

Scanning Infrared Detector

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This document outlines the hardware and software required to produce a rotating infrared scanning device using an infrared receiver, ultrasonic distance sensor, and a rotating servo motor linked to an Arduino UNO. The infrared receiver and ultrasonic sensor will be situated on a servo motor which will continuously oscillate through a 60 degree angle and back. The IR receiver will scan the surrounding area for heat sources from up to a range of seven meters. Once a source is detected, a confirmation of detection will be displayed on a computer monitor. Subsequently, the Arduino will trigger the ultrasonic sensor to measure the distance to the heat source and subsequently instructs the servo motor to stop its rotation and hold position for three seconds. The distance, in centimeters, and direction of the heat source, in degrees, will be displayed on a computer.

I. LIST OF MATERIALS

1. Arduino UNO (1x)
2. HC-SR501 Passive Infrared Sensor (1x)
3. Servo Motor (1x)
4. HC-SR04 Ultrasonic Sensor (1x)
5. Breadboard (1x)
6. Computer Monitor (1x)
7. Jumper wires

II. IMPLEMENTATION

Week 1: Gather necessary materials and order any instruments not found in the lab. Design schematics for project.

Week 2: Study and learn the functions and mechanics of each of the components.

Week 3: Construct and program the infrared scanner.

Week 4: Construct and program the ultrasonic sensor. Program the infrared sensor to communicate with the ultrasonic sensor.

Week 5: Mount each sensor on servo motor and program the components to perform the task outlined in the abstract.

Week 6: Continue testing and improving the apparatus.

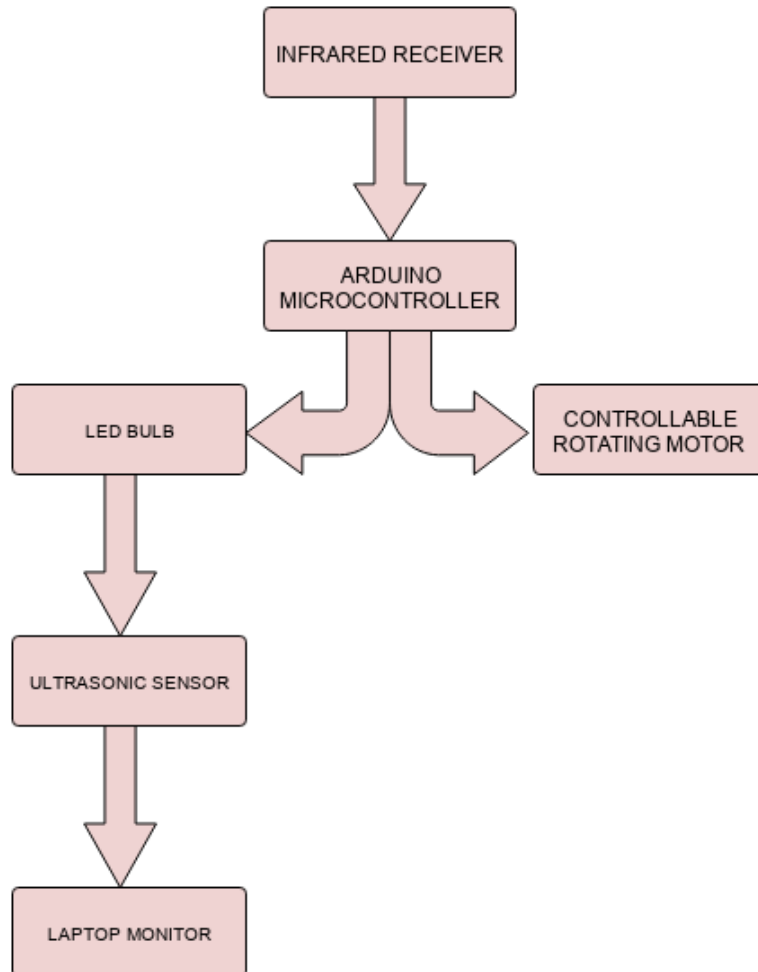


FIG. 1. Block Diagram.