Agent-based traffic flow optimization at multiple signalized intersections

ABSTRACT

Relieving urban traffic congestion has always been an urgent call in a dynamic traffic network. The objective of this research is to control the traffic flow within a traffic network consists of multiple signalized intersections with traffic ramp. The massive traffic network problem is dealt through Q-learning actuated traffic signalization (QLTS), where the traffic phases will be monitored so that immediate actions can be taken when congestion is happening to minimize the number of vehicles in queue. QLTS has better performance than the existing common fixed-time traffic signalization (FTS) in dealing with the ramp flow due to its flexibility in changing the traffic signal with accordance to the traffic conditions and necessity.