

ABSTRACT

MODELLING AND SIMULATION OF ADAPTIVE TRAFFIC LIGHT CONTROL USING ARTIFICIAL NEURAL NETWORK ALGORITHM

Traffic jam is one of the problems that occur in big cities in Indonesia. This problem is increasingly difficult to overcome because the growth of the number of vehicles is much faster than the growth of infrastructure. So don't be surprised if the crossroads area often occurs traffic jams, especially during peak hours. Most current traffic light settings still use a constant time timer.

This final project proposes a crossroads simulation model with an adaptive traffic light control system using a backpropagation neural network. The M/M/1 queue theory is used as a relevant queuing model. Artificial neural network design is obtained based on learning data from the system being run. Learning data is used to develop a pattern that represents the relationship between vehicle current and the duration of traffic lights at the intersection.

The proposed model of the intersection has been validated and tested against the crossroads model with fixed time control system. The proposed model has shown the performance of timing traffic lights adaptively according to the state of traffic flow in a simulation which can be implemented into the real time system. This ensures that vehicles in solid traffic flow do not experience significant delays.

Keywords: *traffic jam, traffic light, adaptive, artificial neural network, simulation*