ABSTRACT

Transport technology in this era has been growing rapidly, but still requires human resource for example electric trains. The presence of human resource allow for human error that often cause accidents, in the gateway rails and collisions trains. Therefore, it needs automation system to reduce that problem.

Movement control electric train and the safety gate railway are solutions of the automation system. This system can minimize accidents because human error. Human resource responsible for monitoring the train and railway to check if any problem.

Transmission node using a star topology and ring topology to compare the transmission time. Star topology require 1.0113 seconds to transmit data, while the tree topology requires 3,034 seconds. The distance that can be reached using nRF24L01 on a node is 90 meters. The prototype train using two pieces to compare speed train. Prototype A train speed is 0.1818 m/s in a straight line and 0.1493 m/s in the turn lane. Prototype B train speed is 0.1860 m/s in a straight line and 0.1516 m/s in the turn lane. Safety gate railway using four sensors to check train arrival.

Keywords: *Proximity, Wireless Sensor Network*, *Pulse Width Modulation*, security gate rails, pace control.