or other portion suitable for use in a computing environment. A computer program may, but need not, correspond to a file in a file system. A program can be stored in a portion of a file that holds other programs or data (e.g., one or more scripts stored in a markup language document), in a single file dedicated to the program in question, or in multiple coordinated files (e.g., files that store one or more portions, sub-programs, or portions of code). A computer program can be deployed to be executed on one computer or on multiple computers that are located at one site or distributed across multiple sites and interconnected by a communication network.

[0114] The processes and logic flows described in this disclosure can be performed by one or more programmable processors executing one or more computer programs to perform actions by operating on input data and generating output. The processes and logic flows can also be performed by, and apparatus can also be implemented as, special purpose logic circuitry, e.g., an FPGA, or an ASIC.

[0115] Processors or processing circuits suitable for the execution of a computer program include, by way of example, both general and special purpose microprocessors, and any one or more processors of any kind of digital computer. Generally, a processor will receive instructions and data from a read-only memory, or a random-access memory, or both. Elements of a computer can include a processor configured to perform actions in accordance with instructions and one or more memory devices for storing instructions and data.

[0116] Generally, a computer will also include, or be operatively coupled to receive data from or transfer data to, or both, one or more mass storage devices for storing data, e.g., magnetic, magneto-optical disks, or optical disks. However, a computer need not have such devices. Moreover, a computer can be embedded in another device, e.g., a mobile telephone, a personal digital assistant (PDA), a mobile audio or video player, a game console, a Global Positioning System (GPS) receiver, or a portable storage device (e.g., a universal serial bus (USB) flash drive), to name just a few.

[0117] Devices suitable for storing computer program instructions and data include all forms of non-volatile memory, media and memory devices, including by way of example semiconductor memory devices, e.g., EPROM, EEPROM, and flash memory devices; magnetic disks, e.g., internal hard disks or removable disks; magneto-optical disks; and CD-ROM and DVD-ROM disks. The processor and the memory can be supplemented by, or incorporated in, special purpose logic circuitry.

[0118] To provide for interaction with a user, implementations of the subject matter described in this specification can be implemented with a computer and/or a display device, e.g., a VR/AR device, a head-mount display (HMD) device, a head-up display (HUD) device, smart eyewear (e.g., glasses), a CRT (cathode-ray tube), LCD (liquid-crystal display), OLED (organic light emitting diode), TFT (thin-film transistor), plasma, other flexible configuration, or any other monitor for displaying information to the user and a keyboard, a pointing device, e.g., a mouse, trackball, etc., or a touch screen, touch pad, etc., by which the user can provide input to the computer.

[0119] Implementations of the subject matter described in this specification can be implemented in a computing system that includes a back-end component, e.g., as a data server, or that includes a middleware component, e.g., an application server, or that includes a front-end component, e.g., a client computer having a graphical user interface or a Web browser through which a user can interact with an implementation of the subject matter described in this specification, or any combination of one or more such back-end, middleware, or front-end components.

[0120] The components of the system can be interconnected by any form or medium of digital data communication, e.g., a communication network. Examples of communication networks include a local area network ("LAN") and a wide area network ("WAN"), an inter-network (e.g., the Internet), and peer-to-peer networks (e.g., ad hoc peer-to-peer networks).

[0121] While this specification contains many specific implementation details, these should not be construed as limitations on the scope of any claims, but rather as descriptions of features specific to particular implementations. Certain features that are described in this specification in the context of separate implementations can also be implemented in combination in a single implementation. Conversely, various features that are described in the context of a single implementation can also be implemented in multiple implementations separately or in any suitable subcombination.

[0122] Moreover, although features may be described above as acting in certain combinations and even initially

claimed as such, one or more features from a claimed combination can in some cases be excised from the combination, and the claimed combination may be directed to a subcombination or variation of a subcombination.

[0123] Similarly, while operations are depicted in the drawings in a particular order, this should not be understood as requiring that such operations be performed in the particular order shown or in sequential order, or that all illustrated operations be performed, to achieve desirable results. In certain circumstances, multitasking and parallel processing may be advantageous. Moreover, the separation of various system components in the implementations described above should not be understood as requiring such separation in all implementations, and it should be understood that the described program components and systems can generally be integrated together in a single software product or packaged into multiple software products.

