PATENT DOCUMENT

[0005]

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SUMMARY OF THE INVENTION

TECHNICAL PROBLEM

[0006]

The present inventor has examined a new technique for identifying a person who cannot be identified in an original image by using image processing on other images. In other words, embodiments of this disclosure provide a technique for identifying a person who cannot be identified in an original image by using image processing on other images.

SOLUTION TO PROBLEM

[0007]

In each aspect of this disclosure, the following embodiments are employed to solve the above-described problem.

[0008]

According to a first aspect, there is provided an information processing apparatus including: an acquisition unit that acquires a first image in which a face is not captured, and from which person region feature information regarding a region including other than a face of a retrieval target person is extracted, a second image in which a first collation result in a first collation process of collating with the person region feature information indicates a match, and in which a facial region is detected from a person region of the person region information in which the first collation result indicates the match, and result information indicating a second collation result in a second collation process of collating between at least one registered face information stored in association with information of at least one specific person in a storage unit and face information extracted from the facial region in the second image; and a display processing unit that displays at least two of the first image, the second image, and the result information on an identical screen, and wherein the storage unit stores the at least one registered face information of the at least one specific person and the information of the at least one specific person, associated with each other, for each specific person, and wherein the result information includes at least one of: a matching degree indicating in the second collation result of being equal to or more than a reference; and the information regarding the specific person, the specific person indicating in the second collation result of being equal to or more than the reference.

According to a second aspect, there is provided an information processing apparatus including: an acquisition unit that acquires a second image in which a first collation result in a first collation process of collating with person region feature information regarding a region including other than a face of a retrieval target person indicates a match, and a facial region is detected from a person region of the person region information in which the first collation result indicates the match, and result information indicating a second collation result in a second collation process of collating between at least one registered face information stored in association with information of at least one specific person in a storage unit and face information extracted from the facial region in the second image; and a display processing unit that displays the acquired second image and result information on an identical screen, and wherein the storage unit stores the at least one registered face information of the at least one specific person and the information of the at least one specific person, associated with each other, for each specific person, and wherein the result information includes at least one of: a matching degree indicating in the second collation result of being equal to or more than a reference; and the information

regarding the specific person, the specific person indicating in the second collation result of being equal to or more than the reference.

According to a third aspect, there is provided an information processing apparatus including: an acquisition unit that acquires a first image in which a face is not captured, and from which person region feature information regarding a region including other than a face of a retrieval target person is extracted, and result information indicating a second collation result in a second collation process of collating between face information extracted from a second image in which a first collation result in a first collation process of collating with the person region feature information indicates a match, and at least one registered face information stored in association with information of at least one specific person in a storage unit; and a display processing unit that displays the acquired first image and result information on an identical screen, and wherein the storage unit stores the at least one registered face information of the at least one specific person and the information of the at least one specific person, associated with each other, for each specific person, and wherein the result information includes at least one of: a matching degree indicating in the second collation result of being equal to or more than a reference; and the information regarding the specific person, the specific person indicating in the second collation result of being equal to or more than the reference.

[0009]

According to a fourth aspect, there is provided an information processing method executed by an information processing apparatus, the method including: acquiring a first image in which a face is not captured, and used to generate person region feature information indicating a feature of a retrieval target person, a second image in which a first collation result in a first collation process of collating with the person region feature information indicates a match, and in which a facial region is detected from a person region of the person region information in which the first collation result indicates the match, and result information indicating a second collation result in a second collation process of collating between at least one registered face information stored in association with information of at least one specific person in a storage unit and face information extracted from the facial region in the second image; and displaying at least two of the first image, the second image, and the result information on an identical screen, and wherein the storage unit stores the at least one registered face information of the at least one specific person and the information of the at least one specific person, associated with each other, for each specific person, and wherein the result information includes at least one of: a matching degree indicating in the second collation result of being equal to or more than a reference; and the information regarding the specific person, the specific person indicating in the second collation result of being equal to or more than the reference.

Disclosed herein is an information processing method executed by an information processing apparatus, the method including: acquiring a second image in which a collation result with person region feature information regarding a region including other than a face of a retrieval target person indicates a match, and a facial region is detected, and result information indicating a collation result between face information stored in a storage unit and face information extracted from the facial region; and displaying the acquired second image and result information on an identical screen.

