

CLAIMS

1. A method for detecting a living body, comprising:

performing target object detection on a first image captured by a first image sensor in a binocular camera apparatus to obtain a first target region, and performing the target object detection on a second image captured by a second image sensor in the binocular camera apparatus to obtain a second target region;

obtaining key point depth information of a target object according to the first target region and the second target region;

determining, based on the key point depth information of the target object, whether the target object is a living body;

responsive to determining that the target object is the living body based on the key point depth information of the target object, determining whether fake information exists in the first image and the second image; and

determining whether the target object is the living body based on whether the fake information exists in the first image and the second image.

2. The method according to claim 1, wherein the obtaining key point depth information of the target object according to the first target region and the second target region comprises:

performing key point detection on the first target region to obtain key point information of the first target region, and performing the key point detection on the second target region to obtain key point information of the second target region; and

determining key point depth information of the target object according to the key point information of the first target region and the key point information of the second target region.

3. The method according to claim 1 or 2, wherein the determining, based on the key point depth information of the target object, whether the target object is the living body comprises:

determining depth dispersion based on the key point depth information of the target object; and

determining, according to the depth dispersion, whether the target object is the living body.

4. The method according to claim 2 or 3, further comprising:

determining whether the first target region is consistent with the second target region;

wherein the obtaining key point depth information of the target object according to the first target region and the second target region comprises:

responsive to determining that the first target region is consistent with the second target region, obtaining the key point depth information of the target object according to the first target region and the second target region.

5. The method according to claim 4, wherein the determining whether the first target region is consistent with the second target region comprises:

searching a database for a first search result corresponding to the first target region;

searching the database for a second search result corresponding to the second target region; and

determining, based on the first search result and the second search result, whether the first target region is consistent with the second target region.

6. The method according to claim 4, wherein the determining whether the first target region is consistent with the second target region comprises:

determining a similarity between the first target region and the second target region; and

determining, based on the similarity, whether the first target region is consistent with the second target region.

7. The method according to any one of claims 4 to 6, further comprising:

responsive to determining that the first target region is inconsistent with the second target region, obtaining a corrected second target region based on the first target region;

wherein the obtaining key point depth information of the target object

according to the first target region and the second target region comprises:

obtaining key point depth information of the target object according to the first target region and the corrected second target region.

8. The method according to claim 7, wherein the obtaining the corrected second target region based on the first target region comprises:

determining a corresponding region of the first target region in the second image; and

determining the corresponding region as the corrected second target region.

9. The method according to claim 8, wherein the determining the corresponding region of the first target region in the second image comprises:

determining a key region in the first target region according to the key point information of the first target region; and

determining the corresponding region of the first target region in the second image based on the key region.

10. The method according to claim 9, wherein the determining the key region in the first target region according to the key point information of the first target region comprises:

determining, based on the key point information of the first target region, a smallest region enclosed by at least one key point in the first target region; and

amplifying the smallest region by a preset number of times to obtain the key region.

11. The method according to claim 8, wherein the determining the corresponding region of the first target region in the second image comprises:

mapping the at least one key point in the first target region to the second image to obtain mapping position information of the at least one key point in the second image; and

determining the corresponding region of the first target region in the second image according to the mapping position information of the at least one key point in the second image.

12. The method according to claim 1, wherein the determining whether the fake information exists in the first image and the second image comprises:

- performing feature extraction processing on the first image and the second image separately to obtain first feature data and second feature data; and

- determining, based on the first feature data and the second feature data, whether the fake information exists in the first image and the second image.

13. The method according to claim 12, wherein the determining, based on the first feature data and the second feature data, whether the fake information exists in the first image and the second image comprises:

- performing fusion processing on the first feature data and the second feature data to obtain fusion features; and

- determining, based on the fusion features, whether the fake information exists in the first image and the second image.

14. The method according to any one of claims 1 to 13, further comprising:

- determining whether the first image and the second image satisfy a frame selection condition;

- wherein the obtaining key point depth information of the target object according to the first target region and the second target region comprises:

- obtaining, responsive to determining that the first image and the second image satisfy the frame selection condition, key point depth information of the target object according to the first target region and the second target region.

15. The method according to claim 14, wherein the frame selection condition comprises at least one of the following:

- the target object is detected in both the first image and the second image;

- the target object detected in the first image is located in a set region of the first image and the target object detected in the second image is located in a set region of the second image;

- completeness of the target object detected in the first image and completeness of the target object detected in the second image satisfy a preset condition;

a proportion, in the first image, of the target object detected in the first image is greater than a proportion threshold and a proportion, in the second image, of the target object detected in the second image is greater than the proportion threshold;

clarity of the first image and clarity of the second image both are greater than a clarity threshold; or

exposure of the first image and exposure of the second image both are greater than an exposure threshold.

16. The method according to any one of claims 1 to 15, further comprising:

determining whether a next image pair in a video stream satisfies the frame selection condition responsive to determining that at least one of the first image or the second image does not satisfy the frame selection condition; and

determining the video stream as a fake video stream responsive to determining that no image pair satisfying the frame selection condition is found from the video stream within a preset time period or within a preset number of image pairs.

17. The method according to any one of claims 1 to 16, wherein the first image sensor or the second image sensor comprises one of the following cameras: a visible light camera, a near-infrared camera, and a dual-channel camera.

18. An apparatus for detecting a living body, comprising:

a target region determining module, configured to perform target object detection on a first image captured by a first image sensor in a binocular camera apparatus to obtain a first target region, and to perform the target object detection on a second image captured by a second image sensor in the binocular camera apparatus to obtain a second target region;

a key point depth information obtaining module, configured to obtain key point depth information of a target object according to the first target region and the second target region;

a first living-body detecting module, configured to determine, based on the key point depth information of the target object, whether the target object is a living body;

a fake information determining module, configured to determine whether fake

information exists in the first image and the second image if it is determined, based on the key point depth information of the target object, that the target object is a living body; and

a second living-body detecting module, configured to determine, based on whether fake information exists in the first image and the second image, the target object is a living body.

19. An electronic device, comprising:

a processor; and

a memory, configured to store instructions executable by the processor;

wherein execution of the instructions by the processor causes the processor to implement operations, the operations comprising:

performing target object detection on a first image captured by a first image sensor in a binocular camera apparatus to obtain a first target region, and performing the target object detection on a second image captured by a second image sensor in the binocular camera apparatus to obtain a second target region;

obtaining key point depth information of a target object according to the first target region and the second target region;

determining, based on the key point depth information of the target object, whether the target object is a living body;

responsive to determining that the target object is the living body based on the key point depth information of the target object, determining whether fake information exists in the first image and the second image; and

determining whether the target object is the living body based on whether the fake information exists in the first image and the second image.

20. A computer-readable storage medium, having computer program instructions stored thereon, wherein execution of the computer program instructions by a processor causes the processor to:

perform target object detection on a first image captured by a first image sensor in a binocular camera apparatus to obtain a first target region, and perform the target object detection on a second image captured by a second image sensor in the binocular camera apparatus to obtain a second target region;

obtain key point depth information of a target object according to the first target region and the second target region;

determine, based on the key point depth information of the target object, whether the target object is a living body;

responsive to determining that the target object is the living body based on the key point depth information of the target object, determine whether fake information exists in the first image and the second image; and

determine whether the target object is the living body based on whether the fake information exists in the first image and the second image.