[Summary of Invention]

[Technical Problem]

[0006]

With regard to the photographing direction of the camera when mounting the wearable camera, a helmet-mounted or glasses-mounted wearable camera may eliminate adjusting the photographing direction of the camera in case of re-mounting the wearable camera after adjusting the photographing direction of the camera.

In contrast, the photographing direction of a badge-mounted wearable camera which is mounted on the chest, shoulder, or back may be changed from that in previous mounting due to variations in the body shapes of wearers, the deviations of mounting locations, or the like. Therefore, it is necessary to adjust the photographing direction of the camera while confirming an image captured by the camera with a monitor after the camera has been mounted.

[0007]

Therefore, to provide a technology for capable of setting the photographing direction of a camera to a predetermined direction when a terminal with the camera is mounted on a wearer.

[0008]

Embodiments of the present invention provide a technology for solving the problems described above.

[Solution to Problem]

[0009]

A direction control device according to one aspect of the present invention includes: camera means for acquiring an image captured by photographing a subject by a camera targeted for adjustment of a photographing direction; image-processing means for calculating a position of a first setting image that represents the subject in the captured

image; posture detection means for detecting a difference between a position of a second setting image that represents the subject in a reference image registered in advance and the position of the first setting image; and camera control means for shifting the photographing direction of the camera based on the difference.

[0009a]

A wearable terminal according to another aspect of the present invention includes the above direction control device.

[0010]

A direction control method according to another aspect of the present invention includes: acquiring an image captured by photographing a subject by a camera targeted for adjustment of a photographing direction; calculating a position of a first setting image that represents the subject in the captured image; detecting a difference between a position of a second setting image that represents the subject in a reference image registered in advance and the position of the first setting image; and shifting the photographing direction of the camera based on the difference.

[0011]

A recording medium according to another aspect of the present invention storing a direction control program that causes a computer to execute: acquiring an image captured by photographing a subject by a camera targeted for adjustment of a photographing direction; calculating a position of a first setting image that represents the subject in the captured image; detecting a difference between a position of a second setting image that represents the subject in a reference image registered in advance and the position of the first setting image; and shifting the photographing direction of the camera based on the difference.

[Advantageous Effects of Invention]

[0012]

According to embodiments of the present invention, the photographing direction of a camera can be set to a predetermined direction when a terminal with the camera is mounted on a wearer.

the setting image 3B registered in the database 123. The feature verification unit 126 notifies the coordinate calculation unit 127 of the position information on the setting image 3B in the reference image registered in the database 123 when the setting image 3A in the captured image and the setting image 3B in the reference image match with each other as a result of the verification.

[0028]

The coordinate calculation unit 127 of the image-processing unit 12 calculates position information that represents the image position of the setting image 3A in the captured image (hereinafter expressed as the position information of the setting image 3A) based on the captured image S11 notified from the feature extraction unit 125. An example of the position information of the setting image 3A calculated by the coordinate calculation unit 127 is coordinate information.

[0029]

Further, the coordinate calculation unit 127 notifies the posture detection unit 13 of the position information of the setting image 3A in the captured image and the position information of the setting image 3B in the reference image registered in the database 123, as the verification image information S12.

[0030]

The posture detection unit 13 generates posture difference information S13 that represents the difference between the position of the setting image 3A in the captured image and the position of the setting image 3B in the reference image, based on the notified verification image information S12, and notifies the camera control unit 14 of the posture difference information S13. Details on the posture difference information S13 will be described later.

[0031]

[0060]

The operation of the wearable terminal 20 according to the second example embodiment will now be described with reference to the drawings. Fig. 9 is a flowchart illustrating the operation of the wearable terminal 20 according to the second example embodiment.

[0061]

First, the camera unit 11 of the wearable terminal 20 acquires the image captured by photographing the mirror image 2' of the wearer 2, reflected by the mirror 4, by the camera (step P11) and notifies the image-processing unit 22 of the captured image S11. Then, the image-processing unit 22 of the wearable terminal 20 detects the face image of the wearer 2 from the captured image S11 of which the notification has been provided (step P12) and calculates the position of the face image in the captured image.

[0062]

Specifically, the face detection unit 121 of the image-processing unit 22 detects the face image from the captured image (step P12), and the face verification unit 122 verifies the face image stored in the database 123A in advance against the extracted face image (step P13). The process of the face verification unit 122 returns to step P11 when the face images do not match with each other (No in step P14). When the face images match with each other (Yes in step P14), the face verification unit 122 sends the position information of the face image in the reference image and the wearer information, registered in the database 123A, to the face coordinate calculation unit 124.

[0063]

The face coordinate calculation unit 124 calculates the position of the face image in the captured image (step P15) and sends the wearer information, together with the position information of the face image in the