

CLAIMS

1. A computer-implemented document verification method, comprising:
 - obtaining an image of a to-be-verified document;
 - providing the image as input to a trained classification model;
 - obtaining an output of the trained classification model, wherein the output represents a probability at which the image passes an anti-counterfeiting identifier verification;
 - verifying whether an anti-counterfeiting identifier exists in the image based on the output of the trained classification model; and
 - performing first verification on the image to determine a probability at which the image is from a screen print;
 - performing second verification on the image to determine a probability at which the image is from a photocopy;
 - determining a probability at which the image is from a physical document based on the probability at which the image is from a screen print and the probability at which the image is from a photocopy;
 - verifying a source of the image based on the probability at which the image is from a physical document; and
 - obtaining a verification result for the to-be-verified document based on the verifying of the anti-counterfeiting identifier and the verifying of the source of the image.
2. The method according to claim 1, wherein verifying whether an anti-counterfeiting identifier exists in the image comprises:
 - determining a type of anti-counterfeiting identifier corresponding to a type of the to-be-verified document; and
 - determining a probability at which an anti-counterfeiting identifier corresponding to the determined type of anti-counterfeiting identifier exists in the image.
3. The method according to claim 2, wherein the type of anti-counterfeiting identifier comprises at least one of watermark text, micro-text, shading lines, gravure printing, color cast, anti-counterfeiting secret marks, or fonts.
4. The method according to claim 1, wherein the verifying a source of the image comprises:
 - analyzing image data of the image to determine the probability at which the image is from a physical document.
5. The method according to claim 4, wherein the analyzing image data of the image comprises:

performing image recognition processing on image data of an individual image frame in the image;

or,

performing differencing processing on image data of at least two types of images in the image to obtain image difference; and using the image difference as an input to a pre-established classification model, the classification model being used to output a verification result of the source of the image based on the input image difference.

6. The method according to claim 1, wherein the verifying whether an anti-counterfeiting identifier exists in the image comprises:

determining a type of anti-counterfeiting identifier corresponding to a type of the to-be-verified document;

determining a probability at which an anti-counterfeiting identifier corresponding to the determined type of anti-counterfeiting identifier exists in the image; and

wherein obtaining a verification result for the to-be-verified document based on the verifying of the anti-counterfeiting identifier and the verifying of the source of the image comprises:

determining the verification result based on an anti-counterfeiting identifier corresponding to the determined type of anti-counterfeiting identifier exists in the image and the probability at which the image is from a physical document.

7. The method according to any one of claims 1-6, wherein:

the to-be-verified document is an identity document of a to-be-verified object; and the method further comprises:

verifying authenticity of identity information in the image of the identify document to obtain an authenticity verification result; and

determining an identity verification result for the to-be-verified object based on the verification result for the identity document and the authenticity verification result.

8. The method according to claim 7, wherein:

the image of the identity document of the to-be-verified object is collected on site.

9. The method according to claim 7, wherein:

the image of the identity document of the to-be-verified object is collected in advance.

10. The method according to claim 7, wherein the verifying the authenticity of identity information in the image of the identify document to obtain an authenticity verification result comprises:

performing online check on the identity information in the image of the identify document, and determining the authenticity of the identity information according to a result of the online check.

11. The method according to claim 10, wherein the performing online check on the identity information in the image of the identify document comprises:

performing the online check on text information and a facial image in the identity information.

12. The method according to claim 11, wherein, before the performing the online check on the facial image in the identity information, the method further comprises:

collecting a facial image of a document-holding person on site;

wherein the performing the online check on the facial image in the identity information comprises:

performing cross-verification on the facial image, the facial image of the document-holding person and a facial image obtained from the online check.

13. The method according to claim 12, wherein, before the determining the authenticity of the identity information, the method further comprises:

performing liveness detection based on the facial image of the document-holding person to obtain a liveness detection result;

wherein the determining the authenticity of the identity information comprises:

determining the authenticity of the identity information based on the result of the online check and the liveness detection result.

14. The method according to any one of claims 7-13, wherein the determining an identity verification result for the to-be-verified object based on verification result for the identity document and the authenticity verification result comprises:

if the authenticity verification result is failure, determining that the identity verification result is failure;

or,

if the authenticity verification result is successful, determining whether the identity verification result is successful based on the verification result for the identity document.

15. The method according to any one of claims 7-13, wherein the determining an identity verification result for the to-be-verified object based on the verification result for the identity document and the authenticity verification result comprises:

if the authenticity verification result is successful, determining a probability at which the identity verification result is successful based on the verification result for the identity document.

16. An identity verification device, comprising:

a processor; and

a memory configured to store computer executable instructions, wherein, when executed, the executable instructions cause the processor to execute the following operations comprising:

obtaining an image of a to-be-verified document;

providing the image as input to a trained classification model;

obtaining an output of the trained classification model, wherein the output represents a probability at which the image passes an anti-counterfeiting identifier verification;

verifying whether an anti-counterfeiting identifier exists in the image based on the output of the trained classification model;

performing first verification on the image to determine a probability at which the image is from a screen print;

performing second verification on the image to determine a probability at which the image is from a photocopy;

determining a probability at which the image is from a physical document based on the probability at which the image is from a screen print and the probability at which the image is from a photocopy;

verifying a source of the image based on the probability at which the image is from a physical document; and

obtaining a verification result for the to-be-verified document based on the verifying of the anti-counterfeiting identifier and the verifying of the source of the image.

17. An identity verification device, comprising:

a processor; and

a memory configured to store computer executable instructions, wherein, when executed, the executable instructions cause the processor to execute the following operations comprising:

obtaining an image of an identity document of a to-be-verified object;

verifying a source of the image of the identify document and/or an anti-counterfeiting identifier in the image of the identify document to obtain a first verification result, by:

receiving a background image; and

verifying the image of the to-be-verified document based on the background image to determine whether the image of the to-be-verified document and the background image are from a same photographing scene, by:

comparing a background region in the image of the to-be-verified document with the background image to determine an overlapping degree between the image of the to-be-verified document and the background image, the background region in the image of the to-be-verified document being a region outside a region of the to-be-verified document in the image; and

determining whether the image of the to-be-verified document and the background image are from the same photographing scene based on the overlapping degree

wherein comparing a background region in the image of the to-be-verified document with the background image to determine an overlapping degree between the image of the to-be-verified document and the background image comprises:

comparing the background region in the image of the to-be-verified document with the background image based on first position information of a gyroscope of a device when the device collects the image of the to-be-verified document and second position information of the gyroscope of the device when the device collects the background image.