SUMMARY

[0004]

Incidentally, in the above-described image-processing device, a group of images of newly acquired forms is specified and a process is performed in accordance with the specified group. For example, when a form image used for a customs service is determined to be a form image specified in a predetermined group, a registered customs specialist is requested to perform work of a customs service based on the form images. When the form image is not determined to be the form image specified in the predetermined group, an operator such as a key puncher who creates a form image is requested to re-perform registration or the like of character information so that the form image is suitable as a form image used for customs work. In a device performing such a process, a process of specifying a group of images of forms is performed using a machine learning result of the images.

However, a group of images of forms for which precision of the machine learning is low or images of forms for which no machine learning has been performed cannot be specified. For images of forms of which such a group cannot be specified, it is necessary for an operator who performs machine learning (the above-described key puncher or the like) to perform work. However, due to the effort required to perform the work, it is necessary to present the work to the operator as work to be performed with priority by the operator

[0005]

An example objective of the present disclosure is to provide an image-processing device, an image processing method, and a program capable of solving the above-described problems.

[0006]

According to a first aspect of the present disclosure, an image-processing device includes: an acquisition means for acquiring form image data, including a recorded character string that is a target of being recorded in a memory and a non-recorded character string that is not the target of being recorded in the memory, generated as an optical reading result of a form image; a group-specifying means for determining whether feature amount of the non-recorded character string of any of kind of groups is identified based on the acquired form image data, from among a plurality of kinds of groups each having the feature amount of attributes and coordinates of non-recorded character strings of a plurality of pieces of form image data, determining that a kind of groups into which the acquired form image data is grouped is specifiable when the feature amount of the non-recorded string is identified, and determining that the kind of groups is unspecifiable when the feature amount of the non-recorded string is not identified; and a work target determination means for determining that the form image data is the form image data on which checking work for the kind of groups is required when the kind of groups of the acquired form image data is determined to be unspecifiable, the checking work indicating a process to acquire the feature amount of the form image data.

[0007]

According to a second aspect of the present disclosure, an image processing method includes: acquiring form image data, including a recorded character string that is a target of being recorded in a memory and a non-recorded character string that is not the target of being recorded in the memory, generated as an optical reading result of a form image; determining whether feature amount of the non-recorded character string of any

of kind of groups is identified based on the acquired form image data, from among a plurality of kinds of groups each having the feature amount of attributes and coordinates of non-recorded character strings of a plurality of pieces of form image data; determining that a kind of groups into which the acquired form image data is grouped is specifiable when the feature amount of the non-recorded string is identified, and determining that the kind of groups is unspecifiable when the feature amount of the non-recorded string is not identified; and determining that the form image data is the form image data on which checking work for the kind of groups is required when the kind of groups of the acquired form image data is determined to be unspecifiable, the checking work indicating a process to acquire the feature amount of the form image data.

[0008]

According to a third aspect of the present disclosure, a non-transitory computer readable storage medium stores a program causing a computer of an image-processing device to perform processing of: acquiring form image data, including a recorded character string that is a target of being recorded in a memory and a non-recorded character string that is not the target of being recorded in the memory, generated as an optical reading result of a form image; determining whether feature amount of the non-recorded character string of any of kind of groups is identified based on the acquired form image data, from among a plurality of kinds of groups each having the feature amount of attributes and coordinates of non-recorded character strings of a plurality of pieces of form image data; determining that a kind of groups into which the acquired form image data is grouped is specifiable when the feature amount of the non-recorded string is identified, and determining that the kind of groups is unspecifiable when the feature amount of the non-recorded string is not identified; and determining that the form image data is the form image data on which checking work for the kind of groups is

required when the kind of groups of the acquired form image data is determined to be unspecifiable, the checking work indicating a process to acquire the feature amount of the form image data.

[0009]

According to embodiments of the present disclosure, it is possible to output the work for checking an image of a form of which a group cannot be specified as work to be preliminarily performed by the operator.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010]

Fig. 1 is a diagram illustrating an overview of an image processing system including an image-processing device according to an embodiment according to the present invention.

Fig. 2 is a diagram illustrating a hardware configuration of the image-processing device according to the embodiment according to the present invention.

Fig. 3 is a first diagram illustrating a functional block of an image-processing device according to the embodiment according to the present invention.

Fig. 4 is a diagram illustrating an example of a document form according to the embodiment according to the present invention.

