Reduction of ANFIS-rules based system through K-Map minimization for traffic signal controller

ABSTRACT

Adaptive-Neural Fuzzy Inference System (ANFIS) traffic signal controller is an intelligent traffic signal controller which has the ability to coordinate the traffic problem by adapting the traffic changes. The number of design rule sets increases the accuracy of the controller. Thus, the complexity of the system and the computation time also increase. Rule minimization based on Karnaugh Map (K-Map) has been done and applied to design the rules of ANFIS for traffic signal controller in order to have optimized performance. The ANFIS traffic signal controller is developed using FIS editor in MATLAB. This controller is applied to control the traffic flow in multilane-multiple traffic intersection. The performance of the developed ANFIS traffic signal controller is compared to existing ANFIS traffic signal controller with the original rules. Indeed, the developed ANFIS traffic signal controller is proven to have a better performance.