CLAIMS

1. A face image retrieval method, applied to a photographing apparatus, the method comprising:

obtaining to-be-retrieved face information corresponding to a to-be-retrieved image by a convolutional neural network, the convolutional neural network being configured with corresponding convolution calculation configuration information by a processor, the convolutional neural network comprising at least one convolutional layer, the convolution calculation configuration information comprising a data bit width value corresponding to each convolutional layer in the convolutional neural network, and the to-be-retrieved image comprising at least one face region;

searching a database for matched preset face image information that matches the to-be-retrieved face information, the database storing at least one piece of preset face image information; and

outputting the preset face image information that matches the to-be-retrieved face information.

2. The method according to claim 1, wherein the obtaining to-be-retrieved face information corresponding to a to-be-retrieved image by a convolutional neural network comprises:

reading the to-be-retrieved image from a front-end memory according to the convolution calculation configuration information, a bit width of the to-be-retrieved image being equal to the data bit width value; and

performing convolution calculation on the to-be-retrieved image by the convolutional neural network to obtain the to-be-retrieved face information.

3. The method according to claim 1 or 2, wherein the convolution calculation configuration information further comprises: a convolution kernel size corresponding to each convolutional layer in the convolutional neural network, or a storage address of the to-be-retrieved image, wherein the to-be-retrieved image is read from the storage address of the to-be-retrieved image in the front-end memory.

4. The method according to claim 3, wherein the performing convolution calculation

on the to-be-retrieved image by the convolutional neural network to obtain the to-be-retrieved face information comprises:

performing convolution calculation on the to-be-retrieved image by a current convolutional layer to obtain a feature map, the current convolutional layer being one of the convolutional layers in the convolutional neural network;

in response to the presence of a next convolutional layer, using the next convolutional layer as the current convolutional layer, using the feature map as the to-be-retrieved image, and iteratively executing following operations until no next convolutional layer exists: the reading the to-be-retrieved image from the front-end memory according to the convolution calculation configuration information configured for the current convolutional layer in the convolutional neural network, and the performing convolution calculation on the to-be-retrieved image by the current convolutional layer to obtain the feature map; and

outputting the feature map to obtain the to-be-retrieve face information.

5. The method according to claim 4, further comprising: after obtaining the feature map,

writing the feature map into the front-end memory.

6. The method according to claim 5, wherein the convolution calculation configuration information further comprises an offset address, wherein the method further comprises: after the performing convolution calculation on the to-be-retrieved image by the current convolutional layer to obtain the feature map,

configuring a storage address of input data corresponding to the next convolutional layer according to the storage address of the input data and the offset address, the input data being to-be-retrieved image data received by the current convolutional layer; and

correspondingly, the writing the feature map into the front-end memory comprises:

writing the feature map into the storage address of the input data corresponding to the next convolutional layer in the front-end memory.

7. The method according to claim 1, further comprising: before the searching a database for matched preset face image information that matches the to-be-retrieved

face information, the method further comprises:

collecting a video stream, and screening the collected video stream based on each face image appearing in the video stream to obtain at least one image, wherein the image comprises face images, and each of the face images corresponds to at least one image;

performing quality screening on the at least one image to obtain at least one first image, the at least one first image being an image with face image quality reaching a set threshold, and each of the at least one first image comprising one face image; and

storing the at least one piece of preset face image information corresponding to the at least one first image into the database.

8. The method according to claim 7, wherein the at least one first image further comprises a background image, and the background image is configured to identify a location where the face image appears in the at least one first image.

9. The method according to claim 7 or 8, further comprising: before the storing the at least one piece of preset face image information corresponding to the at least one first image into the database,

processing the at least one first image by the convolutional neural network to obtain the corresponding at least one piece of preset face image information; and

obtaining corresponding at least one type of attribute information based on the at least one piece of preset face image information, and classifying and storing the at least one piece of preset face image information based on the at least one type of attribute information, each piece of preset face image information comprising at least one type of attribute information.

