CLAIMS

1. A liveness detection method, comprising:

controlling a display screen to display a color according to a predetermined color display sequence, the color display sequence including at least two different colors;

capturing an image of a target object in the color display process;

acquiring a color change sequence of a face of the target object in the image over time; and

determining whether the target object is live based on a matching relationship between the color display sequence and the color change sequence, wherein when a portion of the color display sequence and a corresponding portion of the color change sequence are determined to include a same color sequence and a number of colors in the same color sequence compared to a number of colors in the color change sequence exceeds a preset percentage, it is determined that the color display sequence matches the color change sequence.

2. The method according to claim 1, wherein determining whether the target object is live based on a matching relationship between the color display sequence and the color change sequence comprises:

if the color display sequence matches the color change sequence, determining that the target object is live; and

if the color display sequence does not match the color change sequence, determining that the target object is not live.

3. The method according to claim 2, wherein if the color display sequence matches

the color change sequence, determining that the target object is live comprises:

if the color display sequence matches the color change sequence, determining whether the face of the target object in the image conforms to a three-dimensional color reflection characteristic; and

if yes, determining that the target object is live.

4. The method according to claim 1, wherein controlling a display screen to display a color according to a predetermined color display sequence comprises:

controlling the display screen to sequentially display a single color according to the predetermined color display sequence.

5. The method according to claim 4, wherein before controlling the display screen to sequentially display a single color according to the predetermined color display sequence, the method further comprises:

determining whether a distance between the target object and the display screen is less than a first threshold; and

controlling the display screen to sequentially display a single color according to the predetermined color display sequence comprises: when the distance between the target object and the display screen is less than the first threshold, controlling the display screen to sequentially display a single color according to the predetermined color display sequence, such that light emitted by the display screen irradiates the face of the target object.

6. The method according to claim 4, wherein controlling the display screen to

sequentially display a single color according to the predetermined color display sequence comprises:

acquiring the predetermined color display sequence;

acquiring a brightness corresponding to each color in the color display sequence; and

controlling the display screen to sequentially display a single color, at a brightness corresponding to the color, in the color display sequence and in an order of colors indicated by the color display sequence.

7. The method according to claim 4, wherein two adjacent colors in the color display sequence are colors between which a distance in a three-dimensional color space is greater than a second threshold.

8. The method according to claim 6, wherein acquiring a brightness corresponding to each color in the color display sequence comprises:

determining a brightness of an i-th color in the color display sequence, wherein i is a positive integer; and

determining a brightness of an (i+1)th color in the color display sequence based on the brightness of the i-th color, such that a difference between the brightness of the i-th color and the brightness of the (i+1)th color is greater than a third threshold.

9. The method according to claim 4, wherein the color display sequence comprises colors of black and white.

10. The method according to claim 1, wherein acquiring a color change sequence of a face of the target object in the image over time comprises:

analyzing a face image of the target object in the image to acquire a color superimposed on the face; and

sorting acquired colors in a chronological order to obtain the color change sequence of the face of the target object in the image over time.

11. The method according to claim 6, wherein acquiring the predetermined color display sequence comprises:

receiving the predetermined color display sequence from a server; or

randomly generating the predetermined color display sequence.

12. A liveness detection apparatus, comprising a control module, a capturing module, an acquiring module and a determining module; wherein:

the control module is configured to control a display screen to display a color according to a predetermined color display sequence, the color display sequence including at least two different colors;

the capturing module is configured to capture an image of a target object in the color display process;

the acquiring module is configured to acquire a color change sequence of a face of the target object in the image over time; and

the determining module is configured to determine whether the target object is live based on a matching relationship between the color display sequence and the color change sequence, wherein when a portion of the color display sequence and a

corresponding portion of the color change sequence are determined to include a same color sequence and a number of colors in the same color sequence compared to a number of colors in the color change sequence exceeds a preset percentage, it is determined that the color display sequence matches the color change sequence.

13. An electronic device comprising:

a processor; and

a memory arranged to store computer executable instructions that, when being executed, cause the processor to perform the following operations:

controlling a display screen to display a color according to a predetermined color display sequence, the color display sequence including at least two different colors;

capturing an image of a target object in the color display process;

acquiring a color change sequence of a face of the target object in the image over time; and

determining whether the target object is live based on a matching relationship between the color display sequence and the color change sequence, wherein when a portion of the color display sequence and a corresponding portion of the color change sequence are determined to include a same color sequence and a number of colors in the same color sequence compared to a number of colors in the color change sequence exceeds a preset percentage, it is determined that the color display sequence matches the color change sequence.

14. A computer-readable storage medium storing one or more programs, the one or more programs, when being executed, performing the following operations:

controlling a display screen to display a color according to a predetermined color display sequence, the color display sequence including at least two different colors;

capturing an image of a target object in the color display process;

acquiring a color change sequence of a face of the target object in the image over time; and

determining whether the target object is live based on a matching relationship between the color display sequence and the color change sequence, wherein when a portion of the color display sequence and a corresponding portion of the color change sequence are determined to include a same color sequence and a number of colors in the same color sequence compared to a number of colors in the color change sequence exceeds a preset percentage, it is determined that the color display sequence matches the color change sequence.