[0124] As such, particular implementations of the subject matter have been described. Other implementations are within the scope of the following claims. In some cases, the actions recited in the claims can be performed in a different order and still achieve desirable results. In addition, the processes depicted in the accompanying figures do not necessarily require the particular order shown, or sequential order, to achieve desirable results. In certain implementations, multitasking or parallel processing may be utilized.

[0125] It is intended that the specification and embodiments be considered as examples only. Other embodiments of the disclosure will be apparent to those skilled in the art in view of the specification and drawings of the present disclosure. That is, although specific embodiments have been described above in detail, the description is merely for purposes of illustration. It should be appreciated, therefore, that many aspects described above are not intended as required or essential elements unless explicitly stated otherwise.

[0126] Various modifications of, and equivalent acts corresponding to, the disclosed aspects of the example embodiments, in addition to those described above, can be made by a person of ordinary skill in the art, having the benefit of the present disclosure, without departing from the scope of the disclosure defined in the following claims, the scope of which is to be accorded the broadest interpretation so as to encompass such modifications and equivalent structures.

[0127] It is to be understood that, the present disclosure is not limited to the accurate structure that has been described above and illustrated in the accompanying drawings, and various modifications and changes may be made without departing from the scope of the present disclosure. The scope of the present disclosure is limited only by the appended claims.

Claims

1. A control method for an air outlet device, **characterized by** comprising:

   determining (101) a target environmental pattern selected by a user from a plurality of preset environmental patterns;
   determining (102) a target environmental parameter corresponding to the target environmental pattern; and
   controlling (103) the air outlet device to supply air according to the target environmental parameter.

2. The method of claim 1, wherein the target environmental parameter comprises an air supply pattern of the air outlet device, and controlling (102) the air outlet device to supply air according to the target environmental parameter comprises: controlling the air outlet device to supply air according to the air supply pattern.

3. The method of claim 1 or claim 2, further comprising: controlling an operation of at least one environmental adjustment device according to the target environmental parameter.

4. The method of claim 3, wherein
   the air outlet device is connected to the environmental adjustment device through at least one of a local area network or a server.

5. The method of claim 3 or claim 4, wherein the target environmental parameter comprises at least one of a target odor, a target sound or target illumination information.

6. The method of claim 5, wherein
   when the target environmental parameter comprises the target odor, the environmental adjustment device comprises at least one fragrance device, and controlling the operation of the at least one environmental adjustment device according to the target environmental parameter comprises: controlling the at least one fragrance device to emit an odor according to the target odor; or
   when the target environmental parameter comprises the target sound, the environmental adjustment device comprises at least one sounding device, and controlling the operation of the at least one environmental adjustment device according to the target environmental parameter comprises: controlling the at least one sounding device to produce sound according to the target sound; or
   when the target environmental parameter comprises the target illumination information, the environmental adjustment device comprises at least one light-emit-

ting device, and controlling the operation of the at least one environmental adjustment device according to the target environmental parameter comprises: controlling the at least one light-emitting device to emit light according to the target illumination information; or
when the target environmental parameter comprises the target illumination information, the environmental adjustment device comprises a curtain opening and closing device and a light-emitting device; and controlling the operation of the at least one environmental adjustment device according to the target environmental parameter comprises: controlling the curtain opening and closing device to open or close a curtain, and controlling the light-emitting device to emit light according to the target illumination information.

7. The method of any one of claims 1-6, wherein determining the target environmental pattern selected by the user from the plurality of preset environmental patterns comprises:

determining, within a preset range around the air outlet device, other users except the user;
acquiring environmental patterns selected by the other users;
determining, according to the environmental patterns selected by the other users, the plurality of preset environmental patterns recommended to the user to select; and
acquiring the target environmental pattern selected by the user from the plurality of preset environmental patterns.

8. A control device for an air outlet device, **characterized by** comprising:

a pattern determination module (401), configured to determine a target environmental pattern selected by a user from a plurality of preset environmental patterns;
a parameter determination module (402), configured to determine a target environmental parameter corresponding to the target environmental pattern; and
an air supply control module (403), configured to control the air outlet device to supply air according to the target environmental parameter.

9. The device of claim 8, wherein the target environmental parameter comprises an air supply pattern of the air outlet device, and the air supply control module (403) is configured to control the air outlet device to supply air according to the air supply pattern.

10. The device of claim 8 or claim 9, further comprising:
an operation control module, configured to control an operation of at least one environmental adjustment device according to the target environmental parameter.

11. The device of claim 10, wherein
the air outlet device is connected to the environmental adjustment device through a local area network; or
the air outlet device is connected to the environmental adjustment device through a server.

