

Optimization of urban traffic network signalization using genetic algorithm

ABSTRACT

This work aims to minimize average delay for an urban signalized intersection under oversaturated condition using genetic algorithm (GA). Relieving urban traffic congestion is an urgent call for traffic engineering. The effectiveness of traffic signalization is one of the key solutions to reduce congestion, but regrettably the current traffic signal control system is not fully optimized for handling oversaturated condition. Therefore, this work proposes GA to optimize traffic signals for reducing average delay at a signalized crossed intersection under oversaturated condition. A comprehensive traffic model based on Public Works Department, Malaysia has been developed as the platform. The average delay experienced by vehicles to traverse the crossed intersection is used as the performance metric to evaluate performances of the proposed algorithm. Simulation results show GA is able to control the traffic signals for minimizing the average delay to 55 sec/veh or equivalent to level of service (LOS) D.