

## ***ABSTRACT***

Congestion in traffic and traffic accidents is one of the biggest problems that exist in the developed countries and developing countries, especially Indonesia . Some of the factors that cause congestion in traffic is a factor driver behavior. A driver must have the desire to control the speed of the vehicle in order to achieve a safe position , where the position is a safe distance with the vehicle in front of him to avoid traffic accidents.

There is a mathematical way to describe a car-following, the model of microscopic and macroscopic models . Microscopic model is a model that include the continuous - in-time models (car -following models) that describes the dynamics of each vehicle as a function of position and speed. While the model is a macroscopic model that simulate flow of vehicles in the car following as the flow of fluid. At this research, the researcher simulate the flow of car following of the vehicle with Intelligent Driver Model (IDM) of three homogeneous vehicles in one lane, where Intelligent Driver Model is a type of microscopic models that consider the driver's behavior control the speed and position of the vehicle. The weakness of Intelligent Driver Model method is the extreme deceleration values, so the researcher do three scenarios research to find solutions to these problems .

The results of this study it is a graph of velocity, acceleration, position and the actual bumpers distance against time obtained from the prediction result of IDM method. It also obtained the results of the accuracy of the car- following speed on simulation is 88.9%. Researchers also examined the results of random data simulation as a comparison .

Keywords : Car-following models, microscopic models, macroscopic models, Intelligent Driver Model (IDM )