12. The device of claim 10 or claim 11, wherein the target environmental parameter comprises at least one of a target odor, a target sound or target illumination information.

13. The device of claim 12, wherein
the operation control module is configured to, when the target environmental parameter comprises the target color and the environmental adjustment device comprises at least one fragrance device, control the at least one fragrance device to emit an odor according to the target odor; or
the operation control module is configured to, when the target environmental parameter comprises the target sound and the environmental adjustment device comprises at least one sounding device, control the at least one sounding device to produce sound according to the target sound; or
the operation control module is configured to, when the target environmental parameter comprises the target illumination information and the environmental adjustment device comprises at least one light-emitting device, control the at least one light-emitting device to emit light according to the target illumination information; or
the operation control module is further configured to, when the target environmental parameter comprises the target illumination information and the environmental adjustment device comprises a curtain opening and closing device and a light-emitting device, control the curtain opening and closing device to open or close a curtain and control the light-emitting device to emit light according to the target illumination information.

14. The device of any one of claims 8-13, wherein the pattern determination module is further configured to:

determine, within a preset range around the air outlet device, other users except the user;
acquire environmental patterns selected by the other users;
determine, according to the environmental patterns selected by the other users, the plurality of preset environmental patterns recommended

to the user to select; and
acquire the target environmental pattern selected by the user from the plurality of preset environmental patterns.

15. A computer-readable storage medium, in which a computer program is stored, the computer program being executed by a processor to implement operations of the method of any one of claims 1-7.

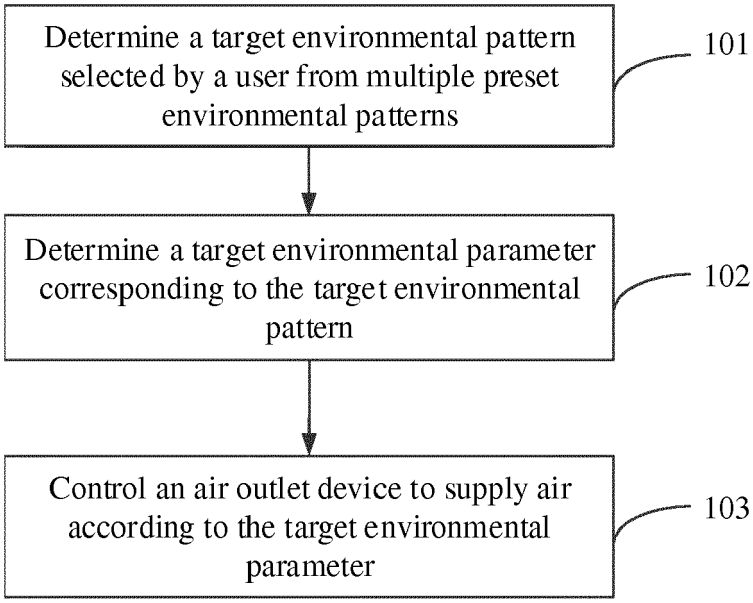
Determine a target environmental pattern selected by a user from multiple preset environmental patterns
101
Determine a target environmental parameter corresponding to the target environmental pattern
102
Control an air outlet device to supply air according to the target environmental parameter
103

FIG. 1

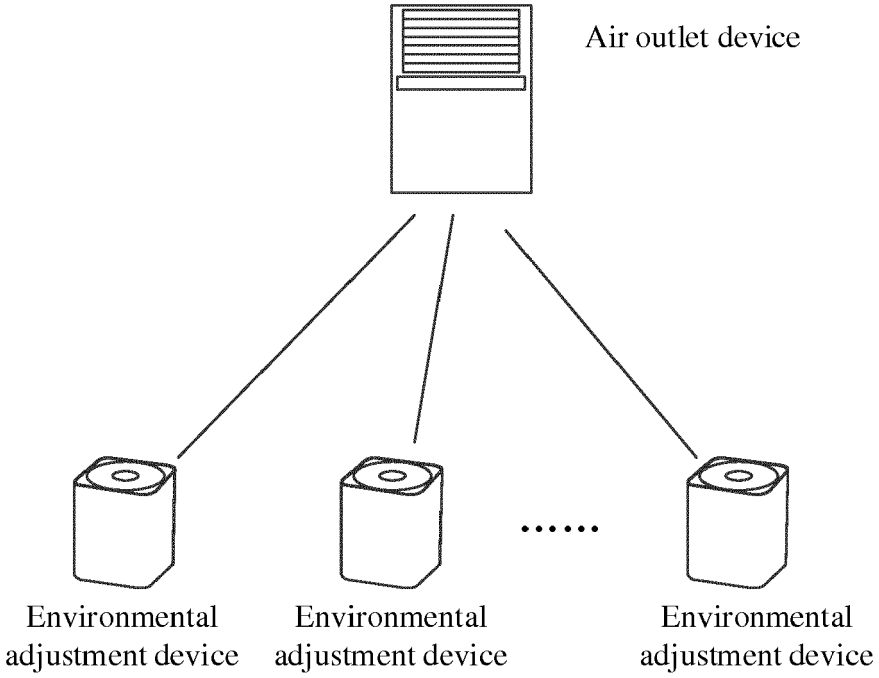
Air outlet device
Environmental adjustment device
Environmental adjustment device
.....
Environmental adjustment device

