

On-demand priority traffic optimizer with fuzzy logic microcontroller

ABSTRACT

Current traffic control system in Malaysia is developed based on predetermined setup, where the system is not able to analyse the surrounding condition to optimize the green time. When there is an unusual traffic flow, the control system fails to control traffic flow efficiently, causing delays and requiring the assistance of traffic police. The main objective of this project is to explore the potential of fuzzy logic embedded control system in optimizing the traffic congestion corresponding to the priority traffic signal. The developed real time traffic-adaptive control system operates by prioritising the green light based on the received priority signals such as high flow rate phases and the emergency vehicles. A microcontroller-based traffic controller with computed algorithm was developed. The performance of the controller in reducing average waiting time and average vehicle queue length at a traffic intersection was evaluated. In overall, Fuzzy Logic managed to reduce 23% of average waiting time and 11% of average vehicles in queue at the intersection as compared to the conventional control.