WHAT IS CLAIMED IS:

1. An automatic removal system for a reservoir cap, comprising:

a removal robot comprising:

a polyarticular robot arm,

an engagement element associated with the robot, and

a gripping mechanism equipped with a detection sensor that is configured to monitor a front; and

a controller configured to:

recognize the reservoir cap installed in a reservoir inlet or a reservoir through the detection sensor,

control the robot arm to move the gripping mechanism to a recognition point, and

control a cylinder, a finger, and a rotary motor to attach or detach the reservoir cap to or from the reservoir inlet;

wherein the detection sensor comprises a vision camera that is configured to detect position data of the reservoir inlet and opening or closing of the reservoir cap; and a sensor camera that is configured to detect a liquid injection amount.

2. The system of claim 1 wherein the engagement element comprises the finger that is installed at an end of the robot arm to move forwards and backwards through the cylinder and grips or releases the reservoir cap.

3. The system of claim 1 further comprising the rotary motor.

4. The system of claim 2 further comprising the rotary motor that rotates the finger.

5. The system of any one of claims 1 to 4, wherein the removal robot is a cooperation robot comprising a plurality of robot arms and a plurality of links.

6. The system of any one of claims 1 to 5, wherein the removal robot comprises a plurality of fingers, an attaching part composed of a finger driving part that is configured to drive the fingers to grip or release the reservoir cap, and a fixing part including the cylinder, the rotary motor, and a base.

7. The system of claim 6, wherein the detection sensor is provided on a side of the base to monitor the front.

8. The system of claim 6 or claim 7, wherein the base is connected to the cylinder through a spring damper to form a suspension structure.

9. The system of claim 1, wherein the vision camera is further configured to detect a shape of the reservoir inlet, and the position data of the reservoir inlet including x-axis and y-axis position compensation values of the reservoir inlet.

10. The system of claim 1 or claim 9, wherein the sensor camera is further configured to detect the liquid injection amount by comparing a distance between a surface of injected liquid and the sensor camera or by comparing an appearance of a translucent reservoir into which liquid is injected.

11. The system of any one of claims 6 to 8, wherein the plurality of fingers are installed to be spaced apart from each other in a circumferential direction; the reservoir cap is gripped when the fingers come near to each other; and the reservoir cap is released when the fingers move away

from each other.

12. The system of any one of claims 1 to 11, wherein the gripping mechanism is connected to an end of the removal robot; and the gripping mechanism is vertically moved through the cylinder.

13. The system of any one of claims 1 to 12, wherein the cylinder is operated in a hydraulic method or in a ball-screw fastening method.

14. The system of any one of claims 1 to 13, wherein the controller is further configured to calculate a torque value required for opening or closing the reservoir cap and perform a control operation such that the reservoir cap is attached to or detached from the inlet by rotating the rotary motor and gripping the finger based on the torque value.

15. The system of any one of claims 6 to 8, wherein the controller is further configured to variably control a driving force of the finger driving part depending on a diameter of the reservoir cap.

16. The system of any one of claims 1 to 15, wherein the controller is further configured to monitor the torque value of the removal robot and the rotating angle of the rotary motor in real time when the reservoir cap is attached to or detached from the reservoir inlet.

17. The system of any one of claims 1 to 16, wherein the detection sensor is configured to check whether the reservoir cap is attached when the control operation of the controller is completed, and the removal robot moves to an initial position; and
the controller is further configured to control the removal robot to attach the reservoir cap when the upper surface of the reservoir cap is not parallel to the upper and lower surfaces of the

reservoir.

18. A vehicle comprising the system of any one of claims 1 to 17.