10. The method according to claim 9, wherein the obtaining corresponding at least one type of attribute information based on the at least one piece of preset face image information, and classifying and storing the at least one piece of preset face image information based on the at least one type of attribute information comprises:

receiving inputted at least one first image with image quality exceeding the set threshold and at least one piece of relevant information corresponding to the at least one first image; and

establishing the corresponding at least one type of attribute information for the at least one first image based on the at least one piece of relevant information, and storing the at least one piece of preset face image information corresponding to the at least one first image into the database based on the at least one type of attribute information.

11. The method according to claim 10, wherein the storing the at least one piece of preset face image information corresponding to the at least one first image into the database based on the at least one type of attribute information comprises:

storing all preset face image information having same attribute information in the at least one piece of preset face image information into one data item, and establishing an index for the data item in the database based on the attribute information; and

the method further comprises:

obtaining a collection time value of collecting each image, and sequentially storing the data items into the database according to the collection time values.

12. The method according to claim 11, wherein storing the preset face image information corresponding to the first image into the database comprises:

searching, based on attribute information corresponding to the first image, the database for determining whether a corresponding data item exists; and

when a data item corresponding to the attribute information exists in the database, storing the preset face image information into the corresponding data item; and when no data item corresponding to the attribute information exists in the database, creating a new data item for the attribute information, and storing the preset face image information into the new data item.

13. The method according to claim 7, wherein the screening the collected video stream based on each face image appearing in the video stream to obtain at least one image comprises:

decomposing the collected video stream into at least one decomposed image, and optimizing the at least one decomposed image to obtain an intermediate image with optimized image display effect; and

performing face recognition on all the intermediate images based on the

convolutional neural network, and obtaining the at least one image having a face image by screening based on a result of the face recognition.

14. The method according to claim 13, wherein the performing face recognition on all the intermediate images based on the convolutional neural network comprises:

performing face recognition based on the convolutional neural network to obtain preset face recognition information, and evaluating the quality of the face image in the at least one image through the preset face recognition information.

15. The method according to claim 14, wherein the performing quality screening on the at least one image to obtain at least one first image comprises:

performing quality screening on the face image in the at least one image based on the preset face recognition information corresponding to the at least one image, and storing the image with face image quality reaching the preset threshold as the at least one first image.

16. The method according to claim 11, wherein the searching a database for matched preset face image information that matches the to-be-retrieved face information comprises:

obtaining the attribute information corresponding to the to-be-retrieved image based on the to-be-retrieved face information, and searching, based on the attribute information, the database for determining whether a conformed data item exists;

when a data item conforming to the attribute information exists, obtaining the matched preset face image information from the conformed data item; and

when no data item conforming to the attribute information exists, feeding back information indicating that no match result exists.

17. The method according to claim 7, wherein the performing quality screening on the at least one image to obtain at least one first image comprises:

performing automatic exposure, automatic white balance, and 3D de-noise processing on the at least one image to obtain the at least one first image with display effect being optimized.

18. A photographing apparatus, comprising:

a processor, configured to configure corresponding convolution calculation

configuration information for a convolutional neural network, the convolutional neural network comprising at least one convolutional layer, and the convolution calculation configuration information comprising a data bit width value corresponding to each convolutional layer in the convolutional neural network;

a convolution calculation section, configured to obtain to-be-retrieved face information corresponding to a to-be-retrieved image by the convolutional neural network, the to-be-retrieved image comprising at least one face region; and

a retrieval section, configured to: search a database for preset face image information that matches the to-be-retrieved face information, the database storing at least one piece of preset face image information; and output the preset face image information that matches the to-be-retrieved face information.

19. A computer storage medium, configured to store computer-readable instructions, wherein when the instructions are executed, operations of the face image retrieval method according to any one of claims 1 to 17 are executed.

20. A computer program, comprising a computer readable code, wherein running of the computer readable code on a device cause a processor in the device to execute instructions for implementing the face image retrieval method according to any one of claims 1 to 17.