

ABSTRACT

Railroad crossing gate is one of a series of technologies found in the railroad system. Most of railroad crossing system still utilize operator power and human power. Thus, human error and operation failure in the system can result in an accident.

In this final project, the author designed a prototype or miniature railroad crossing system that can work automatically without any operator in order to reduce the accident factor. The gate will close and open automatically by combining several infrared sensors that act to calculate the vehicle and train speed reading. Of the two inputs, it produces an outcome in the form of a cross movement decision. Fuzzy Sugeno used the outcome as a regulator of doorstep movement decisions which will result in a fast, medium or long motion crossing movement decision. Communication data transmission is conducted wirelessly using the Wireless HC 12 Module.

In this final project, the infrared sensor could detect number of vehicles and speed of trains. The maximum distance of sensor to the object was 20 cm while the minimum was 1 cm. With the presence of the automatic railroad gate prototype system, it is expected that it can minimize the possibility of delay in closing the gate once the train pass, making it more efficient for officer to maintain the railroad gate and helping minimize the accident occurred on the gate.

Keywords: *Railway gate, Automatic, HC 12, Infrared, Fuzzy Logic, Prototype*