

CHAPTER 4

RESEARCH METHODOLOGY

1. Learn each sensor. This project uses 3 motor servo, 7 ultrasonic sensor, 1 LDR sensor, arduino mega, and breadboard. The result of this step, we will be better to understand how motor servo and ultrasonic sensor work.
2. Trial using 2 ultrasonic sensor and 1 motor servo to move the head. The result of this step is to know how to correlate the motor servo in order to move following to the direction of the ultrasonic sensor that detect the presence of the hand or object.
3. Installation of LDR sensors and correlating with the servos. The purpose of this step is so that the servo is controlled by LDR sensor. In this step, the servo for eyebrow we set default 90 degrees to the left and right eyebrows. When the light intensity height then the servo on the left brow down from 90 degrees toward 50 degrees of adjusting the light intensity. Also to the right servo When the light intensity height then the servo increased to 130 adjusts the intensity of the light.
4. Trial using 2 ultrasonic sensor and 3 motor servo as a head mover, and eyebrows mover. The result of this step is already seen that the motor servo for eyebrows can move to follow the direction of the hand. Give an expression based on the intensity light.
5. Trial using 5 ultrasonic sensor and 3 motor servo as a head mover, and eyebrows mover. The goal in this step same as the previous step only added more ultrasonic sensor from 2 to 5.
6. Trial using 7 ultrasonic sensor and 3 motor servo as a head mover, and eyebrows mover. The purpose in this step same as the previous step only added more ultrasonic sensor from 5 to 7.

7. Testing to find the optimal distance between each ultrasonic sensor. The purpose of this step is to analyze the distance required to put each ultrasonic sensor so that the robot head can move to the all angles from 0 - 180 degrees.

8. Testing to find the optimal distance between ultrasonic sensor with detected object starting from half a cm. The purpose of this step is to find the minimum and maximum distance of an object detected in front of ultrasonic sensor.

