



An ADAPTIVE TRAFFIC LIGHT CONTROL SCHEME AND ITS IMPLEMENTATION IN WSN-BASED ITS

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Abstract- We investigate the problem of adaptive control of traffic lights using real-time traffic information collected by a wireless sensor network (WSN). Previous studies mainly focused on optimizing the intervals of green lights in a fixed sequence of traffic lights, and ignored some traffic flow's characteristics and special traffic circumstances. In this paper, an adaptive traffic light control scheme has been proposed, in which the sequence of traffic lights can be adjusted dynamically in accordance with the real time traffic detected, including traffic volume, waiting time and vehicle density. Subsequently, the optimal traffic light length can be determined according to the local traffic and predicted traffic data. Simulation results demonstrate that the proposed scheme can achieve much higher performance, in terms of throughput and average waiting time. We also implement proposed scheme into our WSN-based ITS project, iSensNet, and the result shows that our scheme is effective and practical.

Index terms: wireless sensor network, intelligent transportation system, adaptive traffic light control, real-time traffic data.