ABSTRACT

Train is one of the safest, most effective and efficient public transportation for mobilizing people and goods in large quantities. Train control systems without drivers are becoming popular in the world in particular, this technology has been in use for several years. Block Signaling is a signaling by dividing traffic into several blocks and each block can only be filled with one train at a time. Signaling blocks have two types, namely fixed blocks and moving blocks. In Indonesia, the train operating system still uses a lot of fixed block systems. The definition of a fixed block is that the length of each block is fixed, in the sense that the start of the block is at one station and ends when it meets the next station. The use of fixed blocks on several types of trains, such as local trains, high-speed trains and freight trains. The main problem. The drawback of the fixed block system is that the number of trains that are crossed is limited because they have to provide open blocks manually and also a buffer as a barrier at the end of the railroad tracks.

To improve the quality of the train operating system, the coordination of the train movement and the efficiency of the autonomous train control system (ATCS). So we designed the train system to be a moving block. Moving block is a signaling system based on blocking zones on each train to make it easier to identify train positions in a precise, fast, safe manner, and can also minimize the risk of collisions between trains. For our research we make three main contributions, namely, knowing the speed of the train, setting a safe distance between the train and other trains, and the train can stop according to its stopping point and can be monitored in real time on a smartphone.

After testing and analysis in our research we get a comparison of the speed of the train (KRL) with the prototype is 1: 50 and we divide the speed of the train into 3 modes, namely the maximum speed (fast) of the real train (KRL) which is 63.4 Km/hour and the speed on the prototype is 1.26 km/hour, the average speed (middle) of the real train (KRL) is 50 km/hour and on the prototype is 1 km/hour and the last (slow) mode on the real train (KRL) is 39, 4 km/hour and prototype 0.78 km/hour, we embedded that system in our first prototype train, and for setting a safe distance we pinned it on the second prototype train and we divided it into 3 modes as well, namely a distance of 0-10 cm (danger) , distance 11-20 (safe) and 21-30 (to far) and for the stopping system we give an order if the distance is less than 10 cm from the first

train in front of it, namely the first prototype train, the second prototype train will stop. The comparison between the safe distance for real trains (KRL) and prototype trains is 1:13, 333, then the last one is our monitoring system using MIT apps that are connected to a smartphonewhich is useful for turning on the controller on the prototype and knowing the speed, safe distance and whereabouts of the prototype train.

Keywords: Block Signalling, Fixed Block, Moving Block, MIT, KRL