CLAIMS

1. An identification method, comprising:

controlling at least one camera to acquire a face image and an eye image of a target object, wherein the eye image comprises an iris feature and/or an eye-print feature; ~~and~~

~~identifying the target object based on the face image and the eye image.~~

performing a liveness detection on the target object based on the eye image and the face image; and

~~2. The method of claim 1, wherein the identifying the target object based on the face image and the eye image comprises:~~

~~determining whether the target object is a living body based on the eye image and the face image; and~~

identifying the target object if the target object is detected to be a living body.

wherein the face image includes multiple frames, the eye image includes multiple frames, and the performing the liveness detection on the target object based on the eye image and the face image comprises:

determining that the target object is a living body is there are differences among the multiple frames of the face image;

determining that the target object is a living body is there are differences among the multiple frames of the eye image in terms of at least one of the iris feature or the eye-print feature; and

determining that the target object is a non-living body is there is no difference between the multiple frames of the eye image in terms of the iris feature and the eye-print feature.

~~3~~2. The method of claim 1, wherein the controlling at least one camera to acquire a face image and an eye image of a target object comprises:

adjusting the at least one camera to acquire the face image of the target object; and

adjusting the at least one camera based on the position of a facial rectangular frame of the face image to acquire the eye image of the target object.

~~4~~3. The method of claim ~~3~~2, wherein the at least one camera is one camera,

the adjusting the at least one camera to acquire the face image of the target object comprises: adjusting the camera to obtain the position of the facial rectangular frame of the target object; and acquiring the face image of the target object based on the position of the facial rectangular frame; and

the adjusting the at least one camera based on the position of a facial rectangular frame of the face image to acquire the eye image of the target object comprises: adjusting the camera based on the position of the facial rectangular frame of the face image to obtain the position of a two-eye rectangular frame of the target object; and acquiring the eye image of the target object based on the position of the two-eye rectangular frame.

~~5~~4. The method of claim ~~3~~2, wherein the at least one camera comprises a first camera for photographing a face and a second camera for photographing eyes,

the adjusting the at least one camera to acquire the face image of the target object comprises: adjusting the first camera to obtain the position of the facial rectangular frame of the target object; and acquiring the face image of the target object based on the position of the facial rectangular frame; and

the adjusting the at least one camera based on the position of a facial rectangular frame of the face image to acquire the eye image of the target object comprises: adjusting the second camera based on the position of the facial rectangular frame to obtain the position of a two-eye rectangular frame of the target object; and acquiring the eye image of the target object based on the position of the two-eye rectangular frame.

~~6~~5. The method of claim 1, wherein the controlling at least one camera to acquire a face image and an eye image of a target object comprises:

adjusting the at least one camera to obtain the position of an initial facial rectangular frame of the target object; and

adjusting the at least one camera based on the position of the initial facial rectangular frame to acquire the face image and the eye image of the target object.

~~7~~6. The method of claim ~~6~~5, wherein the at least one camera is one camera, and the adjusting the at least one camera based on the position of the initial facial rectangular frame to acquire the face image and the eye image of the target object comprises:

adjusting the camera based on the position of the initial facial rectangular frame to obtain the position of a target facial rectangular frame of the target object and the position of a two-eye rectangular frame of the target object; and

acquiring the face image of the target object based on the position of the target facial rectangular frame, and acquiring the eye image of the target object based on the position of the two-eye rectangular frame.

~~8~~7. The method of claim ~~6~~5, wherein the at least one camera comprises a first camera for photographing a face and a second camera for photographing eyes,

the adjusting the at least one camera to obtain the position of an initial facial rectangular frame of the target object comprises: adjusting the first camera to obtain the position of the initial facial rectangular frame of the target object; and

the adjusting the at least one camera based on the position of the initial facial rectangular frame to acquire the face image and the eye image of the target object comprises: adjusting the first camera based on the position of the initial facial rectangular frame to obtain the position of a target facial rectangular frame of the target object, and acquiring the face image of the target object based on the position of the target facial rectangular frame; adjusting the second camera based on the position of the target facial rectangular frame to obtain the position of a two-eye rectangular frame of the target object; and acquiring the eye image of the target object based on the position of the two-eye rectangular frame.

