Real Time Traffic Light Time Analyzer

I. K. K Indika, D.R.V.L.B Thambawita
Department of Computer Science and Technology Uva Wellassa University, Badulla, Sri Lanka.

In urban arrears of all over the world, traffic lights are used to manage the traffic. However, congestion becomes worst and needed to increase the performance of traffic lights by focusing on increasing the capacity of transactions and minimizing the waiting time. By this research, a new fuzzy rule set is proposed for the cross and three-way (T-junction) junctions considering a number of vehicles on a road, time to complete a cycle, waiting time of the each road and the traffic condition of the road. The image processing technique is used to get dynamic data. The fuzzy logic system has been implemented to get decisions dynamically for the cycle time, green color light time and time to cross vehicle by analysing the waiting times using fuzzy outputs and other dependent data. MATLAB is used for fuzzy logic and image processing to generate unique output for each traffic condition. The performance of the new system is evaluated by comparing the waiting times in between current cycles and fuzzy cycles. The results obtained shows that the system has almost higher performance (Between 13% and 47%) and it is increased when congestion is low. Use of dynamic time cycles according to vehicle velocity causes to increase the performance of it. It was identified that performance is higher when using short cycle times for less congestion while medium cycle time is preferred for high congestion. The output results show that fuzzy system is better than the existing system because its waiting time near junctions is less than fixed cycle method.

Keywords: Traffic congestion, Fuzzy logic, Delay estimation, Real time