Disclosed herein is an information processing method executed by an information processing apparatus, the method including: acquiring a first image from which person region feature information regarding a region including other than a face of a retrieval target person is extracted, and result information indicating a collation result between face information extracted from a second image in which a collation result with the person region feature information indicates a match, and a face information stored in a storage unit; and displaying the acquired first image and result information on an identical screen.

[0010]

According to a fifth aspect, there is provided a recording medium having recorded thereon a program causing a computer to execute: a procedure of acquiring a first image in which a face is not captured, and used to generate person region feature information indicating a feature of a retrieval target person, a second image in which a first collation result in a first collation process of collating with the person region feature information indicates a match, and in which a facial region is detected from a person region of the person region information in which the first collation result indicates the match, and result information indicating a second collation result in a second collation process of collating between at least one registered face information stored in association with information of at least one specific person in a storage unit and face information extracted from the facial region in the second image; and a procedure of displaying at least two of the first image, the second image, and the result information on an identical screen, and wherein the storage unit stores the at least one registered face information of the at least one specific person and the information of the at least one specific person, associated with each other, for each specific person, and wherein the result information includes at least one of: a matching degree indicating in the second collation result of being equal to or more than a reference; and the information regarding the specific person, the specific person indicating in the second collation result of being equal to or more than the reference.

The recording medium includes a non-transitory medium.

Disclosed herein is a computer program including computer program codes causing a computer to execute the control method of the information processing apparatus on the information processing apparatus when the program is executed by the computer.

[0011]

It should be noted that any combination of the above-described constituent elements, and expressional conversion of this disclosure among a method, an apparatus, a system, a storage medium, a computer program, and the like is also effective as an aspect of this disclosure.

[0012]

Various constituent elements of this disclosure are not necessarily required to be individually independent elements. For example, a plurality of constituent elements may be configured as a single member, a single constituent element may be configured with a plurality of members, any constituent element may be a part of another constituent element, and a part of any constituent element may overlap a part of another constituent element.

[0013]

A plurality of procedures are sequentially described in the method and the computer program of this disclosure, but the order of description does not limit an order of executing the plurality of procedures. Thus, in a case where the method and the computer program of this disclosure are executed, the order of the plurality of procedures may be changed within the scope without contradiction to contents thereof.

[0014]

The plurality of procedures of the method and the computer program of this disclosure are not limited to being respectively executed at different timings. Thus, another procedure may occur during execution of any procedure, and an execution timing of any procedure may partially or entirely overlap an execution timing of another procedure.

ADVANTAGEOUS EFFECTS OF INVENTION

[0015]

According to each aspect above, it is possible to provide a technique for identifying a person who cannot be identified in an original image by using image processing on other images.

BRIEF DESCRIPTION OF THE DRAWINGS

CLAIMS

1. An information processing apparatus comprising:

an acquisition unit that acquires

a first image in which a face is not captured, and from which person region feature information regarding a region including other than a face of a retrieval target person is extracted,

a second image in which a first collation result in a first collation process of collating with the person region feature information indicates a match, and in which a facial region is detected from a person region of the person region information in which the first collation result indicates the match, and

result information indicating a second collation result in a second collation process of collating between at least one registered face information stored in association with information of at least one specific person in a storage unit and face information extracted from the facial region in the second image; and

a display processing unit that displays at least two of the first image, the second image, and the result information on an identical screen, and

wherein the storage unit stores the at least one registered face information of the at least one specific person and the information of the at least one specific person, associated with each other, for each specific person, and

wherein the result information includes at least one of:

a matching degree indicating in the second collation result of being equal to or more than a reference; and

the information regarding the specific person, the specific person indicating in the second collation result of being equal to or more than the reference.

2. An information processing apparatus comprising:

an acquisition unit that acquires

a second image in which a first collation result in a first collation process of collating with person region feature information regarding a region including other than a face of a retrieval target person indicates a match, and a facial region is detected from a person region of the person region information in which the first collation result indicates the match, and

result information indicating a second collation result in a second collation

process of collating between at least one registered face information stored in association with information of at least one specific person in a storage unit and face information extracted from the facial region in the second image; and

a display processing unit that displays the acquired second image and result information on an identical screen, and

wherein the storage unit stores the at least one registered face information of the at least one specific person and the information of the at least one specific person, associated with each other, for each specific person, and

wherein the result information includes at least one of:

a matching degree indicating in the second collation result of being equal to or more than a reference; and

the information regarding the specific person, the specific person indicating in the second collation result of being equal to or more than the reference.

