CLAIMS

1. An identification (ID) document authentication method, comprising:

aligning a first ID document image and a second ID document image;

cropping a first region of interest from the aligned first ID document image, wherein the first region of interest comprises a multi-angle security feature;

searching the aligned second ID document image to locate a second region of interest that corresponds to the first region of interest, wherein searching the aligned second ID document image comprises varying a size of a search window in a first set of steps, wherein each step in the first set of steps comprises varying a position of the search window in a second set of steps;

calculating a similarity score between the first region of interest and the second region of interest; and

determining the authenticity of the ID document based on a comparison between the similarity score and a similarity threshold, wherein the ID document is authenticated in response to determining that the similarity score is lower than the similarity threshold.

2. The method as claimed in claim 1, wherein the first ID document image and the second ID document image are images of an ID document captured at different angles.

3. The method as claimed in claim 1 or 2, wherein aligning a first ID document image and a second ID document image comprises:

performing image regression of the first ID document image to determine first coordinates of four corner points of the first ID document image;

performing the image regression of the second ID document image to determine second coordinates of four corner points of the second ID document image;

performing image warping of the first ID document image based on the first coordinates of four corner points; and

performing the image warping of the second ID document image based on the second coordinates of four corner points.

4. The method as claimed in any one of the preceding claims, wherein cropping the first region of interest from the aligned first ID document image comprises:

determining an ID document type based on a classification model;

selecting an ID document template corresponding to the determined ID document type;

defining a frame based on the identified ID document template; and

cropping the first region of interest from the aligned first ID document image based on the defined frame.

5. The method as claimed in any one of the preceding claims, wherein varying the size of the search window in the first set of steps further comprises varying the size of the search window based on size ratios between the first region of interest and the second region of interest.

6. The method as claimed in any one of the preceding claims, wherein a comparison score is calculated at each step of the second set of steps, and wherein a highest comparison score is output as the similarity score.

7. The method as claimed in claim 6, wherein calculating the comparison score comprises:

converting the first region of interest to a first grayscale image, wherein the first grayscale image is represented by a first region of interest greyscale image matrix;

converting the second region of interest to a second grayscale image, wherein the second grayscale image is represented by a second region of interest greyscale image matrix;

performing normalization for the first region of interest greyscale image matrix and the second region of interest greyscale image matrix; and

performing a dot product operation on the normalized first region of interest greyscale image matrix and the normalized second region of interest greyscale image matrix.

8. An identification (ID) document authentication system, comprising:

an alignment device configured to align a first ID document image and a second ID document image;

an image cropping device configured to crop a first region of interest from the aligned first ID document image, wherein the first region of interest comprises a multi-angle security feature;

a search device configured to:

search the aligned second ID document image to locate a second region of interest that corresponds to the first region of interest,

vary a size of a search window in a first set of steps, wherein each step in the first set of steps comprises varying a position of the search window in a second set of steps;

a score calculation device configured to calculate a similarity score between the first region of interest and the second region of interest; and

an authentication device configured to determine the authenticity of the ID document based on a comparison between the similarity score and a similarity threshold, wherein the ID document is authenticated in response to determining that the similarity score is lower than the similarity threshold.

9. The system as claimed in claim 9, wherein the first ID document image and the second ID document image are images of an ID document captured at different angles.

10. The system as claimed in claim 9 or 10, wherein the alignment device is further configured to:

perform image regression of the first ID document image to determine first coordinates of four corner points of the first ID document image;

perform the image regression of the second ID document image to determine second coordinates of four corner points of the second ID document image;

perform image warping of the first ID document image based on the first coordinates of four corner points; and

perform the image warping of the second ID document image based on the second coordinates of four corner points.

11. The system as claimed in any one of claims 9 to 11, wherein the image cropping device is further configured to:

determine an ID document type based on a classification model;

select an ID document template corresponding to the determined ID document type;

define a frame based on the identified ID document template; and

crop the first region of interest from the aligned first ID document image based on the defined frame.

12. The system as claimed in any one of claims 9 to 12, wherein the search device is further configured to vary the size of the search window based on size ratios between the first region of interest and the second region of interest.

13. The system as claimed in any one of claims 9 to 13, wherein the score calculation device is further configured to calculate a comparison score at each step of the second set of steps, and wherein a highest comparison score is output as the similarity score.

14. The system as claimed in claim 14, wherein the score calculation device is further configured to:

convert the first region of interest to a first grayscale image, wherein the first grayscale image is represented by a first region of interest greyscale image matrix;

convert the second region of interest to a second grayscale image, wherein the second grayscale image is represented by a second region of interest greyscale image matrix;

perform normalization for the first region of interest greyscale image matrix and the second region of interest greyscale image matrix; and

perform a dot product operation on the normalized first region of interest greyscale image matrix and the normalized second region of interest greyscale image matrix.