

CLAIMS

1. A device, comprising:
 - a display screen configured to make a projection onto a target object according to projection information, wherein the projection information is updated based at least in part on
5 updating display content displayed by the display screen or parameter information of the display screen; and
 - one or more processors configured to:
 - obtain a first image of the target object, the first image corresponding to a first representation of projection information before the display content or the parameter
10 information is updated;
 - obtain a second image of the target object, the second image corresponding to a second representation of projection information after the display content or the parameter information is updated; and
 - perform an authentication with respect to the target object based at least in part on
15 a determination of whether the second object includes an image artifact corresponding to an update to the projection information that is at least partially a result of the updating to the display content or the parameter information.
2. The device of claim 1, wherein the projection information comprises the display content or the parameter information.
- 20 3. The device of claim 1, wherein the one or more processors are further configured to obtain, based at least in part on the first object and the second object, the image artifact corresponding to the update to the projection information based at least in part on the updating to the display content or the parameter information.
4. The device of claim 3, wherein the image artifact is based at least in part on a
25 reflection of the update from the target object of the second image.
5. The device of claim 3, wherein the image artifact corresponding to the update is obtained based at least in part on obtaining an image difference data based at least in part on the first image and the second image.
6. The device of claim 5, wherein the image difference data corresponds to a difference
30 between the second image and the first image.

7. The device of claim 5, wherein the image difference data is obtained based at least in part on a comparison of the first image and the second image.
8. The device of claim 7, wherein the one or more processors are further configured to obtain image data corresponding to the first image and image data corresponding to the second image, and to compare the image data corresponding to the first image and the image data corresponding to the second image.
9. The device of claim 1, wherein the one or more processors are further configured to determine whether the target object is the virtual object, and to determine whether an authentication of a user associated with the target object is successful.
10. The device of claim 1, wherein to perform the authentication with respect to the target object includes obtaining the image artifact from the second image, and determining whether the image artifact matches the updating to the display content or the parameter information.
11. A system, comprising:
a display device configured to make a projection onto a target object according to projection information, wherein the projection information is updated based at least in part on updating display content displayed by the display device or parameter information of the display device; and
a computer terminal configured to:
obtain a first image of the target object, the first image corresponding to a first representation of projection information before the display content or the parameter information is updated;
obtain a second image of the target object, the second image corresponding to a second representation of projection information after the display content or the parameter information is updated; and
perform an authentication with respect to the target object based at least in part on a determination of whether the second object includes an image artifact corresponding to an update to the projection information that is at least partially a result of the updating to the display content or the parameter information.
12. A method, comprising:
obtaining a first image of a target object;
updating projection information associated with a display by a display device;
obtaining a second image of the target object, the second image being an image of the

target object after the projection information is updated; and

performing an authentication with respect to the target object based at least in part on a determination of whether the second object includes an image artifact corresponding to an update to the projection information that is at least partially a result of the updating to the projection information.

13. The method of claim 12, wherein the projection information comprises display content displayed by the display screen, or the parameter information of the display device.

14. The method of claim 12, further comprising: obtaining, based at least in part on the first object and the second object, the image artifact corresponding to the update to the projection information based at least in part on the updating to the display content or the parameter information.

15. The method of claim 14, wherein the image artifact is based at least in part on a reflection of the update from the target object of the second image.

16. The method of claim 14, wherein the image artifact corresponding to the update is obtained based at least in part on obtaining an image difference data based at least in part on the first image and the second image.

17. The method of claim 16, wherein the obtaining the image difference data comprises determining the image difference data based at least in part on the first image and the second image.

18. The method of claim 12, wherein the performing the authentication with respect to the target object includes obtaining the image artifact from the second image, and determining whether the image artifact matches the updating to the display content or the parameter information.

19. The method of claim 18, further comprising: authenticating a user based at least in part on whether the image artifact matches the updating to the display content or the parameter information.

20. The method of claim 12, wherein:

the first image comprises a first facial image and a first background image of the target object captured when first projection information is being projected;

the second image comprises a second facial image and a second background image of the target object captured when second projection information is being projected; and

the projection information comprises one or more of: projection brightness, projection color, and projection graphics.

21. The method of claim 12, further comprising determining that the target object does not pass authentication based at least in part on a determination that the second image does
5 not have the image artifact, or that the image artifact of the second image does not match the update to the projection information.