

ABSTRACT

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SIMULATION OF TRAFFIC CONTROL USING FUZZY LOGIC

(xvi+ 125 pages; 49 figures; 27 tables; 1 appendix)

It has been always an exciting part to create machines with minds. The main idea is to make computer thinking and acting just like human. This idea is well known as the artificial intelligence. This study has a lot of branches. One of those is fuzzy logic. One of the fuzzy logic applications is traffic control simulation. And it is still interesting to explore implementation of fuzzy logic in traffic control problem. So, this thesis will solve the traffic jam problem.

The rules are created based on rule-based system. Tsukamoto method is used for fuzzy inferencing. This method presents a fuzzy set with monotonous membership function and derives their result by Weighted Average Method. Some parameters are used in this system such as the car density in the current traffic lane and in the waiting traffic lane.

This traffic control simulation simulates a road environment with cars at a 4-way intersection with working traffic lights and there are 12 traffic lanes, three in each way. Eight traffic lanes are being controlled with this fuzzy logic system. This thesis also discusses about the statistics function. The arrival cars in every traffic lane will show up randomly based on the Poisson distribution.

This thesis reports that there is a queue in the prominent lane, if the prominent lane and the waiting lane have the average arrival car in the category *sangat padat*. However, if the prominent lane has the average arrival car in the category *sangat padat* and the waiting lane has not, then there will be no queue in the prominent lane

References: 17 (2004 - 1997).