CLAIMS

1. A dynamic action detection method, comprising:

adding an image frame in a video stream into a first queue, to obtain the first queue of partially updated image frames;

detecting a dynamic action in the first queue of partially updated image frames; and

updating an action detection result according to the dynamic action under the condition that the dynamic action does not match with the action detection result, the action detection result comprising an action reference result or a previously detected action detection result.

2. The method according to claim 1, wherein a method of obtaining the previously detected action detection result comprises:

moving the image frame in the first queue into a second queue under the condition that a dynamic action exists in the image frame of the first queue; and

determining the action detection result according to an image frame in the second queue.

3. The method according to claim 1, wherein the action detection result comprises a static action; and wherein adding the image frame in the video stream into the first queue, to obtain the first queue of partially updated image frames comprises:

obtaining a static action in an image frame to be identified in the video stream; and

adding the image frame to be identified into the first queue under the condition that the static action in the image frame to be identified does not match with the static action in the action detection result, to obtain the first queue of partially updated image frames.

4. The method according to claim 2, wherein the action detection result comprises a static action; and wherein adding the image frame in the video stream into the first queue, to obtain the first queue of partially updated image frames comprises:

obtaining a static action in an image frame to be identified in the video stream; and

adding the image frame to be identified into the first queue under the condition that the static action in the image frame to be identified does not match with the static action in the action detection result, to obtain the first queue of partially updated image frames.

5. The method according to claim 4, wherein the action detection result further comprises an action trajectory and/or switching information of the static action; and wherein adding the image frame in the video stream into the first queue, to obtain the first queue of partially

updated image frames comprises:

determining the action trajectory and/or switching information of the static action in the image frame to be identified according to the image frame to be identified and the image frame in the second queue under the condition that the static action in the image frame to be identified matches with the static action in the action detection result; and

adding the image frame to be identified into the first queue under the condition that the action trajectory and/or switching information of the static action in the image frame to be identified does not match with the action detection result, to obtain the first queue of partially updated image frames.

6. The method according to claim 2, further comprising:

emptying the second queue and moving the image frame in the first queue into the second queue under the condition that the dynamic action detected according to the first queue of partially updated image frames does not match with the action detection result; and

updating the action detection result according to a dynamic action in the image frame in the second queue.

7. The method according to claim 5, further comprising:

adding the image frame to be identified into the second queue under the condition that a static action in the image frame to be identified, and the action trajectory and/or switching information of the static action match with the action detection result.

8. The method according to claim 1, wherein the dynamic action comprises at least one static action and an action trajectory of the static action; and wherein detecting the dynamic action in the first queue of partially updated image frames comprises:

obtaining the dynamic action in the first queue of partially updated image frames according to the static action of each image frame in the first queue of partially updated image frames and the action trajectory of the static action in the each image frame.

9. The method according to claim 1, wherein the dynamic action comprises at least two static actions and switching information between the static actions; and wherein detecting the dynamic action in the first queue of partially updated image frames comprises:

obtaining the dynamic action in the first queue of partially updated image frames according to the static actions of each image frame in the first queue of partially updated

image frames and the switching information of the static actions.

10. The method according to claim 1, wherein the dynamic action comprises at least two static actions, an action trajectory of each static action, and switching information between the static actions; and wherein detecting the dynamic action in the first queue of partially updated image frames comprises:

obtaining the dynamic action in the first queue of partially updated image frames according to the static actions of each image frame in the first queue of partially updated image frames , the action trajectory of the each static action, and the switching information between the static actions.

11. The method according to claim 3, wherein the dynamic action comprises a hand dynamic action, and the static action comprises a gesture; and wherein obtaining the static action in the image frame to be identified in the video stream comprises:

detecting whether the image frame to be identified comprises a hand; and

obtaining a gesture in the image frame to be identified according to fingers and/or a palm on the hand under the condition that the image frame to be identified comprises the hand.

12. The method according to claim 4, wherein the dynamic action comprises a hand dynamic action, and the static action comprises a gesture; and wherein obtaining the static action in the image frame to be identified in the video stream comprises:

detecting whether the image frame to be identified comprises a hand; and

obtaining a gesture in the image frame to be identified according to fingers and/or a palm on the hand under the condition that the image frame to be identified comprises the hand.

13. The method according to claim 11, wherein obtaining the gesture in the image frame to be identified according to the fingers and/or the palm on the hand comprises:

identifying the gesture in the image frame to be identified according to a position of a first key point of the fingers on the hand and/or a position of a second key point of the palm; wherein the first key point of the fingers comprises a fingertip or a knuckle; the second key point of the palm comprises a point on a palm center, a palm back, or a palm edge.

14. The method according to claim 12, wherein obtaining the gesture in the image frame to be identified according to the fingers and/or the palm on the hand comprises:

identifying the gesture in the image frame to be identified according to a position of a first key point of the fingers on the hand and/or a position of a second key point of the palm;

wherein the first key point of the fingers comprises a fingertip or a knuckle; the second key point of the palm comprises a point on a palm center, a palm back, or a palm edge.

15. The method according to claim 14, wherein the hand dynamic action further comprises an action trajectory and/or switching information of the gesture; and wherein determining the action trajectory and/or the switching information of the static action in the image frame to be identified according to the image frame to be identified and the image frame in the second queue further comprises:

determining the action trajectory and/or the switching information in the image frame to be identified according to the first key point in the image frame to be identified and a first key point in the image frame in the second queue corresponding thereto; and/or

determining the action trajectory and/or the switching information in the image frame to be identified according to the second key point in the image frame to be identified and a second key point in the image frame in the second queue corresponding thereto.

16. The method according to any one of claims 1 to 15, wherein the dynamic action comprises a static action and an action trajectory of the static action; and wherein detecting the dynamic action in the first queue of partially updated image frames comprises:

detecting the static action in the image frame in the first queue;

calculating an accumulated movement distance of a static action in a target image frame in an X axial direction and a Y axial direction with respect to the static action in a first image frame in the first queue; the target image frame comprising any image frame in the first queue except the first image frame; and

obtaining the dynamic action in the image frame in the first queue according to the static action in the target image frame and the accumulated movement distance.

17. The method according to claim 16, wherein obtaining the dynamic action in the image frame in the first queue according to the static action in the target image frame and the accumulated movement distance comprises:

determining the dynamic action of the target object in the image frame in the first queue to be a discontinuous action under the condition that the accumulated movement distance of the static action in the target image frame is less than a movement threshold.

18. A dynamic action detection apparatus, comprising:

a first queue update module, configured to add an image frame in a video stream into a first queue, to obtain the first queue of partially updated image frames;

a dynamic action detection module, configured to detect a dynamic action in the first queue of partially updated image frames; and

an action detection result update module, configured to update an action detection result according to the dynamic action under the condition that the dynamic action does not match with the action detection result, the action detection result comprising an action reference result or a previously detected action detection result.

19. An electronic device, comprising:

a processor; and

a memory configured to store processor-executable instructions;

wherein the processor is configured to: execute the method according to any one of claims 1 to 17.

20. A computer readable storage medium, having computer program instructions stored thereon, wherein when the computer program instructions are executed by a processor, the method according to any one of claims 1 to 17 is implemented.