FIG. 2

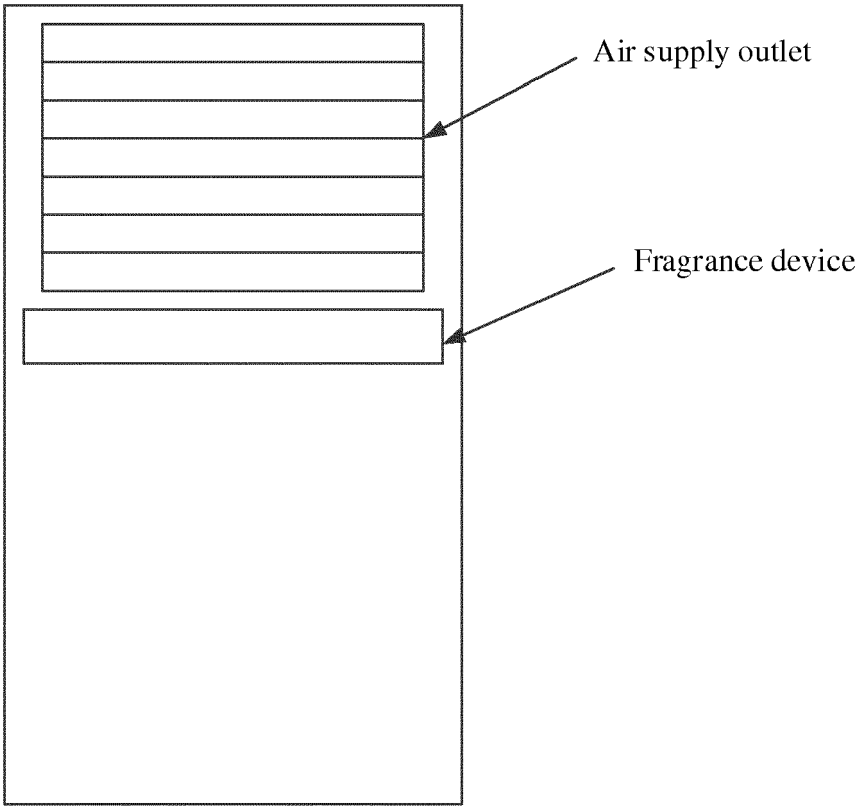

FIG. 3

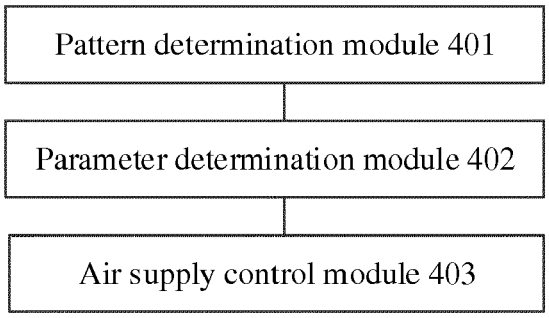
Pattern determination module 401
Parameter determination module 402
Air supply control module 403

