CLAIMS

1. A method for intelligent adjustment of a vehicle seat, comprising:

detecting an image of a riding person of a vehicle, to obtain a detection result;

determining body type related information and/or face height information of the riding person according to the detection result;

determining adjustment information of a seat of the riding person based on the body type related information and/or the face height information; and

outputting the adjustment information, or adjusting the seat based on the adjustment information.

2. The method according to claim 1, wherein the detection result comprises: a face reference point coordinate;

detecting the image of the riding person of the vehicle, to obtain the detection result comprises:

performing face reference point detection on the image of the riding person, to obtain the face reference point coordinate of the riding person in a camera coordinate system; and

determining the face height information of the riding person according to the detection result comprises:

converting the face reference point coordinate to a vehicle coordinate system from the camera coordinate system; and

determining the face height information of the riding person based on the face reference point coordinate in the vehicle coordinate system.

3. The method according to claim 2, wherein the face reference point comprises at least one face key point and/or at least one face other position point; and

performing the face reference point detection on the image of the riding person, to obtain the face reference point coordinate of the riding person in the camera coordinate system comprises:

performing face reference point detection on the image of the riding person, to obtain at least one face key point coordinate of the riding person in the camera coordinate system; and/or

determining the at least one face other position point based on the at least one face key point coordinate.

4. The method according to any one of claims 1 to 3, wherein the body type related information comprises race information and/or gender information;

detecting the image of the riding person of the vehicle, to obtain the detection result comprises:

inputting the image of the riding person into a neural network used for attribute detection to perform attribute detection, to obtain an attribute detection result output by the neural network; and

determining the body type related information of the riding person according to the detection result comprises:

obtaining the race information and/or gender information of the riding person corresponding to the image based on the attribute detection result.

5. The method according to any one of claims 1 to 4, wherein determining adjustment information of the seat of the riding person based on the body type related information and/or the face height information comprises:

obtaining a preset seat adjustment converting relation related to a body type and/or a face height;

determining a seat expectation state corresponding to the riding person based on the body type related information and/or the face height information, and the seat adjustment converting relation; and

determining adjustment information of the seat based on the seat expectation state, or determining the adjustment information of the seat based on the seat expectation state and a seat current state.

6. The method according to any one of claims 1 to 4, wherein determining adjustment information of the seat of the riding person based on the body type related information and the face height information comprises:

obtaining a preset first seat adjustment converting relation related to the face height;

determining a first seat expectation state corresponding to the riding person based on the face height information and the first seat adjustment converting relation;

obtaining a preset second seat adjustment converting relation related to the body type related information;

determining a second seat expectation state based on the body type related information,

the second seat adjustment converting relation, and the first seat expectation state; and

determining the adjustment information of the seat based on the second seat expectation state, or determining the adjustment information of the seat based on the second seat expectation state and the seat current state.

7. The method according to claims 1 to 6, further comprising:

establishing a mapping relationship between the seat adjustment information corresponding to the riding person and identity information of the riding person and storing the mapping relationship.

8. The method according to any one of claims 1 to 7, wherein the seat adjustment information comprises at least one of the following information: a target value of a seat adjustment parameter, upward or downward adjustment amount of the seat, forward or backward adjustment amount of the seat, leftward or rightward adjustment amount of the seat, an adjustment amount of an inclined angle of a back-rest chair, or an adjustment amount of an inclined angel of a cushion.

9. The method according to claim 8, wherein adjusting the seat based on the seat adjustment information comprises at least one of the following operations:

adjusting the seat based on the target value of the seat adjustment parameter;

adjusting the seat in upper or lower direction based on the upward or downward adjustment amount of the seat;

adjusting the seat in front or back direction based on the forward or backward adjustment amount of the seat;

adjusting the seat in left or right direction based on the leftward or rightward adjustment amount of the seat;

adjusting the inclined angle of a backrest of the seat based on the adjustment amount of the inclined angle of the back-rest chair; or

adjusting the inclined angle of the cushion of the seat based on the adjustment amount of the inclined angle of the cushion.

10. The method according to any one of claims 1 to 9, wherein before detecting the image of the riding person, to obtain the detection result, the method further comprises:

performing identity authentication based on the image; and

enabling the riding person to have a seat adjustment authority in response to the identity

authentication being passed.

11. The method according to claim 10, wherein

performing the identity authentication based on the image comprises: performing face recognition based on the image to obtain a face feature of the riding person; and, matching the face feature with at least one pre-stored face feature having the seat adjustment authority; and

enabling the riding person to have the seat adjustment authority in response to the identity authentication being passed comprises: enabling the riding person to have the seat adjustment authority in response to that the pre-stored face feature matched with the face feature exists and the identity authentication is passed.

12. The method according to claim 10 or 11, wherein enabling the riding person to have the seat adjustment authority in response to the identity authentication being passed comprises:

determining whether a database comprises the identity information of the riding person in response to the identity authentication being passed, wherein the database at least stores the identification information and seat expectation state of at least one riding person; the database comprises at least one pre-stored face feature and at least one seat position information; and each pre-stored face feature corresponds to one seat position information; and

allowing the riding person to adjust the seat in response to the database not including the identity information of the riding person.

13. The method according to any one of claims 1 to 12, wherein before detecting the image of the riding person of the vehicle, to obtain the detection result, the method further comprises:

collecting the image of the riding person by using at least one camera disposed inside the vehicle.

14. The method according to claim 13, wherein the camera comprises at least one of: an infrared camera, an RGB camera, a TOF camera, or a binocular camera.

15. The method according to claim 13 or 14, wherein collecting the image of the riding person by using the at least one camera disposed inside the vehicle comprises:

collecting the image of the riding person by using the at least one camera and a supplementary lighting apparatus disposed inside the vehicle.

16. An apparatus for intelligent adjustment of a vehicle seat, comprising:

a person detection unit, configured to detect an image of a riding person of a vehicle, to obtain a detection result;

a related information determining unit, configured to determine body type related information and/or face height information of the riding person according to the detection result;

an adjustment information determining unit, configured to determine adjustment information of a seat of the riding person based on the body type related information and/or the face height information; and

an information processing unit, configured to output the adjustment information, or adjust the seat based on the adjustment information.

17. The apparatus according to claim 16, wherein the detection result comprises: a face reference point coordinate;

the person detection unit is configured to perform the face reference point detection on the image of the riding person, to obtain a face reference point coordinate of the riding person in a camera coordinate system; and

the related information determining unit is configured to, when determining the face height information of the riding person according to the detection result, convert the face reference point coordinate to a vehicle coordinate system from the camera coordinate system; and determine the face height information of the riding person based on the face reference point coordinate in the vehicle coordinate system.

18. The apparatus according to any one of claims 16 to 17, wherein the body type related information comprises race information and/or gender information;

the person detection unit is configured to input the image of the riding person into a neural network used for attribute detection to perform attribute detection, to obtain an attribute detection result output by the neural network; and

the related information determining unit is configured to, when determining body type related information of the riding person according to the detection result, obtain the race information and/or gender information of the riding person corresponding to the image based on the attribute detection result.

19. A vehicle, comprising the apparatus for intelligent adjustment of a vehicle seat according to any one of claims 16 to 18.

20. A non-transitory computer storage medium, configured to store computer readable instructions, wherein the instructions, when being executed, enable to implement operations of the method for intelligent adjustment of a vehicle seat according to any one of claims 1 to 15.