3. An information processing apparatus comprising:

an acquisition unit that acquires

a first image in which a face is not captured, and from which person region feature information regarding a region including other than a face of a retrieval target person is extracted, and

result information indicating a second collation result in a second collation process of collating between face information extracted from a second image in which a first collation result in a first collation process of collating with the person region feature information indicates a match, and at least one registered face information stored in association with information of at least one specific person in a storage unit; and

a display processing unit that displays the acquired first image and result information on an identical screen, and

wherein the storage unit stores the at least one registered face information of the at least one specific person and the information of the at least one specific person, associated with each other, for each specific person, and

wherein the result information includes at least one of:

a matching degree indicating in the second collation result of being equal to or more than a reference; and

the information regarding the specific person, the specific person indicating in the second

collation result of being equal to or more than the reference.

4. The information processing apparatus according to any one of claims 1 to 3,

wherein the acquisition unit acquires a plurality of the second images, and

wherein the display processing unit displays the result information for each of the plurality of acquired second images.

5. The information processing apparatus according to any one of claims 1, 3, and claim 4 citing claim 1 or 3,

wherein the display processing unit displays the first image, the second image, the result information on an identical screen.

6. The information processing apparatus according to any one of claims 1 and 3; and claims 4 and 5 which cite claim 1 or 3,

wherein the display processing unit displays the first image and the second image on an identical screen.

7. The information processing apparatus according to claim 6,

wherein the acquisition unit acquires a plurality of the second images, and

wherein in a case where a selection operation of selecting at least one image from among the plurality of second images is received, the display processing unit displays the result information for the selected second image.

8. An information processing method executed by an information processing apparatus, the method comprising:

acquiring

a first image in which a face is not captured, and used to generate person region feature information indicating a feature of a retrieval target person,

a second image in which a first collation result in a first collation process of collating with the person region feature information indicates a match, and in which a facial region is detected from a person region of the person region information in which the first collation result indicates the match, and

result information indicating a second collation result in a second collation process of collating between at least one registered face information stored in

association with information of at least one specific person in a storage unit and face information extracted from the facial region in the second image; and

displaying at least two of the first image, the second image, and the result information on an identical screen, and

wherein the storage unit stores the at least one registered face information of the at least one specific person and the information of the at least one specific person, associated with each other, for each specific person, and

wherein the result information includes at least one of:

a matching degree indicating in the second collation result of being equal to or more than a reference; and

the information regarding the specific person, the specific person indicating in the second collation result of being equal to or more than the reference.

9. A recording medium having recorded thereon a program causing a computer to execute:

a procedure of acquiring

a first image in which a face is not captured, and used to generate person region feature information indicating a feature of a retrieval target person,

a second image in which a first collation result in a first collation process of collating with the person region feature information indicates a match, and in which a facial region is detected from a person region of the person region information in which the first collation result indicates the match, and

result information indicating a second collation result in a second collation process of collating between at least one registered face information stored in association with information of at least one specific person in a storage unit and face information extracted from the facial region in the second image; and

a procedure of displaying at least two of the first image, the second image, and the result information on an identical screen, and

wherein the storage unit stores the at least one registered face information of the at least one specific person and the information of the at least one specific person, associated with each other, for each specific person, and

wherein the result information includes at least one of:

a matching degree indicating in the second collation result of being equal to or more than a reference; and

the information regarding the specific person, the specific person indicating in the second

collation result of being equal to or more than the reference.

10. The information processing apparatus according to any one of claims 1 to 7,

wherein the result information includes the information regarding a plurality of specific persons indicating in the second collation result of being equal to or more than the reference.

11. The information processing apparatus according to claim 10,

wherein the result information includes the information regarding predetermined number of specific persons from among the plurality of specific persons indicating in the second collation result of being equal to or more than the reference.

12. The information processing apparatus according to claim 10 or 11,

wherein the result information includes the information regarding the plurality of specific persons indicating in the second collation result of being equal to or more than the reference in a descending order of the matching degree.