FIG. 4

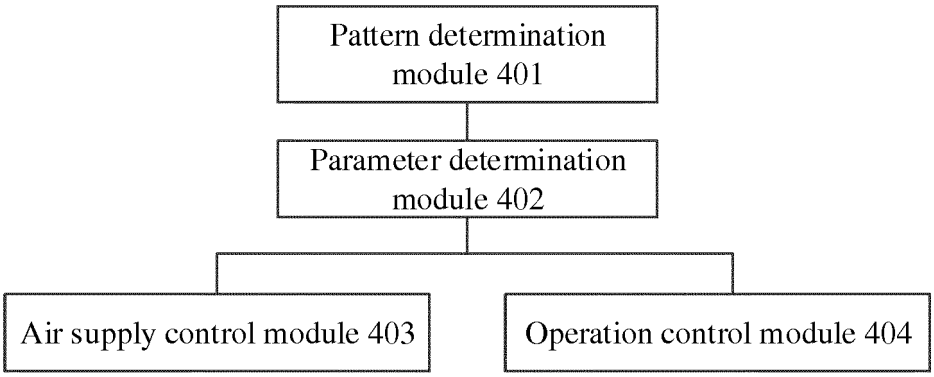
Pattern determination module 401
Parameter determination module 402
Air supply control module 403
Operation control module 404

FIG. 5

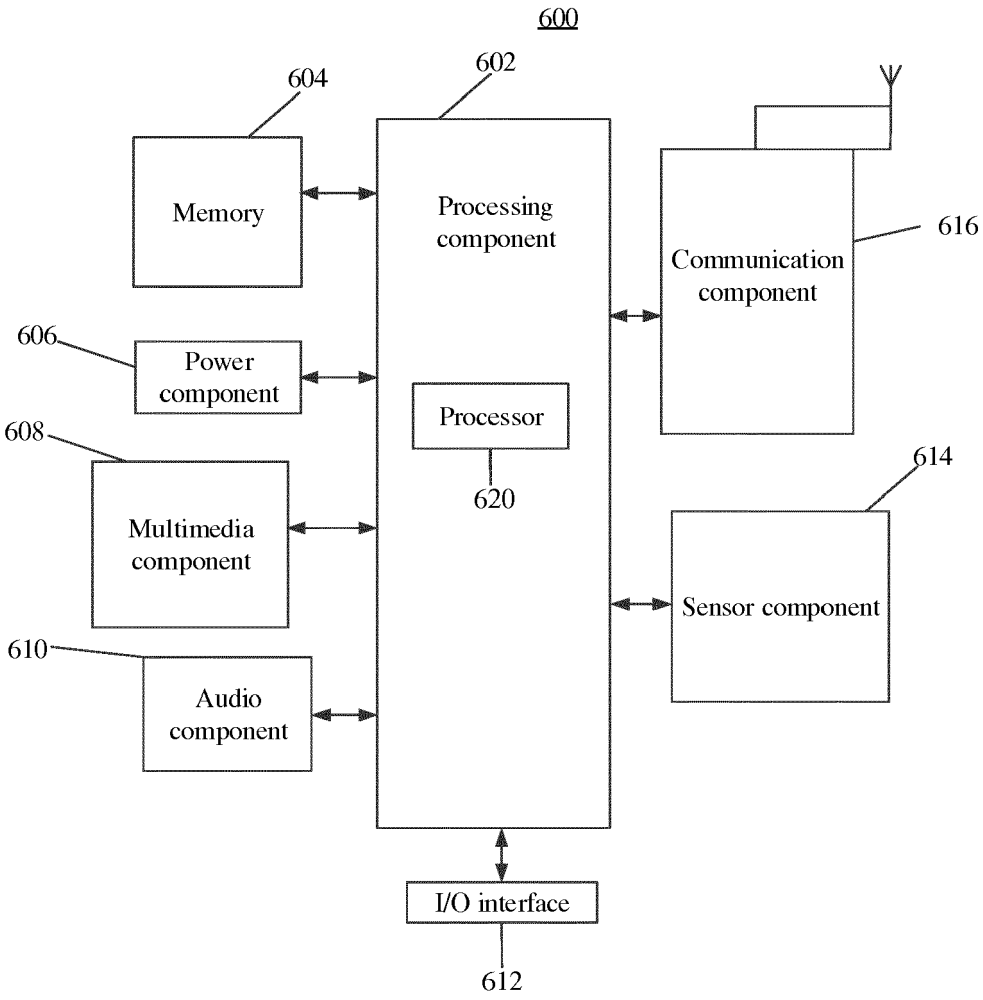
600
602
604
Memory
Processing component
Communication component
616
606
Power component
Processor
620
608
Multimedia component
614
Sensor component
610
Audio component
I/O interface
612

FIG. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 19 19 8525

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Place of search	Date of completion of the search	Examiner
Munich	3 March 2020	Blot, Pierre-Edouard

CATEGORY OF CITED DOCUMENTS

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