CLAIMS

What is claimed is:

1. A system for adjusting wheel alignment of a vehicle, the system comprising:

a base configured to be moved by a robot;

an adjustment arm movably disposed on the base and configured to be moved by an actuator;

a fixing unit provided at an upper end of the adjustment arm and configured to fix a bolt head or a nut; and

a control unit configured to control the robot to allow the base to enter a toe adjustment part or a camber adjustment part for a vehicle suspension, the control unit being configured to control the actuator to allow the fixing unit of the adjustment arm to manipulate a bolt and a nut of the toe adjustment part or the camber adjustment part to adjust the wheel alignment of the vehicle,

wherein the base comprises an upper base part and a lower base part, the robot is connected to the upper base part through a pneumatic cylinder provided in the lower base part, and the control unit controls the robot to tilt the upper base part with respect to the lower base part and allow the base to enter the toe adjustment part or the camber adjustment part for the vehicle suspension.

2. The system of claim 1, wherein the control unit calculates an initial value of the wheel alignment of the vehicle and determines whether the vehicle is required to be subjected to the adjustment of the wheel alignment based on the calculated initial value, and

wherein the control unit allows the fixing unit to adjust the wheel alignment of the vehicle required to be subjected to the adjustment of the wheel alignment.

3. The system of claim 1 or 2, further comprising:

a determination unit configured to determine whether the wheel alignment of the vehicle adjusted by the control unit is within a normal range.

4. The system of claim 3, wherein the control unit completes the adjustment of the wheel alignment of the vehicle when the determination unit determines that the adjusted wheel alignment of the vehicle is within the normal range, and

wherein the control unit repeatedly adjusts the wheel alignment of the vehicle when the determination unit determines that the adjusted wheel alignment of the vehicle is not within the normal range.

5. The system of one of claims 1 to 4, wherein the adjustment arm comprises a first arm and a second arm provided at two opposite sides of the base, the fixing unit comprises a bolt head fixing part and a nut fixing part, and the bolt head fixing part and the nut fixing part are respectively provided on the first arm and the second arm.

6. The system of one of claims 1 to 4, wherein the fixing unit comprises a groove-shaped bolt head fixing part and a groove-shaped nut fixing part respectively provided on two opposite sides of an upper end of the adjustment arm, and the bolt head fixing part or the nut fixing part is directed toward a suspension of the vehicle by a rotation of the adjustment arm.

7. The system of claim 6, wherein the fixing unit comprises a single body, the groove-shaped bolt head fixing part provided at one side of the body, and the groove-shaped nut fixing part provided at the other side of the body.

8. A method of adjusting wheel alignment of a vehicle using the system for adjusting the wheel alignment of the vehicle according to claim 5, the method comprising:

adjusting, by the actuator, a distance between the first arm and the second arm spaced apart from each other and disposed at the two opposite sides of the base;

controlling, by the control unit, the robot to allow the base to enter the toe adjustment part or the camber adjustment part for the vehicle suspension; and

controlling, by the control unit, the actuator to allow the bolt head fixing part and the nut fixing part to manipulate the bolt and the nut of the toe adjustment part or the camber adjustment part to adjust the wheel alignment of the vehicle.

9. The method of claim 8, wherein the adjusting of the wheel alignment of the vehicle comprises calculating an initial value of the wheel alignment of the vehicle, determining whether the vehicle is required to be subjected to the adjustment of the wheel alignment based on the calculated initial value, and adjusting the wheel alignment of the vehicle by allowing the bolt head fixing part and the nut fixing part to manipulate the bolt and the nut of the toe adjustment part or the camber adjustment part in respect to the vehicle required to be subjected to the adjustment of the wheel alignment.

10. The method of claim 8 or 9, further comprising:

determining, by a determination unit, whether the adjusted wheel alignment of the vehicle is within a normal range after the controlling of the actuator by the control unit to allow the bolt head fixing part and the nut fixing part to manipulate the bolt and the nut of the toe adjustment part or the camber adjustment part to adjust the wheel alignment of the vehicle.

11. A method of adjusting wheel alignment of a vehicle using the system for adjusting the wheel alignment of the vehicle according to claim 6 or 7, the method comprising:

adjusting, by the actuator, the adjustment arm;

controlling, by the control unit, the robot to allow the base to enter the toe adjustment part or the camber adjustment part for the vehicle suspension; and

controlling, by the control unit, the actuator to allow the bolt head fixing part and the nut fixing part to manipulate the bolt and the nut of the toe adjustment part or the camber adjustment part to adjust the wheel alignment of the vehicle.

12. The method of claim 11, wherein the adjusting of the wheel alignment of the vehicle comprises calculating an initial value of the wheel alignment of the vehicle, determining whether the vehicle is required to be subjected to the adjustment of the wheel alignment based on the calculated initial value, and adjusting the wheel alignment of the vehicle by allowing the bolt head fixing part and the nut fixing part to manipulate the bolt and the nut of the toe adjustment part or the camber adjustment part in respect to the vehicle required to be subjected to the adjustment of the wheel alignment.

13. The method of claim 11 or 12, further comprising:

determining, by a determination unit, whether the adjusted wheel alignment of the vehicle is within a normal range after the controlling of the actuator by the control unit to allow the bolt head fixing part and the nut fixing part to manipulate the bolt and the nut of the toe adjustment part or the camber adjustment part to adjust the wheel alignment of the vehicle.