Optimizing City Traffic Light Management for Improving Traffic System in Smart Cities

Abstract

The network technology is growing continuously and every day a new and innovative research is performed for improving the communication cost and performance. Due to this a number of different applications are developed for supporting the human being for their daily usages. Among them the monitoring and surveillance is a key aspects of the different applications. In this presented work the key aim is to study about the different wireless network technologies and obtain an effective manner to use with the city traffic management systems. There a number of techniques are found when studied around the city traffic management system. Among them the VANET (vehicular ad hoc network) is one of the most cost effective and efficient network technologies which are frequently used for the traffic monitoring and surveillance. Therefore in this presented work the key focused is first placed on studying about the VANET networks and then after a RSU (road side unit based) VANET is identified to use with the city traffic network. In this technique V2R (vehicle to RSU) and V2I (vehicle to infrastructure) technique is used to simulate the network traffic issues and their signaling process. The main concept behind the presented simulation is that the scheduling the city traffic
network by the traffic lights. This may help to improve the scheduling of the traffic lights to improve the traffic management. In addition of that a priority based scheduling algorithm is also developed for finding the better schedule of the vehicles during heavy traffic in roads. The implementation of the proposed functional demonstration is performed on the basis of SUMO tool. And the scheduling algorithm is implemented using the JAVA technology. After the simulation the performance of scheduling algorithm is estimated and demonstrated in terms of time complexity, space complexity and the decisional ability. The results demonstrate the effective scheduling of traffic lights and improved management of the city traffic.

References


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Index Terms

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Keywords

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