

MATLAB simulation of fuzzy traffic controller for multilane isolated intersection.

ABSTRACT

This paper presents a MATLAB simulation of fuzzy traffic controller for controlling traffic flow at multilane isolated signalized intersection. The controller is developed based on the waiting time and vehicles queue length at current green phase, and vehicles queue lengths at the other phases. For control strategy, the controller controls the traffic light timings and phase sequence to ensure smooth flow of traffic with minimal waiting time, queue length and delay time. In this research, the isolated intersection model used consists of two lanes in each approach. Each approach has two different values of vehicles queue length and waiting time, respectively, at the intersection. The maximum values of vehicles queue length and waiting times are selected as the inputs to controller for optimized control of traffic flows at the intersection. A traffic model and fuzzy traffic controller are developed to evaluate the performance of traffic controllers under different conditions. In the end, by comparing the experimental result obtained by the vehicle-actuated controller (VAC) and fuzzy traffic controller (FTC) which improves significant performance for intersections, we confirmed the efficiency of our intelligent controller based fuzzy inference system.

Keyword: Fuzzy traffic controller; Multilane; Isolated intersection; Vehicle-actuated controller.