CLAIMS

1. A vehicle intelligent driving control method, wherein the method comprises:

collecting, by a vehicle-mounted camera of a vehicle, a video stream of a road image of a scenario where the vehicle is located;

detecting a target object in the road image to obtain a bounding box of the target object; and determining, in the road image, a free space of the vehicle;

adjusting the bounding box of the target object according to the free space; and

performing intelligent driving control on the vehicle according to the adjusted bounding box.

2. The method according to claim 1, wherein determining, in the road image, the free space of the vehicle comprises:

performing image segmentation on the road image to obtain a segmented area where the target object in the road image is located;

performing lane detection on the road image; and

determining, according to a detection result of the lanes and the segmented area, the free space of the vehicle in the road image.

3. The method according to claim 1, wherein determining, in the road image, the free space of the vehicle comprises:

determining an overall projected area of the target object in the road image;

performing lane detection on the road image; and

determining, according to a detection result of the lanes and the overall projected area, the free space of the vehicle in the road image.

4. The method according to any one of claims 1 to 3, wherein the target object is a vehicle, and the bounding box of the target object is a bounding box of a front or rear portion of the vehicle.

5. The method according to any one of claims 1 to 4, wherein adjusting the bounding box of the target object according to the free space comprises:

determining an edge of the free space corresponding to a bottom edge of the bounding box as a reference edge; and

adjusting, according to the reference edge, a position where the bounding box of the target object is located in the road image.

6. The method according to claim 5, wherein adjusting, according to the reference edge, the position where the bounding box of the target object is located in the road image comprises:

determining, in an image coordinate system, first coordinate values of pixels included in the reference edge along a height direction of the target object;

calculating an average value of the first coordinate values to obtain a first position average value; and

adjusting, in the height direction of the target object, the position where the bounding box of the target object is located in the road image, according to the first position average value.

7. The method according to claim 5 or 6, wherein adjusting, according to the reference edge, the position where the bounding box of the target object is located in the road image comprises:

determining, in an image coordinate system, second coordinate values of pixels on the reference edge along a width direction of the target object;

calculating an average value of the second coordinate values to obtain a second position average value; and

adjusting, in the width direction of the target object, the position where the bounding box of the target object is located in the road image according to the second position average value.

8. The method according to any one of claims 1 to 7, wherein performing intelligent driving control on the vehicle according to the adjusted bounding box comprises:

determining a detected depth-width ratio of the target object according to the adjusted bounding box;

determining a height adjustment value in a case where a difference value between the detected depth-width ratio and a preset depth-width ratio of the target object is greater than a difference value threshold; and

performing intelligent driving control on the vehicle according to the height adjustment value and the bounding box.

9. The method according to any one of claims 1 to 8, wherein performing intelligent driving control on the vehicle according to the adjusted bounding box comprises:

determining, according to the adjusted bounding box, an actual position of the target object on the road with a plurality of homography matrices of the vehicle-mounted camera, wherein each homography matrix has a different calibrated distance range; and

performing the intelligent driving control on the vehicle according to the actual position of the target object on the road.

10. The method according to claim 9, wherein the method further comprises:

determining a dangerous area for the vehicle;

determining a danger level of the target object according to the actual position of the target object and the dangerous area; and

sending, in a case where the danger level satisfies a danger threshold, prompt information of the danger level.

11. The method according to claim 10, wherein determining the danger level of the target object according to the actual position of the target object and the dangerous area comprises:

determining a first danger level of the target object according to the actual position of the target object and the dangerous area;

determining, in a case where the first danger level of the target object is a highest danger level, an adjacent position of the target object in an adjacent image of the road images in the video stream; and

determining the danger level of the target object according to the adjacent position and the actual position of the target object.

12. The method according to any one of claims 1 to 11, wherein the method further comprises:

obtaining collision time according to a distance between the target object and the vehicle, movement information of the target object, and movement information of the vehicle;

determining collision warning information according to the collision time and a time threshold; and

sending the collision warning information.

13. The method according to claim 12, wherein sending the collision warning information comprises:

sending the collision warning information in a case where there is no transmission record of the collision warning information for the target object in the sent collision warning information; and/or

not sending the collision warning information in a case where there is a transmission record of the collision warning information for the target object in the sent collision warning information.

14. The method according to claim 12 or 13, wherein sending the collision warning information comprises:

acquiring driving status information of the vehicle, wherein the driving status information includes braking information and/or steering information; and

sending the collision warning information in a case where it is determined according to the driving status information that the vehicle has not performed corresponding braking and/or steering operation.

15. The method according to any one of claims 12 to 14, wherein a step of determining a distance between the target object and the vehicle comprises:

detecting, in the road image, a vehicle license plate and/or a vehicle logo of the vehicle;

determining a reference distance of the target object according to detection results of the vehicle license plate and/or the vehicle logo; and

adjusting the distance between the target object and the vehicle according to the reference distance.

16. The method according to claim 15, wherein adjusting the distance between the target object and the vehicle according to the reference distance comprises:

adjusting, in a case where a difference value between the reference distance and the distance between the target object and the vehicle is greater than a difference value threshold, the distance between the target object and the vehicle to the reference distance, or

calculating a difference value between the reference distance and the distance between the target object and the vehicle, and determining, according to the difference value, the distance between the target object and the vehicle.

17. A vehicle intelligent driving control device, wherein the device comprises:

a video stream acquiring module, configured to collect, by a vehicle-mounted camera of a vehicle, a video stream of a road image of a scenario where the vehicle is located;

a free space determining module, configured to detect a target object in the road image to obtain a bounding box of the target object; and determine, in the road image, a free space of the vehicle;

a bounding box adjusting module, configured to adjust the bounding box of the target object according to the free space; and

a control module, configured to perform intelligent driving control on the vehicle according to the adjusted bounding box.

18. The device according to claim 17, wherein the free space determining module comprises:

an image segmentation sub-module, configured to perform image segmentation on the road image to obtain a segmented area where the target object in the road image is located;

a first lane detecting sub-module, configured to perform lane detection on the road image; and

a first free space determining sub-module, configured to determine, according to a detection result of the lanes and the segmented area, the free space of the vehicle in the road image.

19. An electronic apparatus, 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 16.

20. A computer readable storage medium having computer program instructions stored thereon, wherein the computer program instructions, when executed by a processor, implement the method according to any one of claims 1 to 16.