CLAIMS

1. A face-hand correlation degree detection method, comprising:

acquiring an image to be detected;

determining a face feature set and a hand feature set of the image to be detected on the basis of a result obtained by performing face and hand detection on the image to be detected, wherein each face feature in the face feature set corresponds to one face in a picture of the image to be detected, and each hand feature in the hand feature set corresponds to one hand in the picture of the image to be detected;

determining a first interaction feature of a target face on the basis of a face feature of the target face and the hand feature set, wherein the target face is any face in the picture of the image to be detected, and wherein the first interaction feature is obtained by fusing the face feature of the target face with ~~the~~ hand features, belonging to the hand feature set, of ~~each hand~~ all hands in the picture of the image to be detected;

determining a second interaction feature of a target hand on the basis of a hand feature of the target hand and the face feature set, wherein the target hand is any hand in the picture of the image to be detected, and wherein the second interaction feature is obtained by fusing the hand feature of the target hand with ~~the~~ face features, belonging to the face feature set, of ~~each face~~ all faces in the picture of the image to be detected; and

determining a correlation between the target face and the target hand on the basis of the first interaction feature and the second interaction feature.

2. The method of claim 1, wherein the determining a face feature set and a hand feature set of the image to be detected on the basis of the result obtained by performing face and hand detection on the image to be detected comprises:

determining a face detection box of each face and a hand detection box of each hand

in the picture of the image to be detected on the basis of the result obtained by performing the face and hand detection on the image to be detected;

extracting a feature of the each face based on the face detection box of the each face to obtain the face feature set; and

extracting a feature of the each hand based on the hand detection box of the each hand to obtain the hand feature set.

3. The method of claim 1 or 2, wherein the determining a first interaction feature of a target face on the basis of a face feature of the target face and the hand feature set comprises:

constructing a first undirected graph on the basis of the target face and the each hand in the picture, wherein the first undirected graph includes a first node corresponding to the target face, a second node in one-to-one correspondence with the each hand, and a first side in one-to-one correspondence with the second node, each first side is configured to connect the first node and one of second nodes;

determining a first correlation degree between a hand feature of the hand corresponding to the second node connected to the each first side and the face feature of the target face in the first undirected graph; and

determining the first interaction feature on the basis of the face feature of the target face, the hand feature of the each hand in the picture, and the corresponding first correlation degree.

4. The method of claim 3, wherein the determining the first correlation degree between a hand feature of the hand corresponding to the second node connected to each first side and the face feature of the target face in the first undirected graph comprises:

determining a first confidence degree that the hand corresponding to the second node connected to the each first side and the target face belong to a same body on the basis of the

hand feature of the hand corresponding to the second node connected to the each first side and the face feature of the target face; and

normalizing the first confidence degree that the hand corresponding to the second node connected to the each first side and the target face in the first undirected graph belong to the same body, to obtain the first correlation degree between the hand feature of the hand corresponding to the second node connected to the each first side and the face feature of the target face.

5. The method of claim 3 or 4, wherein the determining the first interaction feature on the basis of the face feature of the target face, the hand feature of each hand in the picture, and the corresponding first correlation degree comprises:

adjusting the hand feature of the each hand on the basis of the first correlation degree corresponding to the each hand, to obtain an adjusted feature of the each hand; and

fusing the adjusted feature of the each hand in the picture and the face feature of the target face to obtain the first interaction feature.

6. The method of claim 1, wherein the determining a second interaction feature of a target hand on the basis of a hand feature of the target hand and the face feature set comprises:

constructing a second undirected graph on the basis of the target hand and each face in the picture, wherein the second undirected graph includes a third node corresponding to the target hand, a fourth node in one-to-one correspondence with the each face, and a second side in one-to-one correspondence with the fourth node, each second side is configured to connect the third node and one of fourth nodes;

determining a second correlation degree between a face feature of the face corresponding to the fourth node connected to the each second side and the hand feature of the target hand in the second undirected graph; and

determining the second interaction feature on the basis of the hand feature of the target hand, the face feature of the each face in the picture, and the corresponding second correlation degree.

7. The method of claim 6, wherein the determining the second correlation degree between a face feature of the face corresponding to the fourth node connected to the each second side and the hand feature of the target hand in the second undirected graph comprises:

determining a second confidence degree that the face corresponding to the fourth node connected to the each second side and the target hand belong to a same body on the basis of the face feature of the face corresponding to the fourth node connected to the each second side and the hand feature of the target hand; and

normalizing the second confidence degree that the face corresponding to the fourth node connected to the each second side and the target hand in the second undirected graph belong to the same body, to obtain the second correlation degree between the face feature of the face corresponding to the fourth node connected to the each second side and the hand feature of the target hand.