~~9. The method of claim 2, wherein the face image is a single-frame face image, the eye image is a single-frame eye image, and the determining whether the target object is a living body based on the eye image and the face image comprises:~~

~~determining whether the target object is a living body based on a difference between a single-frame face image of a living body and a single-frame face image of a non-living body, and a~~

~~difference between the iris feature and/or the eye-print feature included in a single-frame eye image of a living body and the iris feature and/or the eye-print feature included in a single-frame eye image of a non-living body.~~

~~10. The method of claim 2, wherein the face image is a multi-frame face image, the eye image is a multi-frame eye image, and~~

~~the determining whether the target object is a living body based on the eye image and the face image comprises:~~

~~determining that the target object is a living body if there are differences among the multiple frames of the face image;~~

~~determining that the target object is a living body if there are differences among the multiple frames of the eye image in terms of the iris feature or the eye-print feature; and~~

~~determining that the target object is a non-living body if there is no difference between the multiple frames of the eye image in terms of the iris feature or the eye-print feature.~~

~~11~~8. The method of claim 1, wherein the eye image comprises an iris feature, and the identifying the target object comprises:

comparing the acquired face image with face images in a face image library;

selecting a first group of face images from the face image library, the first group of face images being face images whose similarities with the acquired face image are greater than a first threshold;

further comparing the iris feature of the acquired eye image with iris features of specified eye images in an eye image library, wherein the specified eye images are associated with the face images in the first group of face images; and

identifying the target object successfully if the similarity between an iris feature of an eye image in the eye image library and the iris feature of the acquired eye image is greater than a second threshold.

~~12~~9. The method of claim 1, wherein the eye image comprises an eye-print feature, and the identifying the target object comprises:

comparing the acquired face image with face images in a face image library;

selecting a first group of face images from the face image library, the first group of face images being face images whose similarities with the acquired face image are greater than a first threshold;

further comparing the eye-print feature of the acquired eye image with eye-print features of specified eye images in an eye image library, wherein the specified eye images are associated with the face images in the first group of face images; and

identifying the target object successfully if the similarity between an eye-print feature of an eye image in the eye image library and the eye-print feature of the acquired eye image is greater than a third threshold.

~~13~~10. The method of claim 1, wherein the eye image comprises an iris feature and an eye-print feature, and the identifying the target object comprises:

comparing the acquired face image with face images in a face image library;

selecting a first group of face images from the face image library, the first group of face images being face images whose similarities with the acquired face image are greater than a first threshold;

further comparing the iris feature of the acquired eye image with iris features of specified eye images in an eye image library, wherein the specified eye images are associated with the face images in the first group of face images;

selecting a first group of eye images from the specified eye images, the first group of eye images being eye images having iris features whose similarities with the iris feature of the acquired eye image are greater than a second threshold in the specified eye images;

comparing the eye-print feature of the acquired eye image with eye-print features of the eye images in the first group of eye images; and

identifying the target object successfully if the similarity between an eye-print feature of an eye image in the first group of eye images and the eye-print feature of the acquired eye image is greater than a third threshold.

~~14~~11. The method of claim 1, wherein the eye image comprises an iris feature and an eye-print feature, and the identifying the target object comprises:

comparing the acquired face image with face images in a face image library;

selecting a first group of face images from the face image library, the first group of face images being face images whose similarities with the acquired face image are greater than a first threshold;

further comparing the eye-print feature of the acquired eye image with eye-print features of specified eye images in an eye image library, wherein the specified eye images are associated with the face images in the first group of face images;

selecting a second group of eye images from the specified eye images, the second group of eye images being eye images having eye-print features whose similarities with the eye-print feature of the acquired eye image are greater than a third threshold in the specified eye images;

comparing the iris feature of the acquired eye image with iris features of the eye images in the second group of eye images; and

identifying the target object successfully if the similarity between an iris feature of an eye image in the second group of eye images and the iris feature of the acquired eye image is greater than a second threshold.

~~15~~12. The method of claim 1, wherein the eye image comprises an iris feature, and the identifying the target object comprises:

comparing the iris feature of the acquired eye image with iris features of eye images in an eye image library;

selecting a third group of eye images from the eye image library, the third group of eye images being eye images having iris features whose similarities with the iris feature of the acquired eye image are greater than a second threshold;

comparing the acquired face image with specified face images in a face image library, wherein the specified face images are associated with the eye images in the third group of eye images; and

identifying the target object successfully if the similarity between a face image in the specified face images and the acquired face image is greater than a first threshold.

~~16~~13. The method of claim 1, wherein the eye image comprises an eye-print feature, and the identifying the target object comprises:

comparing the eye-print feature of the acquired eye image with eye-print features of eye images in an eye image library;

selecting a fourth group of eye images from the eye image library, the fourth group of eye images being eye images having eye-print features whose similarities with the eye-print feature of the acquired eye image are greater than a third threshold;

comparing the acquired face image with specified face images in a face image library, wherein the specified face images are associated with the eye images in the fourth group of eye images; and

identifying the target object successfully if the similarity between a face image in the specified face images and the acquired face image is greater than a first threshold.

