

CLAIMS

1. A method for face location tracking, the method comprising:
 - determining a face region in a current image frame by using an Adaboost method for reducing a quantity of classification levels (S1);
 - determining a predicted region that comprises a face in a next image frame of the current image frame based on the face region in the current image frame by expanding a length and a width of the face region in the current image frame (S2);
 - searching the predicted region for a first preselected region with a similarity to the face region that satisfies a predetermined requirement (S3);
 - traversing the entire next image frame to determine whether the face region is detected in the next image frame (S4) and to obtain a detection result in the next image frame;
 - determining a face location tracking result of the next image frame based on the first preselected region, the result of detecting the face region in the next image frame, and a predetermined selection rule (S4); and
 - wherein the predetermined selection rule comprises selecting the first preselected region as the face location tracking result in response to determining that the face region is not detected in the next image frame.
2. The method of claim 1, wherein the searching the predicted region for the first preselected region with similarity to the face region that satisfies the predetermined requirement comprises:
 - traversing the predicted region based on a first moving step to obtain a comparison region of the face region;
 - calculating similarity between the face region and the comparison region; and
 - using a comparison region with similarity that meets the predetermined requirement in the next image frame as the first preselected region in the next image frame.
3. The method of claim 2, wherein the similarity between the face region and the comparison region is calculated based on a comparison of boundary locations of the current comparison region and of the face region and a difference between grayscale values of pixels with coordinates in the comparison region and in the next image frame, relative to a specified empirical threshold.

4. The method of claim 2, wherein the comparison region with similarity that satisfies the predetermined requirement comprises:

a comparison region with the largest similarity among comparison regions in the next image frame.

5. The method of claim 2, wherein a value range of the first moving step is greater than or equal to two pixels.

6. The method of any one of claims 2 to 5, wherein the method further comprises:

searching for a second preselected region with the highest similarity to the face region within a range of a second step size surrounding the first preselected region, wherein the second step size is less than the first step size; and

determining the face location tracking result of the next image frame based on the first preselected region, the result of detecting the face region in the next image frame, and a predetermined selection rule further comprises: determining the face location tracking result of the next image frame based on the second preselected region, the result of detecting the face region in the next image frame, and the predetermined selection rule.

7. The method of claim 1, wherein the determining a face location tracking result of the next image frame based on the first preselected region, the result of detecting the face region in the next image frame, and a predetermined selection rule comprises:

detecting the face region in the next image frame;

determining a coefficient of an overlap between the detected face region in the next image frame and the first preselected region;

in response to determining that the coefficient of the overlap between the detected face region in the next image frame and the first preselected region is 0, using the first preselected region as the face location tracking result of the next image frame;

in response to determining that the coefficient of the overlap between the detected face region in the next image frame and the first preselected region is less than a predetermined threshold, using the first preselected region as the face location tracking result of the next image frame; or

in response to determining that the coefficient of the overlap between the detected face region

in the next image frame and the first preselected region is greater than or equal to the predetermined threshold, using the detected face region in the next image frame as the face location tracking result of the next image frame.

8. The method of claim 1, wherein the obtaining a face region in a current image frame comprises:

determining a number of faces in the current image frame;

in response to determining that at least two faces are detected from the current image frame, selecting a region corresponding to a face with the largest area in the current image frame as the face region in the current image frame.

9. The method of any one of claims 1 to 8, wherein the length and the width of the face region in the current image frame are expanded with a number of pixels.

10. The method of any one of claims 1 to 8, wherein the length and the width of the face region in the current image frame are expanded by a number of times.

11. The method of any one of claims 1 to 10, wherein if the current image frame comprises a plurality of faces, a face closest to the camera is a main target.

12. The method of any one of claims 1 to 10, wherein the Adaboost method comprises an iterative algorithm combining weak classifiers into a strong classifier.

13. An apparatus for face location tracking, the apparatus comprising a plurality of modules configured to perform the method of any one of claims 1 to 12.