

ABSTRACT

One popular transportation in Indonesia, especially in Java is the train. In addition to relatively low tariffs, train is known as quick transportation and connect many major cities and towns. With many areas being reached, then the rail which is the train lane is also getting longer and across many places, including major roads and village roads. For major roads with high traffic volume, PT. KAI railway crossings are guarded by an officer in turn for 24 hours. However, most railway crossings that pass through the lane does not have railgate. This leads to frequent accidents at railroad crossings that do not have the railgate. To solve this problem, then one solution is to manufacture an automatic railgate system that can detect the arrival of the train.

In this final project, the automatic railgate system is being made with microcontroller and sensors that can detect the arrival of the train. In this final project, the automatic railgate system will be working according to the input from train arrival detector. In general, this system will be working when train arrival detector is detecting the train, then the detector will be sending signals to change the LED indicator that the train will be coming and the relay will close the railgate. When the railgate is in the process of closing, the ultrasonic sensor is detecting a vehicle under the railgate, then the railgate will cease to close for a moment, when the vehicle is no longer under the railgate, the railgate will continue to close again.

According to the result from RF module testing, the RF module will be working optimally until 1,2 km with average delay 1,5 seconds. According to the result from railgate closing time, the railgate will be closed perfectly in 15,92 seconds with an obstacle until 4 seconds that slowing the railgate down.

Keywords: Railway Crossing System, Microcontroller, Relay, Ultrasonic Sensor, DC Motor.