

## **Q-Learning traffic signal optimization within multiple intersections traffic network**

### **ABSTRACT**

Traffic flow optimization within traffic networks has been approached through different kinds of methods. One of the methods is to reconfigure the traffic signal timing plan. However, dynamic characteristic of the traffic flow is not able to be resolved by the conventional traffic signal timing plan management. As a result, traffic congestion still remains as an unsolved problem. Thus, in this study, artificial intelligence algorithm has been introduced in the traffic signal timing plan to enable the traffic management systems' learning ability. Q-Learning algorithm acts as the learning mechanism for traffic light intersections to release itself from traffic congestions situation. Adjacent traffic light intersections will work independently and yet cooperate with each other to a common goal of ensuring the fluency of the traffic flows within traffic network. The experimental results show that the Q-Learning algorithm is able to learn from the dynamic traffic flow and optimized the traffic flow.