CLAIMS

What is claimed is:

1. A computer-implemented method, comprising:

pairing, for each of a plurality of users, an identity document (ID) face image and a live face image to form a pair of face images;

generating, for each pair of face images, a similarity score for the ID face image based on a face similarity between the ID face image and the live face image in the pair of face images;

ranking the similarity scores corresponding to the ID face images; and

training, based on the ID face images and the ranked similarity scores corresponding to the ID face images, a model for ID face image quality recognition.

2. The method as claimed in claim 1, wherein training a model for ID face image quality recognition comprises training a multiclass classifier.

3. The method as claimed in claim 2, wherein training the multiclass classifier comprises:

dividing the ranked similarity scores into *N* labels of ID face image quality;

assigning the ID face image with a corresponding label; and

training a multiclass classifier of *N* classes based on the ID face images and corresponding labels of the ID face images.

4. The method as claimed in claim 3, wherein dividing the ranked similarity scores into *N* labels is percentile-based.

5. The method as claimed in claim 1, wherein training a model for ID face image quality recognition comprises training a regression model.

6. The method as claimed in any one of the preceding claims, further comprising, prior to generating the similarity score for the ID face image:

determining, for each of the plurality of users, if the live face image meets one or more predetermined standards; and

excluding the live face image in response to determining that the live face image does not meet the one or more predetermined standards.

7. The method as claimed in claim 6, wherein determining if the live face image meets the one or more predetermined standards comprises:

using a no-reference image quality model and/or a face pose estimation model to determine if the live face image meets the one or more predetermined standards; and

excluding the live face image in response to determining that the live face image has a low image quality and/or a face with a non-frontal pose.

8. The method as claimed in any one of the preceding claims, wherein the similarity scores are normally distributed.

9. The method as claimed in any one of the preceding claims, wherein the model is a convolutional neural network (CNN)-based model.

10. The method as claimed in any one of the preceding claims, wherein the live face image comprises a face image collected during biometric authentication or collected during an electronic-Know Your Customer (eKYC) procedure.

11. A method for face image quality recognition, comprising:

receiving an identity document (ID) face image of a user;

inputting the ID face image to a model for ID face image quality recognition, wherein the model is trained according to the method as claimed in any one of claims 1 to 10; and

determining a quality of the ID face image based on an output of the model.

12. The method as claimed in claim 11, wherein the model is a multiclass classifier trained according to the method as claimed in any one of claims 2 to 4, comprising:

inputting the ID face image to the multiclass classifier;

outputting a class for the ID face image; and

determining a quality of the ID face image based on the class.

13. The method as claimed in claim 12, further comprising:

selecting one or more classes of the multiclass classifier as quality recognition criteria; and

automatically rejecting the ID face image in response to the class not being one of the one or more selected classes.

14. A computer-implemented system, comprising:

one or more processors; and

one or more computer-readable memories coupled to the one or more processors and having instructions stored thereon that are executable by the one or more processors to perform the method of any one of claims 1 to 13.

15. An apparatus comprising a plurality of modules for performing the method of any one of claims 1 to 13.