positions corresponding to the plurality of blowers; a detector which detects a user who is present in a direction to which the air is blown; a deriving unit which derives a horizontal width of the user with respect to the plurality of blowers based on a result of detection from the detector; a determiner which determines a blowing mode at each of both ends and a center of the horizontal width of the user derived, based on the horizontal width of the user; and a controller which controls an operation of each of the plurality of blowers based on the blowing mode determined.

[0007]

A control method according to one aspect of the present invention is a method of controlling a blowing device which includes a plurality of blowers which blow air toward a plurality of positions aligned in a horizontal direction and corresponding to the plurality of blowers. The control method includes: detecting a user who is present in a direction to which the air is blown from the blowing device; deriving a horizontal width of the user with respect to the plurality of blowers based on a result of detection obtained in the detecting; determining a blowing mode at each of both ends and a center of the horizontal width of the user derived in the deriving, based on the horizontal width of the user; and controlling an operation of each of the plurality of blowers based on the blowing mode determined.

[0008]

A program according to one aspect of the present invention is a non-transitory computer-readable recording medium for use in a computer, the recording medium having a computer program recorded thereon for causing the computer to perform the control method.

[Advantageous Effects of Invention]

[0009]

According to the present invention, it is possible to provide a control system and a control method capable of performing comfortable air conditioning control according to a person.

[Brief Description of Drawings]

[0010]

[FIG. 1]

user terminal device 400. The communication performed by communicator 110 may be wired communication or wireless communication. The communication standard used for communication is not particularly limited, either.

[0024]

Information processer 120 performs information processing for causing blowing device 200 to perform blowing control. Information processer 120 includes deriving unit 122, determiner 124, and controller 126. Information processer 120 is realized by, for example, a processor, a microcomputer, or a dedicated circuit. Information processer 120 may be realized by a combination of two or more of a processor, a microcomputer, or a dedicated circuit.

[0025]

Based on the result of detection from detector 30, deriving unit 122 derives the horizontal width of user 1 with respect to the blowers (for example, first blower 240a, second blower 240b, third blower 240c).

[0026]

Determiner 124 determines the blowing mode at each of both ends and the center of the horizontal width of user 1 based on the width of user 1 derived by deriving unit 122. Examples of the blowing mode include a blowing speed, the volume of blown air, a blowing range, and periodic variations (so-called fluctuations) of these parameters.

[0027]

Controller 126 controls the operations of the respective blowers of blowing device 200 based on the blowing modes determined by determiner 124. Specific examples of the blowing pattern achieved based on the blowing mode may include a blowing pattern in which the volume of air at each of both ends of the width of user 1 is greater than the volume of air at the center of the width of user 1, or a blowing pattern in which the volume of air at each of both ends of the width of user 1 is less than the volume of air at the center of the width of user 1. Moreover, the blowing pattern may be

high pressure air blown from the outlets of each blower according to width W_1 and W_2 of users 1a and 1b. By controlling the volume of air blown from each blower, controller 126 is capable of controlling the blowing range, blowing strength, air speed, and the like of the air blown from each blower. The blowing control performed based on the width of the user is not limited to the examples illustrated in FIG. 5.

[0061]

[Variation 1 of Operation Example 1]

In operation example 1, deriving unit 122 may derive the vertical height of the user (here, the length of the user in the height direction) from the result of detection from detector 30, and determiner 124 may determine the blowing mode based on the height of the user in addition to the horizontal width of the user. For example, determiner 124 may determine different blowing modes between when the user is sitting on a chair or the like and when the user is standing, by adjusting the blowing range and the blowing strength in the height direction at each of both ends and the center of the width of the user. In this case, controller 126 controls the direction of the air blown from each of the blowers by adjusting the direction of the high-pressure air blown from each of the outlets of the blowers based on the blowing mode. For example, controller 126 may control the direction of blown air by adjusting the volume of high-pressure air blown from each outlet such that the volume of and the speed of the air drawn to the space between adjacent nozzles can have gradients. Although not illustrated, an air direction adjusting plate for adjusting the direction of high-pressure air may be provided in each outlet, and controller 126 may adjust the direction of the high pressure air by adjusting the direction of the air direction adjusting plate of each outlet.

[0062]

[Variation 2 of Operation Example 1]

In operation example 1 and its variation 1, it may be that deriving unit 122 derives the surface temperature of the user (for

sensation desired by the user and the information related to the mood desired by the user, and controller 126 may control the humidification unit based on the determined humidification mode.

[0093]

Note that, in operation example 4, control may be performed by appropriately combining Variations 1 to 3 of operation example 4.

[0094]

[4. Advantageous Effects, etc.]

