DESCRIPTION

Title of Invention: IMAGING UNIT, INFORMATION PROCESSING DEVICE, PASSAGE MANAGEMENT SYSTEM, INFORMATION PROCESSING METHOD, AND PROGRAM

Technical Field

[0001]

The present disclosure relates to an imaging unit, an information processing device, a passage management system, an information processing method, and a recording medium.

Background Art

[0002]

It is known to use face authentication in a passage management system.

[0003]

For example, PTL 1 discloses a passage management system including an information processing device that captures, by a camera, an imaging range including a face of a person entering a gate and performs face authentication processing on the captured image.

Citation List

Patent Literature

[0004]

PTL 1: JP 2023-75227 A

Summary

[0004A]

In a first aspect, the present disclosure provides an imaging unit comprising: a camera provided in a gate having a door that opens and closes based on a result of authentication of a face image of an entering user and a guide member provided with the door, the camera capturing the face image; a housing attached to the guide member and housing the

camera; and a light-emitting member located at at least a part around the camera and capable of emitting light according to a state of the authentication.

[0004B]

In a second aspect, the present disclosure provides an information processing device comprising: lighting instruction means for causing, according to a state of authentication, a light-emitting member of an imaging unit to emit light, the imaging unit including a camera provided in a gate having a door that opens and closes based on a result of the authentication of a face image of an entering user and a guide member provided with the door, the camera capturing the face image; a housing attached to the guide member and housing the camera; and the light-emitting member located at at least a part around the camera; and authentication means for performing the authentication.

[0004C]

In a third aspect, the present disclosure provides a passage management system comprising: the information processing device according to the second aspect; the imaging unit; and the gate.

[0004D]

In a fourth aspect, the present disclosure provides an information processing method comprising: causing, during waiting for authentication, a light-emitting member located at at least a part around a camera that captures a face image of an entering user and capable of emitting light according to a state of the authentication of the face image to emit light; and performing the authentication based on the face image.

[0004E]

In a fifth aspect, the present disclosure provides a program for causing a computer to execute: causing, during waiting for authentication, a light-emitting member located at at least a part around a camera that captures a

face image of an entering user and capable of emitting light according to a state of the authentication of the face image to emit light; and performing the authentication based on the face image.

Technical Problem

[0005]

The passage management system disclosed in PTL 1 captures, by a camera, an imaging range including a face of a person entering a gate, performs face authentication processing on the captured image, and performs passage management of the person with respect to the gate.

The light-emitting member 23 is located at at least a part around the camera 21 and is capable of emitting light according to a state of authentication of the face image. As states of authentication, there are four states: waiting for authentication, execution of authentication, success of authentication, and failure of authentication.

Further, the optical axis of the light-emitting member 23 is directed toward the center side of the housing 22.

[0018]

(Position of Imaging Unit)

As shown again in Fig. 1, the position of the camera 21ENT provided in the first guide member 12R is a position ENT closer to the entrance/exit E2 than the central portion of the guide member 12. The camera 21ENT captures the user U entering the gate 1 from the entrance/exit E1 toward the direction D from the position ENT.

For example, in the present disclosure, the camera 21ENT housed in the housing 22 is assumed to be installed at a position where the user U can be captured from in front of the user U entering the gate 1 from the entrance/exit E1 toward the direction D. For example, as shown in Fig. 3, the camera 21ENT is assumed to capture the user U from the right front of the user U. The camera 21ENT may capture the user U from the left front of the user U.

The position of the camera 21END provided in the second guide member 12L is a position END closer to the entrance/exit E1 than the central portion of the guide member 12. The camera 21END captures, from the position END, a certain user entering the gate 1 from the entrance/exit E2 toward the RD direction (hereinafter, referred to as “user X“).

For example, in the present disclosure, the camera 21END housed in the housing 22 is assumed to be installed at a position where a user X can

be captured from in front of the user X entering the gate 1 from the entrance/exit E2 toward the RD direction. For example, the camera 21END is assumed to capture the user X from the right front of the user X entering the gate 1 from the entrance/exit E2 toward the RD direction. The camera 21END may capture the user X from the left front of the user X.

From the above, the direction faced by the camera 21 of the present disclosure is inclined toward the user U (user X) entering the gate 1 relative to the extending direction of the gate 1.

[0019]

In Fig. 4 and the following figures, description will be given with the guide member 12 being the first guide member 12R and the imaging unit 2 included in the guide member 12 being the first imaging unit 2ENT. However, the second guide member 12L and the second imaging unit 2END are also assumed to be represented by description similar to that for the first guide member 12R and the first imaging unit 2ENT.

[0020]

(Attachment of Light-Emitting Member)

Fig. 4 is an enlarged view of a part A of Fig. 2.

As shown in Fig. 4, the housing 22 is attached to the guide member 12 with a space therebetween.

The light-emitting member 23 is attached to the housing 22 or provided directly below the housing 22. For example, in the present disclosure, the light-emitting member 23 is assumed to be attached to the housing 22.

Light emitted by the light-emitting member 23 attached to the housing 22 is reflected by the guide member 12R and travels toward the user. That is, the gate 1 has a reflecting surface SR that reflects the light emitted by the light-emitting member 23.

device 5 in the present example embodiment will be described.

