

Abstract

Mathematical model in traffic lately many developed by several mathematicians and researchers. Development of mathematical model in traffic based on the variety of problems and also the need for innovation in optimized traffic flow. In finding one solution in the traffic flow then developed mathematical model uses a Finite Different method and Least Square method to approximate the conservation of mass and the velocity function can be used to model the movement of traffic flow, so that be found a pattern of the movement of the traffic flow.

In this final Task, Finite Different Methods uses to find the solution of numerical model of traffic in the conservation of mass. Then, the Least Square method is used to determine the results of linear and quadratic interpolation. Then the results of linear interpolation and quadratic simulated vehicle movements to find based on the specified time and space.

The results of this research in the form of a graph of the relationship of the speed and movement of traffic flow is observed directly by using model Lightill, Whitman, and Richard. In addition to that found the function interpolation linear and quadratic by using different methods to. Then, the obtained simulation results also the movement of the traffic flow within the specified time and with Lax Wendroff method, in which the simulation was conducted on two different time variations at fifteen and thirty seconds. At the time of fifteen seconds the position of the vehicle using linear interpolation function exists at position 160 meters and quadratic interpolation functions obtained in the position of 180 meters. By using a variation of the time of thirty seconds, obtained the position of a vehicle using linear interpolation function in the position of 260 meters, and quadratic interpolation functions obtained at position 325 meters.

Keywords: traffic flow, macroscopic models, finite different method.