As described above, control system 500 includes: a plurality of blowers (for example, first blower 240a, second blower 240b, third blower 240c) which blow air toward a plurality of positions aligned in the horizontal direction and corresponding to the blowers; detector 30 which detects user 1 who is present in the direction in which air is blown; deriving unit 122 which derives the horizontal width of user 1 with respect to the blowers (first blower 240a, second blower 240b, third blower 240c) based on the result of detection from detector 30; determiner 124 which determines the blowing mode at each of both ends and the center of the horizontal width of user 1 derived, based on the width of user 1; and controller 126 which controls the operation of each of the blowers (first blower 240a, second blower 240b, third blower 240c) based on the determined blowing mode.

[0095]

Since such a control system 500 is capable of individually controlling the operation of the blowers according to the horizontal width of the user with respect to the blowers, it is possible to perform comfortable air conditioning control according to the user.

[0096]

Moreover, for example, in control system 500, each of blowers (first blower 240a, second blower 240b, third blower 240c) includes at least two nozzles 241a to 241f which are disposed with a space in between. Each of the at least two nozzles 241a to 241f includes one lateral face with one of outlets 242a to 242f for blowing high-pressure air. The one lateral faces of the at least two nozzles 241a to 241f are flush with each other. Each of blowers (first blower 240a, second blower 240b, third blower 240c)

Since such a control system 500 is further capable of performing blowing control according to the surface temperature of the user, it is possible to perform more comfortable air conditioning control according to the user.

[0104]

Moreover, for example, control system 500 further includes temperature sensor 50 which senses the ambient temperature of user 1, and determiner 124 further determines the blowing mode based on the sensed ambient temperature of user 1.

[0105]

Since such a control system 500 is further capable of performing blowing control according to the ambient temperature of the user, it is possible to perform more comfortable air conditioning control.

[0106]

Moreover, for example, in control system 500, each of blowers (first blower 240a, second blower 240b, third blower 240c) further includes a temperature adjuster which adjusts the temperature of the air (for example, first temperature adjuster 250a, second temperature adjuster 250b, third temperature adjuster 250c), and controller 126 causes each temperature adjuster (first temperature adjuster 250a, second temperature adjuster 250b, third temperature adjuster 250c) to adjust the temperature of the air in the control of the operations of the blowers (first blower 240a, second blower 240b, third blower 240c).

[0107]

Since such a control system 500 is capable of adjusting the temperature of the air blown by each of the blowers, it is possible to perform more comfortable air conditioning control.

[0108]

Moreover, for example, control system 500 further includes receiver 440 which receives input of at least one item of information of information related to the thermal sensation desired by user 1 or information related to the mood desired by user 1, and determiner 124 further determines the

blowing mode based on the at least one item of information received by receiver 440.

[0109]

Since such a control system 500 is capable of performing blowing control according to the information related to the thermal sensation and the mood desired by the user, it is possible to perform comfortable air conditioning control according to the user's preference. At least one of first information or second information can be output based on the stored information.

[0110]

Moreover, for example, in control system 500, when the information related to the mood desired by user 1 is information indicating a desire for relaxation, determiner 124 determines the blowing mode which increases a ratio of the volume of air at each of both ends of the width of user 1 to the volume of air at the center of the width of user 1. When the information related to the mood desired by user 1 is information indicating a desire for awakening, determiner 124 determines the blowing mode which decreases the ratio.

[0111]

Such a control system 500 is capable of performing blowing control according to the mood desired by the user.

[0112]

Moreover, for example, in control system 500, when receiver 440 receives the information that is newly input, determiner 124 changes the blowing mode based on the information that is newly input, and controller 126 controls the operation of each of the blowers (first blower 240a, second blower 240b, third blower 240c) based on the blowing mode after changing.

[0113]

Since such a control system 500 is capable of performing blowing control according to the change in the thermal sensation and the mood desired by the user, it is possible to perform comfortable air conditioning control according to the user's preference.

[0114]

Moreover, for example, control system 500 further includes lighting unit 311, determiner 124 further determines the lighting mode of lighting unit 311 based on the at least one item of information received by receiver 440, and controller 126 controls at least one of the chromaticity or the intensity of the light emitted from lighting unit 311 based on the determined lighting mode.

[0115]

Since such a control system 500 is also capable of performing lighting control in addition to blowing control according to the thermal sensation and the mood desired by the user, it is possible to provide the user with a visually comfortable environment.

[0116]

Moreover, for example, control system 500 further includes audio unit 321, determiner 124 further determines the audio mode of audio unit 321 based on the at least one item of information received by receiver 440, and controller 126 further controls at least one of the type, volume, and reproduction speed of the sound reproduced from audio unit 321, based on the determined audio mode.

[0117]

Since such a control system 500 is also capable of performing audio control in addition to blowing control according to the thermal sensation and the mood desired by the user, it is possible to provide the user with an aurally comfortable environment.

[0118]

Moreover, for example, control system 500 further includes a humidification unit (not illustrated).