8. The method of claim 6 or 7, wherein the determining the second interaction feature on the basis of the hand feature of the target hand, the face feature of the each face in the picture, and the corresponding second correlation degree comprises:

adjusting the face feature of the each face on the basis of the second correlation degree corresponding to the each face, to obtain an adjusted feature of the each face; and

fusing the adjusted feature of the each face in the picture and the hand feature of the target hand to obtain the second interaction feature.

9. The method of any one of claims 1 to 8, wherein the determining a correlation between the

target face and the target hand on the basis of the first interaction feature and the second interaction feature comprises:

determining a third confidence degree that the target face and the target hand belong to a same body on the basis of the first interaction feature and the second interaction feature; and

determining the third confidence degree as the correlation degree between the target face and the target hand.

10. The method of any one of claims 1 to 9, in a case where the image to be detected further includes other body parts, further comprising:

determining a body feature set of other body parts of the image to be detected on the basis of a result obtained by performing detection of the other body parts on the image to be detected, wherein each body feature in the body feature set corresponds to one of the other body parts in a picture of the image to be detected, the other body parts are body parts other than face and hand;

wherein the determining a first interaction feature of the target face on the basis of a face feature of the target face and the hand feature set comprises:

determining the first interaction feature on the basis of the face feature of the target face, the body feature set, and the hand feature set;

wherein the determining a second interaction feature on the basis of a hand feature of the target hand and the face feature set comprises:

determining the second interaction feature on the basis of the hand feature of the target hand, the body feature set, and the face feature set.

11. A computer storage medium, storing a computer executable instruction, wherein the computer executable instruction is executed to:

acquire an image to be detected;

determine a face feature set and a hand feature set of the image to be detected on the basis of a result obtained by performing face and hand detection on the image to be detected, wherein each face feature in the face feature set corresponds to one face in a picture of the image to be detected, and each hand feature in the hand feature set corresponds to one hand in the picture of the image to be detected;

determine a first interaction feature of a target face on the basis of a face feature of the target face and the hand feature set, wherein the target face is any face in the picture of the image to be detected, and wherein the first interaction feature is obtained by fusing the face feature of the target face with ~~the~~ hand features, belonging to the hand feature set, of ~~each hand~~ all hands in the picture of the image to be detected;

determine a second interaction feature of a target hand on the basis of a hand feature of the target hand and the face feature set, wherein the target hand is any hand in the picture of the image to be detected, and wherein the second interaction feature is obtained by fusing the hand feature of the target hand with ~~the~~ face features, belonging to the face feature set, of ~~each face~~ all faces in the picture of the image to be detected; and

determine a correlation between the target face and the target hand on the basis of the first interaction feature and the second interaction feature.

12. A computer device, comprising a memory and a processor, wherein the memory stores a computer executable instruction, and wherein when executing the computer executable instruction on the memory, the processor is configured to:

acquire an image to be detected;

determine a face feature set and a hand feature set of the image to be detected on the basis of a result obtained by performing face and hand detection on the image to be detected, wherein each face feature in the face feature set corresponds to one face in a picture of the image to be detected, and each hand feature in the hand feature set corresponds to one hand in

the picture of the image to be detected;

determine a first interaction feature of a target face on the basis of a face feature of the target face and the hand feature set, wherein the target face is any face in the picture of the image to be detected, and wherein the first interaction feature is obtained by fusing the face feature of the target face with ~~the~~ hand features, belonging to the hand feature set, of ~~each hand~~ all hands in the picture of the image to be detected;

determine a second interaction feature of a target hand on the basis of a hand feature of the target hand and the face feature set, wherein the target hand is any hand in the picture of the image to be detected, and wherein the second interaction feature is obtained by fusing the hand feature of the target hand with ~~the~~ face features, belonging to the face feature set, of ~~each face~~ all faces in the picture of the image to be detected; and

determine a correlation between the target face and the target hand on the basis of the first interaction feature and the second interaction feature.

13. The computer device of claim 12, wherein when determining the face feature set and the hand feature set of the image to be detected on the basis of the result obtained by performing the face and hand detection on the image to be detected, the processor is configured to:

determine a face detection box of each face and a hand detection box of each hand in the picture of the image to be detected on the basis of the result obtained by performing the face and hand detection on the image to be detected;

extract a feature of the each face on the face detection box of the each face to obtain the face feature set; and

extract a feature of the each hand on the hand detection box of the each hand to obtain the hand feature set.