~~17~~14. The method of claim 1, wherein the eye image comprises an iris feature and an eye-print feature, and the identifying the target object comprises:

comparing the iris feature of the acquired eye image with iris features of eye images in an eye image library;

selecting a third group of eye images from the eye image library, the third group of eye images being eye images having iris features whose similarities with the iris feature of the acquired eye image are greater than a second threshold;

comparing the eye-print feature of the acquired eye image with eye-print features of the eye images in the third group of eye images;

selecting a fifth group of eye images from the third group of eye images, the fifth group of eye images being eye images having eye-print features whose similarities with the eye-print feature of the acquired eye image are greater than a third threshold;

comparing the acquired face image with specified face images in a face image library, wherein the specified face images are associated with the fifth group of eye images; and

identifying the target object successfully if the similarity between a face image in the specified face images and the acquired face image is greater than a first threshold.

~~18~~15. The method of claim 1, wherein the eye image comprises an iris feature and an eye-print feature, and the identifying the target object comprises:

comparing the eye-print feature of the acquired eye image with eye-print features of eye images in an eye image library;

selecting a fourth group of eye images from the eye image library, the fourth group of eye images being face images having eye-print features whose similarities with the eye-print feature of the acquired eye image are greater than a third threshold;

comparing the iris feature of the acquired eye image with iris features of the eye images in the fourth group of eye images;

selecting a sixth group of eye images from the fourth group of eye images, the sixth group of eye images being eye images having iris features whose similarities with the iris feature of the acquired eye image are greater than a second threshold;

comparing the acquired face image with specified face images in a face image library, wherein the specified face images are associated with the sixth group of eye images; and

identifying the target object successfully if the similarity between a face image in the specified face images and the acquired face image is greater than a first threshold.

~~19~~16. An identification apparatus, comprising:

an acquisition module configured to acquire a face image and an eye image of a target object through at least one camera, wherein the eye image comprises an iris feature and/or an eye-print feature; and

an identification module configured to ~~identify the target object based on the face image and the eye image~~ perform a liveness detection on the target object based on the eye image and the face image and identify the target object if the target object is detected to be a living body,

wherein the face image includes multiple frames, the eye image includes multiple frames, and the performing the liveness detection on the target object based on the eye image and the face image comprises:

determining that the target object is a living body is there are differences among the multiple frames of the face image;

determining that the target object is a living body is there are differences among the multiple frames of the eye image in terms of at least one of the iris feature or the eye-print feature; and

determining that the target object is a non-living body is there is no difference between the multiple frames of the eye image in terms of the iris feature and the eye-print feature.

~~20~~17. An identification device, comprising:

a processor; and

a memory configured to store computer executable instructions, wherein the processor performs the following operations when the executable instructions are executed:

controlling at least one camera to acquire a face image and an eye image of a target object, wherein the eye image comprises an iris feature and/or an eye-print feature; and

~~identifying the target object based on the face image and the eye image~~performing a liveness detection on the target object based on the eye image and the face image and identify the target object if the target object is detected to be a living body,

wherein the face image includes multiple frames, the eye image includes multiple frames, and the performing the liveness detection on the target object based on the eye image and the face image comprises:

determining that the target object is a living body is there are differences among the multiple frames of the face image;

determining that the target object is a living body is there are differences among the multiple frames of the eye image in terms of at least one of the iris feature or the eye-print feature; and

determining that the target object is a non-living body is there is no difference between the multiple frames of the eye image in terms of the iris feature and the eye-print feature.

~~21~~18. A computer-readable storage medium, wherein one or more programs are stored in the computer-readable storage medium, and the following operations are performed when the one or more programs are executed:

controlling at least one camera to acquire a face image and an eye image of a target object, wherein the eye image comprises an iris feature and/or an eye-print feature; and

~~identifying the target object based on the face image and the eye image~~performing a liveness detection on the target object based on the eye image and the face image and identify the target object if the target object is detected to be a living body,

wherein the face image includes multiple frames, the eye image includes multiple frames, and the performing the liveness detection on the target object based on the eye image and the face image comprises:

determining that the target object is a living body is there are differences among the multiple frames of the face image;

determining that the target object is a living body is there are differences among the multiple frames of the eye image in terms of at least one of the iris feature or the eye-print feature; and

determining that the target object is a non-living body is there is no difference between the multiple frames of the eye image in terms of the iris feature and the eye-print feature.