[0119]

Since such a control system 500 is capable of performing humidity control in addition to blowing control, it is possible to provide the user with a more comfortable environment.

[0120]

Moreover, the control method performed by a computer such as control system 500 is a method of controlling air blowing device 200 which includes a plurality of blowers (first blower 240a, second

[CLAIMS]

[Claim 1]

A control system comprising:

a plurality of blowers which blow air toward a plurality of positions aligned in a horizontal direction, the plurality of positions corresponding to the plurality of blowers;

a detector which detects a user who is present in a direction to which the air is blown;

a deriving unit which derives a horizontal width of the user with respect to the plurality of blowers based on a result of detection from the detector;

a determiner which determines a blowing mode at each of both ends and a center of the horizontal width of the user derived, based on the horizontal width of the user; and

a controller which controls an operation of each of the plurality of blowers based on the blowing mode determined.

[Claim 2]

The control system according to claim 1,

wherein each of the plurality of blowers includes at least two nozzles which are disposed with a space in between, each of the at least two nozzles including one lateral face with an outlet for blowing high-pressure air, the one lateral faces of the at least two nozzles being flush with each other,

each of the plurality of blowers blows, toward a corresponding one of the plurality of positions, the air drawn to the space by the high-pressure air blown from the outlet, and

when controlling the operation of each of the plurality of blowers, the controller controls a volume of the air blown, by adjusting a volume of the high-pressure air blown from the outlet.

[Claim 3]

The control system according to claim 2,

wherein the controller further controls a direction of the air by

adjusting a direction of the high-pressure air blown from the outlet.

[Claim 4]

The control system according to any one of claims 1 to 3,

wherein the deriving unit further derives a vertical height of the user from the result of detection, and

the determiner further determines the blowing mode based on the vertical height of the user derived.

[Claim 5]

The control system according to any one of claims 1 to 4,

wherein the deriving unit further derives a surface temperature of the user from the result of detection, and

the determiner further determines the blowing mode based on the surface temperature of the user derived.

[Claim 6]

The control system according to any one of claims 1 to 5, further comprising

a temperature sensor which senses an ambient temperature of the user,

wherein the determiner further determines the blowing mode based on the ambient temperature of the user sensed.

[Claim 7]

The control system according to any one of claims 1 to 6,

wherein each of the plurality of blowers further includes a temperature adjuster which adjusts a temperature of the air, and

when controlling the operation of each of the plurality of blowers, the controller causes the temperature adjuster to adjust the temperature of the air.

[Claim 8]

The control system according to any one of claims 1 to 7,

further comprising

a receiver which receives an input of at least one item of information of information related to a thermal sensation desired by the user or information related to a mood desired by the user,

wherein the determiner further determines the blowing mode based on the at least one item of information received by the receiver.

[Claim 9]

The control system according to claim 8,

wherein, when the information related to the mood desired by the user is information indicating a desire for relaxation, the determiner determines the blowing mode which increases a ratio of a volume of the air at each of both ends of the horizontal width of the user to a volume of the air at a center of the horizontal width of the user, and

when the information related to the mood desired by the user is information indicating a desire for awakening, the determiner determines the blowing mode which decreases the ratio.

[Claim 10]

The control system according to claim 8,

wherein, when the receiver receives information that is newly input, the determiner changes the blowing mode based on the information that is newly input, and

the controller controls the operation of each of the plurality of blowers based on the blowing mode after changing.

[Claim 11]

The control system according to claim 8, further comprising

a lighting unit,

wherein the determiner further determines a lighting mode of the lighting unit based on the at least one item of information received by the receiver, and

the controller controls at least one of a chromaticity or an intensity of light emitted from the lighting unit, based on the lighting mode determined.

[Claim 12]

The control system according to claim 8, further comprising an audio unit,

wherein the determiner further determines an audio mode of the audio unit based on the at least one item of information received by the receiver, and

the controller further controls at least one of a type, a volume, or a reproduction speed of a sound reproduced by the audio unit, based on the audio mode determined.

[Claim 13]

The control system according to any one of claims 1 to 12, further comprising a humidification unit.

[Claim 14]

A control method of controlling a blowing device which includes a plurality of blowers which blow air toward a plurality of positions aligned in a horizontal direction and corresponding to the plurality of blowers, the control method comprising:

detecting a user who is present in a direction to which the air is blown from the blowing device;

deriving a horizontal width of the user with respect to the plurality of blowers based on a result of detection obtained in the detecting;

determining a blowing mode at each of both ends and a center of the horizontal width of the user derived in the deriving, based on the horizontal width of the user; and

controlling an operation of each of the plurality of blowers based on the blowing mode determined.

[Claim 15]

A non-transitory computer-readable recording medium for use in a computer, the recording medium having a computer program recorded thereon for causing the computer to perform the control method according to claim 14.