

CLAIMS

1. A method for video-based facial recognition, comprising:

forming a face sequence for face images, in a video, that appear in multiple continuous video frames and have positions in the multiple video frames meeting a predetermined displacement requirement, wherein the face sequence is a set of face images of a same person in the multiple video frames; and

performing facial recognition for the face sequence by using a preset face library according to face features in the face sequence.

2. The method according to claim 1, wherein the face images, in a video, appearing in multiple continuous video frames and having positions in the multiple video frames meeting a predetermined displacement requirement comprises:

the face images of the same person appearing in successively adjacent video frames, and the displacement from the positions of the face images of the same person in a former video frame to the positions of the face images of the same person in a latter video frame meeting a predetermined displacement requirement.

3. The method according to any one of claims 1 to 2, wherein the forming the face sequence for face images, in a video, that appear in multiple continuous video frames and have positions in the multiple video frames meeting a predetermined displacement requirement comprises:

obtaining the face images of the same person in N continuous video frames of the video, N being an integer greater than two;

determining, in the face images of the same person, a face image pair that the displacement from the position of a face image in the former video frame to the position of the face image in the latter video frame meets the predetermined displacement requirement; and

if an intersection over union of the face image pair meets the predetermined

displacement requirement with the face images of the same person satisfies a preset ratio, forming the face images of the same person into the face sequence.

4. The method according to any one of claims 1 to 3, wherein the forming a face sequence for face images, in a video, that appear in multiple continuous video frames and have positions in the multiple video frames meeting a predetermined displacement requirement comprises:

respectively creating face sequences for one or more of at least one face image in a video frame in which a face appears for the first time in the video;

respectively creating face sequences for one or more of the at least one face image that does not appear in the former video frame but appears in the latter video frame; or

incorporating the face images of the same person appearing in the former video frame and the latter video frame and having continuous spatial positions, into the face sequence of the same person.

5. The method according to claim 4, wherein the incorporating the face images of the same person appearing in the former video frame and the latter video frame and having continuous spatial positions, into the face sequence of the same person comprises:

respectively obtaining the a face feature of each of the at least one face image in the former video frame of successively adjacent video frames, a position in the former video frame of each of the at least one face image in the former video frame, a face feature of each of the at least one face image in the latter video frame, and the a position in the latter video frame of each of the at least one face image in the latter video frame;

determining, according to the position in the former video frame of each of the at least one face image in the former video frame and the position in the latter video frame of each of the at least one face image in the latter video frame, a face image

pair having displacement meeting the predetermined displacement requirement; and

in a case that the similarity of the face feature pair of the face image pair meets the predetermined similarity requirement, determining, for the face image pair having displacement meeting the predetermined displacement requirement, that the face image of the face image pair in the latter video frame belongs to the face sequence to which the face image in the former video frame belongs.

6. The method according to claim 4 or 5, wherein the respectively creating face sequences for one or more of the at least one face image that does not appear in the former video frame but appears in the latter video frame comprises:

in a case that the similarity of the face feature pair of the face image pair does not meet the predetermined similarity requirement, creating, for the face image pair having displacement meeting the predetermined displacement requirement, a face sequence for the face image of the face image pair in the latter video frame.

7. The method according to any one of claims 1 to 6, wherein before the performing facial recognition for the face sequence by using a preset face library according to face features in the face sequence, the method further comprising obtaining the face features, and the obtaining the face features comprises:

performing, using a face detector, face detection on at least one video frame to obtain bounding box information of at least one face image in the at least one video frame; and

providing the at least one video frame and the bounding box information of the at least one face image in the at least one video frame to a neural network for face feature extraction, such that each face feature of the at least one face image in the at least one video frame is obtained through the neural network.

8. The method according to any one of claims 1 to 7, wherein after the forming a face sequence and before the performing facial recognition for the face sequence by using

a preset face library at least according to face features in the face sequence, the method further comprises:

performing clustering processing on at least some face sequences according to the face features of at least some face sequences to combine different face sequences corresponding to the same person,

wherein after the clustering processing, each of the different face sequences corresponds to a respective person.

9. The method according to claim 8, wherein the face features of the at least some face sequences comprise:

a weighted average value of the face features of at least some face images in the face sequence.

10. The method according to claim 9, wherein weight values of the face features of the at least some face images in the face sequence are determined according to a face image quality of the at least some face images.

11. The method according to claim 10, wherein the face image quality comprises at least one of face image light intensity, face image definition, or face orientation.

12. The method according to any one of claims 1 to 11, wherein the face library comprises face features of multiple persons, and the face features of any person comprise a comprehensive face feature of the person and face features in different pictures of the person, wherein the comprehensive face feature comprises a weighted average value of the face features in different pictures of the person.

13. The method according to claim 12, wherein the performing facial recognition for the face sequence by using a preset face library according to face features in the face sequence comprises:

computing, for at least one face feature of the face sequence, the similarity between the face feature and the comprehensive face feature of at least one person in the face library, and determining the persons in the face library corresponding to the highest similarities;

voting for the persons in the face library corresponding to the highest similarities determined according to at least some face features of the face sequence, and taking the person having a maximum number of votes as a person to which the face sequence belongs; and

determining, for the face sequence, according to the similarities between at least one face feature of the face sequence and the face features in different pictures of the person in the face library to which the face sequence belongs, a confidence that the face sequence belongs to the person.

14. The method according to claim 13, wherein the determining, according to the similarities between at least one face feature of the face sequence and the face features in different pictures of the person in the face library to which the face sequence belongs, a confidence that the face sequence belongs to the person comprises:

computing, for one of the at least one face feature of the face sequence, a similarity between the one of the at least one face feature and another face feature in a face feature set having the most similar face pose to the one of the at least one face feature; and

determining, according to the computed similarity between the one of the at least one face feature and the another face feature in the face feature set having the most similar face pose to the one of the at least one face feature, the confidence that the face sequence belongs to the person,

wherein the face feature set comprises the face features in different pictures of the person in the face library.

15. The method according to claim 13 or 14, wherein the determining, at least

according to the similarities between at least one face feature of the face sequence and the face features in different pictures of the person in the face library to which the face sequence belongs, a confidence that the face sequence belongs to the person comprises:

determining, according to face key points of the face sequence and face key points in the face feature set, the face feature in the face feature set having the most similar face pose to that in the face sequence.

16. The method according to any one of claims 1 to 15, wherein the method further comprises:

obtaining, through a neural network, face key points of at least one face image of the video frame.

17. The method according to any one of claims 1 to 16, wherein the determining, according to the similarities between at least one face feature of the face sequence and the face features in different pictures of the person in the face library to which the face sequence belongs, a confidence that the face sequence belongs to the person further comprises:

correcting the confidence that the face sequence belongs to the person by using the similarity between the face feature of the face sequence and the comprehensive face feature of the person to which the face sequence belongs.

18. An electronic device, comprising:

a memory configured to store a computer program; and

a processor configured to execute the computer program stored in the memory, wherein the computer program, when being executed, implements the method according to any one of claims 1 to 17.

19. A computer-readable storage medium having a computer program stored thereon,

wherein the computer program, when being executed by a processor, implements the method according to any one of claims 1 to 17.

20. A computer program, comprising computer instructions, wherein the computer instructions, when being executed in a processor of a device, implement the method according to any one of claims 1 to 17.