An information processing method of the present example embodiment is carried out according to the flow shown in Fig. 11.

[0036]

First, the information processing device 5 determines whether the state of authentication by the authentication means 52 is waiting for authentication (step ST101).

In a case where the state is waiting for authentication (step ST101:YES), the lighting instruction means 51 of the information processing device 5 causes the light-emitting member 23 to emit light in light emission pattern 1 (step ST105).

In light emission pattern 1, the lighting instruction means 51 of the information processing device 5 causes the light-emitting member 23 to emit light only in the first region A1 out of the first region A1 and the second region A2 that the housing 22 included in the imaging unit 2 has.

In a case where the state is not the waiting state (step ST101:NO), the process proceeds to the next process.

[0037]

Next, the information processing device 5 determines whether the state of authentication by the authentication means 52 is execution of authentication (step ST102).

In a case where the state is execution of authentication (step ST102:YES), the lighting instruction means 51 of the information processing device 5 causes the light-emitting member 23 to emit light in light emission pattern 2 (step ST106).

In light emission pattern 2, the lighting instruction means 51 of the information processing device 5 causes the light-emitting member 23 to blink. At that time, no limitation is imposed on a region such as the first region A1 and the second region A2.

In a case where the state is not execution of authentication (step ST102:NO), the process proceeds to the next process.

[0038]

Next, the information processing device 5 determines whether the state of authentication by the authentication means 52 is success of authentication (step ST103).

In a case where the state is success of authentication (step ST103:YES), the lighting instruction means 51 of the information processing device 5 causes the light-emitting member 23 to emit light in light emission pattern 3 (step ST107).

In light emission pattern 3, the lighting instruction means 51 of the information processing device 5 causes the light-emitting member 23 to emit light sequentially from the first region A1 to the second region A2 in the first region A1 and the second region A2.

[0039]

In a case where the state is not success (step ST103:NO), that is, in a case of failure of authentication, the lighting instruction means 51 of the information processing device 5 causes the light-emitting member 23 to emit light in light emission pattern 4 (step ST104).

In light emission pattern 4, the lighting instruction means 51 of the information processing device 5 causes the light-emitting member 23 to emit light in the first region A1 and the second region A2.

[0040]

As described above, the lighting instruction means 51 of the information processing device 5 causes the light-emitting member 23 to emit light according to the state of authentication. (End)

[0041]

(Operation and Effects)

According to the imaging unit 2 of the present disclosure, the

CLAIMS

[Claim 1]

An imaging unit comprising:

a camera provided in a gate having a door that opens and closes based on a result of authentication of a face image of an entering user and a guide member provided with the door, the camera capturing the face image;

a housing attached to the guide member and housing the camera; and

a light-emitting member located at at least a part around the camera and capable of emitting light according to a state of the authentication.

[Claim 2]

The imaging unit according to claim 1, wherein

the housing is attached to the guide member with a space, and

light emitted by the light-emitting member travels toward the user through the space.

[Claim 3]

The imaging unit according to claim 1 or 2, wherein

the housing has, at at least a part around the camera, a first region and a second region aligned with the first region in an extending direction of the gate,

the first region is on a lens side of the camera relative to the second region, and

the light-emitting member is capable of emitting light only in the first region out of the first region and the second region during waiting for the authentication.

[Claim 4]

The imaging unit according to claim 3,

wherein the light-emitting member is capable of emitting light in the first region and the second region in a case of failure of the authentication.

[Claim 5]

The imaging unit according to claim 1 or 2,

wherein an optical axis of the light-emitting member is directed toward a center side of the housing.

[Claim 6]

The imaging unit according to claim 5, wherein

the housing has, at at least a part around the camera, a first region and a second region aligned with the first region in an extending direction of the gate,

the first region is on a lens side of the camera relative to the second region, and

among an optical axis of the light-emitting member in the first region and an optical axis of the light-emitting member in the second region, only the optical axis of the light-emitting member in the first region is directed toward the center side of the housing.

[Claim 7]

An information processing device comprising:

lighting instruction means for causing, according to a state of authentication, a light-emitting member of an imaging unit to emit light,

the imaging unit including

a camera provided in a gate having a door that opens and closes based on a result of the authentication of a face image of an entering user and a guide member provided with the door, the camera capturing the face image;

a housing attached to the guide member and housing the camera; and

the light-emitting member located at at least a part around the camera; and

authentication means for performing the authentication.

[Claim 8]

A passage management system comprising:

the information processing device according to claim 7;

the imaging unit; and

the gate.

[Claim 9]

An information processing method comprising:

causing, during waiting for authentication, a light-emitting member located at at least a part around a camera that captures a face image of an entering user and capable of emitting light according to a state of the authentication of the face image to emit light; and

performing the authentication based on the face image.

[Claim 10]

A program for causing a computer to execute:

causing, during waiting for authentication, a light-emitting member located at at least a part around a camera that captures a face image of an entering user and capable of emitting light according to a state of the authentication of the face image to emit light; and

performing the authentication based on the face image.