

WHAT IS CLAIMED IS:

1. A system, comprising:
 - at least one computer-readable storage medium including a set of instructions for verifying authenticity of a target ID photo; and
 - at least one processor in communication with the computer-readable storage medium, wherein when executing the set of instructions, the at least one processor is directed to:
 - receive a target identification (ID) photo;
 - access a database of one or more reference ID photos;
 - determine a difference value between a predetermined area on the target ID photo and a predetermined area of one or more target reference ID photos of the one or more reference ID photos in the database, wherein the database of one or more reference ID photos includes one or more structured data, each of the one or more structured data encoding a reference feature vector associated with the predetermined area of a reference ID photo;
 - upon determining that the difference value is less than a threshold value, generate a warning code to indicate that the target ID photo is a fake ID photo.
2. The system of claim 1, wherein to determine the difference value, the at least one processor is further directed to:
 - determine a target feature vector based on one or more features of the predetermined area on the target ID photo;
 - determine the difference value by comparing the target feature vector with the reference feature vector.

3. The system of claim 2, wherein the difference value is a Euclidean distance.

4. The system of claim 2, wherein the at least one processor is further directed to:

divide an ID photo into at least one block, the ID photo being a reference ID photo or the target ID photo;

determine grey scale of one or more pixels in each block;

determine pixel gradient of each block based on the grey scale of the one or more pixels;

determine texture feature of the ID photo based on the pixel gradient of each block; and

store the texture feature of the at least one block to a feature vector in the storage medium, the feature vector being the reference feature vector or the target feature vector.

5. The system of claim 2, wherein the at least one processor is further directed to:

obtain grey scale of a predetermined area of pixels in an ID photo, the ID photo being a reference ID photo or the target ID photo;

determine one or more binary values based on the pixel and the one or more neighbors of the pixel;

determine texture information of the pixel based on the one or more binary values;

determine texture feature of the ID photo based on the texture information of all the pixels of the ID photo; and

store the texture feature of the at least one block to a feature vector in the storage medium, the feature vector being the reference feature vector or the target feature vector.

6. The system of claim 2, wherein the at least one processor is further directed to:

determine face feature by a trained convolutional neural network, wherein the predetermined area of the target ID photo includes a portrait area.

7. The system of claim 2, wherein the at least one processor is further directed to:

determine fake ID feature by a trained convolutional neural network,
wherein a trained convolutional neural network is trained, by at least one computer, with a plurality of reference fake ID photos.

8. The system of claim 2, wherein the at least one processor is further directed to establish the database of reference ID photos, including:

to access in the database via a data bus of an online platform to read data of the one or more reference ID photos;

to generate the reference feature vector for each of the one or more reference ID photos based on a reference feature of each of the one or more reference ID photos;

to generate a cluster number based on the reference feature vector;

for each of the one or more reference ID photos, to direct a read/write equipment to add the cluster number encoding the corresponding ID photo.

9. A method for approving a request, comprising:

receiving, by at least one computer, a target identification (ID) photo;
accessing, by the at least one computer, a database of one or more reference ID photos;
determining, by the at least one computer, a difference value between a predetermined area on the target ID photo and a predetermined area of one or more target reference ID photos of the one or more reference ID photos in the database, wherein the database of one or more reference ID photos includes one or more structured data, each of the one or more structured data encoding a reference feature vector associated with the predetermined area of a reference ID photo;
upon determining that the difference value is less than a threshold value, generating, by the at least one computer, a warning code to indicate that the target ID photo is a fake ID photo.

10. The method of claim 9, wherein the determining of the difference value includes:

determining a target feature vector based on one or more features of the predetermined area on the target ID photo;
determining the difference value by comparing the target feature vector with a reference feature vector.

11. The method of claim 10, wherein the difference value is a Euclidean distance.

12. The method of claim 10, further comprising:

dividing, by the at least one computer, an ID photo into at least one block, the ID photo being a reference ID photo or the target ID photo;

determining, by the at least one computer, grey scale of one or more pixels in each block;

determining, by the at least one computer, pixel gradient of each block based on the grey scale of the one or more pixels;

determining, by the at least one computer, texture feature of the ID photo based on the pixel gradient of each block; and

storing, by the at least one computer, the texture feature of the at least one block to a feature vector in a storage medium, the feature vector being the reference feature vector or the target feature vector.

13. The method of claim 10, further comprising:

obtaining, by the at least one computer, grey scale of a predetermined area of pixels in an ID photo, the ID photo being a reference ID photo or the target ID photo;

determining, by the at least one computer, one or more binary values between the pixel and the one or more neighbors of the pixel;

determine, by the at least one computer, texture information of the pixel based on the one or more binary values;

determine, by the at least one computer, texture feature of the ID photo based on the texture information of all the pixels of the ID photo; and

storing, by the at least one computer, the texture feature of the at least one block to a feature vector in a storage medium, the feature vector being the reference feature vector or the target feature vector.

14. The method of claim 10, further comprising:

determining, by the at least one computer, face feature by a trained convolutional neural network, wherein the predetermined area of the target ID

photo includes a portrait area.

15. The method of claim 10, further comprising:

determining, by the at least one computer, fake ID feature by a trained convolutional neural network,

wherein a trained convolutional neural network is trained, by the at least one computer, with a plurality of reference fake ID photos.

16. The method of claim 10, further comprising establishing the database of reference ID photos, which including:

accessing, by the at least one computer, in the database via a data bus of an online platform to read data of the one or more reference ID photos;

determining, by the at least one computer, a category for each of the one or more reference ID photos;

generating, by the at least one computer, the reference feature vector for each of the one or more reference ID photos based on a reference feature of each of the one or more-reference ID photos;

generating, by the at least one computer, a cluster number based on the reference feature vector;

for each of the one or more reference ID photos, directing, by the at least one computer, a read/write equipment to add the cluster number encoding the corresponding category of the ID photo.

17. A non-transitory computer readable medium, comprising at least one set of instructions for verifying authenticity of a target ID photo, wherein when executed by at least one processor of a computer server, the at least one set of instructions directs the at least one processor to perform acts of:

- receiving a target identification (ID) photo;
- accessing a database of one or more reference ID photos;
- determining a difference value between a predetermined area on the target ID photo and a predetermined area of one or more target reference ID photos of the one or more reference ID photos in the database, wherein the database of one or more reference ID photos includes one or more structured data, each of the one or more structured data encoding a reference feature vector associated with the predetermined area of a reference ID photos;
- upon determining that the difference value is less than a threshold value, generating a warning code to indicate that the target ID photo is a fake ID photo.

18. The non-transitory computer readable medium of claim 17, wherein the determining of the difference value includes:

- determining a target feature vector based on one or more features of the predetermined area on the target ID photo;
- determining the difference value by comparing the target feature vector with a reference feature vector.

19. The non-transitory computer readable medium of claim 18, the at least one set of instructions further directs the at least one processor to perform acts of:

- dividing an ID photo into at least one block, the ID photo being a reference ID photo or the target ID photo;
- determining grey scale of one or more pixels in each block;
- determining pixel gradient of each block based on the grey scale of the one or more pixels;
- determining texture feature of the ID photo based on the pixel gradient of

each block; and

storing the texture feature of the at least one block to a feature vector in the storage medium, the feature vector being the reference feature vector or the target feature vector.

20. The non-transitory computer readable medium of claim 18, the at least one set of instructions further directs the at least one processor to perform acts of:

determining fake ID feature by a trained convolutional neural network,
wherein a trained convolutional neural network is trained, by at least one computer, with a plurality of reference fake ID photos.