

CLAIMS

1. A method of determining performance parameters, comprising:
acquiring a first dataset which comprises a plurality of face images;
for each of the plurality of face images, obtaining a liveness classification result and a detection result of the face image by inputting the face image into a neural network; and
determining performance parameters of the neural network according to a plurality of detection results.
2. The method according to claim 1, wherein the detection result comprises relevant data used to determine whether a face in the face image belongs to a living one or not.
3. The method according to claim 1 or 2, wherein the detection result comprises at least one of:
a face attribute,
a spoof type,
an illumination condition,
an imaging environment,
depth information, or
reflection information.
4. The method according to any one of claims 1 to 3, wherein each of the plurality of face images comprises respective annotation information of the face image, and
wherein determining the performance parameters of the neural network according to the plurality of detection results comprises:
for each of the plurality of face images, obtaining a comparison result corresponding to the face image by comparing the detection result of the face image with the respective annotation information of the face image; and
determining the performance parameters of the neural network based on comparison results corresponding to at least a portion of the plurality of face images.
5. The method according to any one of claims 1 to 4, further comprising:
based on an evaluation result, acquiring a plurality of training samples related to the evaluation result from a second dataset, wherein the plurality of training samples comprise face images, and the evaluation result is a result of evaluating the neural network according to the determined performance parameters;
for each of the plurality of training samples, obtaining a detection result of the training sample by inputting the training sample into the neural network; and

adjusting weight parameters of the neural network according to a degree of difference between detection results with respect to at least a portion of the training samples and annotation information with respect to the at least a portion of the training samples.

6. The method according to claim 5, wherein the first dataset and the second dataset both comprise real face images and unreal face images, and

wherein annotation information of a real face image comprises a liveness classification result and face attributes, and annotation information of an unreal face image comprises a liveness classification result and at least one of: a spoof type, an illumination condition, or an imaging environment.

7. The method according to claim 6, wherein a number of the real face images in the second dataset is less than a number of the unreal face images in the second dataset.

8. The method according to claim 6 or 7, further comprising:

obtaining the unreal face images through a target acquisition mode.

9. The method according to claim 8, wherein the target acquisition mode comprises at least one of:

one or more acquisition directions,

one or more bending modes, or

one or more types of one or more acquisition devices used to acquire the unreal face images.

10. The method according to claim 9, wherein

the acquisition directions for at least a portion of the unreal face images comprised in a same dataset are different; and/or

the bending modes for at least a portion of the unreal face images comprised in the same dataset are different; and/or

the types of acquisition devices corresponding to at least a portion of the unreal face images comprised in the same dataset are different.

11. An apparatus for determining performance parameters, comprising:

a first acquisition unit, configured to acquire a first dataset which comprises a plurality of face images;

a detector, configured to, for each of the plurality of face images, obtain a liveness classification result and a detection result of the face image by inputting the face image into a neural network;

a determination unit, configured to determine performance parameters of the neural network according to a plurality of detection results.

12. The apparatus according to claim 11, wherein the detection result comprises relevant data used to determine whether a face in the face image belongs to a living one or not;

and/or

the detection result comprises at least one of: a face attribute, a spoof type, an illumination condition, an imaging environment, depth information, or reflection information.

13. The apparatus according to claim 11 or 12, wherein each of the plurality of face images comprises respective annotation information of the face image, and the determination unit is also configured to, for each of the plurality of face images, obtain a comparison result corresponding to the face image by comparing the detection result of the face image with the respective annotation information of the face image; and determine the performance parameters of the neural network based on comparison results corresponding to at least a portion of the plurality of face images.

14. The apparatus according to any one of claims 11 to 13, the apparatus also comprises a training unit configured to, based on an evaluation result, acquire a plurality of training samples related to the evaluation result from a second dataset, wherein the plurality of training samples comprise face images, and the evaluation result is a result of evaluating the neural network according to the determined performance parameters; for each of the plurality of training samples, obtain a detection result of the training sample by inputting the training sample into the neural network; and adjust weight parameters of the neural network according to a degree of difference between detection results with respect to at least a portion of the training samples and annotation information with respect to the at least a portion of the training samples.

15. The apparatus according to claim 14, wherein the first dataset and the second dataset both comprise real face images and unreal face images, and wherein annotation information of a real face image comprises a liveness classification result and face attributes, and annotation information of an unreal face image comprises a liveness classification result and at least one of: a spoof type, an illumination condition, or an imaging environment.

16. The apparatus according to claim 15, the apparatus also comprises a second acquisition unit configured to obtain the unreal face images through a target acquisition mode.

17. The apparatus according to claim 16, the target acquisition mode comprises at least one of: one or more acquisition directions, one or more bending modes, or one or more types of one or more acquisition devices used to acquire the unreal face images.

18. An electronic device, comprising:
a processor, and
a memory for storing instructions executable by the processor,
wherein the processor is configured to invoke the instructions to implement the method according to any one of claims 1 to 10.

19. A non-transitory computer-readable storage medium, wherein the storage medium stores computer program instructions, when the computer program instructions are executed by a processor, the processor is caused to implement the method according to any one of claims 1 to 10.

20. A computer program, comprising computer readable codes, wherein when the computer readable codes are run on a device, a processor in the device executes instructions for implementing the method according to any one of claims 1 to 10.