In view of the above, this present invention provides a face authentication method capable of solving the problem described above, that is, a problem that a face authentication process cannot be performed smoothly when a registered person is together with an accompanying person.

[0007]

A face authentication method, according to one aspect of the present disclosure, is configured to include

extracting a plurality of face images in a captured image,

on the basis of at least one of the face images, when determining whether or not a person of the face image satisfies an exclusion condition of a face authentication process:

detecting an age of a person as an attribute of the person of at least one of the face images based on a distance between persons in the plurality of face images, and

determining whether or not the person satisfies the exclusion condition on a basis of the age, and

excluding the face image of the person satisfying the exclusion condition, and performing the face authentication process on another one of the face images to authenticate whether or not a person of the other one of the face images is a registered person.

[0008]

Further, a face authentication device, according to one aspect of the present disclosure, is configured to include

an extraction means for extracting a plurality of face images in a captured image,

a determination means for, on the basis of at least one of the face images, when determining whether or not a person of the face image satisfies an exclusion condition of a face authentication process:

detecting an age of a person as an attribute of the person of at least one of the face images based on a distance between persons in the plurality of face images, and

determining whether or not the person satisfies the exclusion condition on a basis of the age, and

an authentication means for excluding the face image of the person satisfying the exclusion condition, and performing the face authentication process on another one of the face

images to authenticate whether or not a person of the other one of the face images is a registered person.

[0009]

Further, a program, according to one aspect of the present disclosure, is configured to cause an information processing device to implement

an extraction means for extracting a plurality of face images in a captured image,

a determination means for, on the basis of at least one of the face images, when determining whether or not a person of the face image satisfies an exclusion condition of a face authentication process:

detect an age of a person as an attribute of the person of at least one of the face images based on a distance between persons in the plurality of face images, and

determine whether or not the person satisfies the exclusion condition on a basis of the age, and

an authentication means for excluding the face image of the person satisfying the exclusion condition, and performing the face authentication process on another one of the face images to authenticate whether or not a person of the other one of the face images is a registered person.

[0010]

With the configurations described above, the present invention enables a face authentication process to be performed smoothly when a registered person is together with an accompanying person.

BRIEF DESCRIPTION OF DRAWINGS

[0011]

Fig. 1 illustrates the overall configuration and an example of a used state of a face authentication system according to a first exemplary embodiment of the present invention.

CLAIMS

1. A face authentication method comprising:

extracting a plurality of face images in a captured image;

on a basis of at least one of the face images, when determining whether or not a person of the face image satisfies an exclusion condition of a face authentication process:

detecting an age of a person as an attribute of the person of at least one of the face images based on a distance between persons in the plurality of face images, and

determining whether or not the person satisfies the exclusion condition on a basis of the age; and

excluding the face image of the person satisfying the exclusion condition, and performing the face authentication process on another one of the face images to authenticate whether or not a person of the other one of the face images is a registered person.

2. The face authentication method according to claim 1, further comprising

on the basis of at least one of the face images, detecting an attribute of the person of the face image, and determining whether or not the person satisfies the exclusion condition on a basis of the attribute.

3. The face authentication method according to claim 2, further comprising

on the basis of at least one of the face images, detecting age of the person of the face image, and determining whether or not the person satisfies the exclusion condition on a basis of the age.

4. The face authentication method according to claim 3, further comprising

determining that the person satisfies the exclusion condition when the age of the person of the face image is an age that is determined to be a child according to a preset reference.

5. The face authentication method according to any of claims 1 to 4, further comprising

before performing calculation of a feature amount on the face image required for the face authentication process, determining whether or not the person of the face image satisfies the exclusion condition on a basis of the face image.

6. The face authentication method according to any of claims 1 to 5, further comprising

performing control to open a predetermined gate when the face authentication process succeeded, the face authentication process being performed on at least one of the face images among the plurality of face images simultaneously extracted from a captured image excluding the face image of the person satisfying the exclusion condition.

7. The face authentication method according to claim 1, further comprising

when two face images are located within a predetermined distance range, detecting that the age of the person included in one of the two face images is an adult and the age of the person included in the other face image is a child.

8. A face authentication device comprising:

extraction means for extracting a plurality of face images in a captured image;

determination means for, on a basis of at least one of the face images, when determining whether or not a person of the face image satisfies an exclusion condition of a face authentication process:

detecting an age of a person as an attribute of the person of at least one of the face images based on a distance between persons in the plurality of face images, and

determining whether or not the person satisfies the exclusion condition on a basis of the age; and

authentication means for excluding the face image of the person satisfying the exclusion condition, and performing the face authentication process on another one of the face images to authenticate whether or not a person of the other one of the face images is a registered person.

9. A computer-readable medium storing thereon a program for causing an information processing device to execute processing to:

extract a plurality of face images in a captured image;

on a basis of at least one of the face images, when determining whether or not a person of the face image satisfies an exclusion condition of a face authentication process:

detect an age of a person as an attribute of the person of at least one of the face images based on a distance between persons in the plurality of face images, and

determine whether or not the person satisfies the exclusion condition on a basis of the age; and

exclude the face image of the person satisfying the exclusion condition, and perform the face authentication process on another one of the face images to authenticate whether or not a person of the other one of the face images is a registered person.