14. The computer device of claim 12 or 13, wherein when determining the first interaction

feature of the target face on the basis of the face feature of the target face and the hand feature set, the processor is configured to:

construct a first undirected graph on the basis of the target face and the each hand in the picture, wherein the first undirected graph includes a first node corresponding to the target face, a second node in one-to-one correspondence with the each hand, and a first side in one-to-one correspondence with the second node, each first side is configured to connect the first node and one of second nodes;

determine a first correlation degree between a hand feature of the hand corresponding to the second node connected to the each first side and the face feature of the target face in the first undirected graph; and

determine the first interaction feature on the basis of the face feature of the target face, the hand feature of the each hand in the picture, and the corresponding first correlation degree.

15. The computer device of claim 14, wherein when determining the first correlation degree between the hand feature of the hand corresponding to the second node connected to the each first side and the face feature of the target face in the first undirected graph, the processor is configured to:

determine a first confidence degree that the hand corresponding to the second node connected to the each first side and the target face belong to a same body on the basis of the hand feature of the hand corresponding to the second node connected to the each first side and the face feature of the target face; and

normalize the first confidence degree that the hand corresponding to the second node connected to the each first side and the target face in the first undirected graph belong to the same body, to obtain the first correlation degree between the hand feature of the hand corresponding to the second node connected to the each first side and the face feature of the target face.

16. The computer device of claim 14 or 15, wherein when determining the first interaction feature on the basis of the face feature of the target face, the hand feature of the each hand in the picture, and the corresponding first correlation degree, the processor is configured to:

adjust the hand feature of the each hand on the basis of the first correlation degree corresponding to the each hand, to obtain an adjusted feature of the each hand; and

fuse the adjusted feature of the each hand in the picture and the face feature of the target face to obtain the first interaction feature.

17. The computer device of claim 12, wherein when determining the second interaction feature of the target hand on the basis of the hand feature of the target hand and the face feature set, the processor is configured to:

construct a second undirected graph on the basis of the target hand and each face in the picture, wherein the second undirected graph includes a third node corresponding to the target hand, a fourth node in one-to-one correspondence with the each face, and a second side in one-to-one correspondence with the fourth node, each second side is configured to connect the third node and one of fourth nodes;

determine a second correlation degree between a face feature of the face corresponding to the fourth node connected to the each second side and the hand feature of the target hand in the second undirected graph; and

determine the second interaction feature on the basis of the hand feature of the target hand, the face feature of the each face in the picture, and the corresponding second correlation degree.

18. The computer device of claim 17, wherein when determining the second correlation degree between the face feature of the face corresponding to the fourth node connected to the each second side and the hand feature of the target hand in the second undirected graph, the processor is configured to:

determine a second confidence degree that the face corresponding to the fourth node connected to the each second side and the target hand belong to a same body on the basis of the face feature of the face corresponding to the fourth node connected to the each second side and the hand feature of the target hand; and

normalize the second confidence degree that the face corresponding to the fourth node connected to the each second side and the target hand in the second undirected graph belong to the same body, to obtain the second correlation degree between the face feature of the face corresponding to the fourth node connected to the each second side and the hand feature of the target hand.

19. The computer device of claim 17 or 18, wherein when determining the second interaction feature on the basis of the hand feature of the target hand, the face feature of the each face in the picture, and the corresponding second correlation degree, the processor is configured to:

adjust the face feature of the each face on the basis of the second correlation degree corresponding to the each face, to obtain an adjusted feature of the each face; and

fuse the adjusted feature of the each face in the picture and the hand feature of the target hand to obtain the second interaction feature.

20. A computer program, comprising computer instructions executable by an electronic device, wherein when executed by a processor in the electronic device, the computer instructions are configured to:

acquire an image to be detected;

determine a face feature set and a hand feature set of the image to be detected on the basis of a result obtained by performing face and hand detection on the image to be detected, wherein each face feature in the face feature set corresponds to one face in a picture of the image to be detected, and each hand feature in the hand feature set corresponds to one hand in the picture of the image to be detected;

determine a first interaction feature of a target face on the basis of a face feature of the target face and the hand feature set, wherein the target face is any face in the picture of the image to be detected, and wherein the first interaction feature is obtained by fusing the face feature of the target face with ~~the~~ hand features, belonging to the hand feature set, of ~~each hand~~ all hands in the picture of the image to be detected;

determine a second interaction feature of a target hand on the basis of a hand feature of the target hand and the face feature set, wherein the target hand is any hand in the picture of the image to be detected, and wherein the second interaction feature is obtained by fusing the hand feature of the target hand with ~~the~~ face features, belonging to the face feature set, of ~~each face~~ all faces in the picture of the image to be detected; and

determine a correlation between the target face and the target hand on the basis of the first interaction feature and the second interaction feature.