Fig. 5 is a diagram illustrating an overview of a data table stored in a database according to the embodiment according to the present invention.

Fig. 6 is a first diagram illustrating a processing flow of the image-processing device according to the embodiment according to the present invention.

Fig. 7 is a second diagram illustrating a processing flow of the image-processing device according to the embodiment according to the present invention.

Fig. 8 is a second diagram illustrating a functional block of the image-

CLAIMS

1. An image-processing device comprising:

an acquisition means for acquiring form image data, including a recorded character string that is a target of being recorded in a memory and a non-recorded character string that is not the target of being recorded in the memory, generated as an optical reading result of a form image;

a group-specifying means for determining whether feature amount of the non-recorded character string of any of kind of groups is identified based on the acquired form image data, from among a plurality of kinds of groups each having the feature amount of attributes and coordinates of non-recorded character strings of a plurality of pieces of form image data, determining that a kind of groups into which the acquired form image data is grouped is specifiable when the feature amount of the non-recorded string is identified, and determining that the kind of groups is unspecifiable when the feature amount of the non-recorded string is not identified; and

a work target determination means for determining that the form image data is the form image data on which checking work for the kind of groups is required when the kind of groups of the acquired form image data is determined to be unspecifiable, the checking work indicating a process to acquire the feature amount of the form image data.

2. The image-processing device according to claim 1, wherein, based on a machine learning result of the form image data, the group-specifying means is configured to determine whether the kind of groups of the form image data is specifiable.

3. The image-processing device according to claim 1 or 2, further comprising:

a work data generation means for generating work data, which is a procedure of works related to the form image data, indicating that the form image data on which the checking work is required is output to a terminal used by an operator , before the form image data on which the checking work is not required is output to the terminal.

4. The image-processing device according to claim 3, wherein the work data generation means is configured to generate the work data in which a priority of the form image data on which the checking work is required is higher than the priority of the form image data on which the checking work is not required.

5. The image-processing device according to claim 3 or 4, further comprising:

a grouping means for grouping the kind of groups to which the form image data on which the checking work is required belongs by grouping the plurality of pieces of form image data into the plurality of kinds of groups based on correlation or similarity of feature amounts between the plurality of pieces of form image data, in response to an operation in the checking work by the operator.

6. The image-processing device according to any one of claims 3 to 5, wherein the work data generation means is configured to determining a number of pieces of form image data necessary for analysis of the feature amounts among the plurality of pieces of form image data on which the checking work is required, and generate the work data which indicates that the determined number of pieces of form image data is output to the operator in order of a work number.

7. An image processing method comprising:

acquiring form image data, including a recorded character string that is a target of being recorded in a memory and a non-recorded character string that is not the target of being recorded in the memory, generated as an optical reading result of a form image;

determining whether feature amount of the non-recorded character string of any of kind of groups is identified based on the acquired form image data, from among a plurality of kinds of groups each having the feature amount of attributes and coordinates of non-recorded character strings of a plurality of pieces of form image data;

determining that a kind of groups into which the acquired form image data is grouped is specifiable when the feature amount of the non-recorded string is identified, and determining that the kind of groups is unspecifiable when the feature amount of the non-recorded string is not identified; and

determining that the form image data is the form image data on which checking work for the kind of groups is required when the kind of groups of the acquired form image data is determined to be unspecifiable, the checking work indicating a process to acquire the feature amount of the form image data.

8. A non-transitory computer-readable storage medium that stores a program causing a computer of an image-processing device to perform processing of:

acquiring form image data, including a recorded character string that is a target of being recorded in a memory and a non-recorded character string that is not the target of being recorded in the memory, generated as an optical reading result of a form image;

determining whether feature amount of the non-recorded character string of any of kind of groups is identified based on the acquired form image data, from among a plurality of kinds of groups each having the feature amount of attributes and coordinates of non-recorded character strings of a plurality of pieces of form image data;

determining that a kind of groups into which the acquired form image data is grouped is specifiable when the feature amount of the non-recorded string is identified, and determining that the kind of groups is unspecifiable when the feature amount of the non-recorded string is not identified; and

determining that the form image data is the form image data on which checking work for the kind of groups is required when the kind of groups of the acquired form image data is determined to be unspecifiable, the checking work indicating a process to acquire the feature amount of the form image data.