IoT for ITS: A Dynamic Traffic Lights Control based on the Kerner Three Phase Traffic Theory

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Abstract

A traffic light is a device for the regulation of traffic between road users, vehicles and pedestrians. The setting and synchronization of traffic lights of an axis or an area are very complex, and sometimes unsatisfactory for all or part of them.

In addition, according to several studies, traffic lights would be responsible for half of the traffic jams and thus half the pollution, and poorly regulated lights can cause the tripling of the fuel consumption, therefore CO2 emissions and other pollutants emissions, when traffic is cluttered or too sparse.

In our solution, we will try to apply the Kerner three-phase traffic theory to realize a synchronized system by establishing an Intelligent Transport System that will provide automatic management of traffic lights, while establishing a communication mode based on the concept of the Internet of Things for various traffic lights controllers to enable them to collaborate. In order
to resolve the traffic jam issues, so the reduce of CO2 emissions and also the mobility metrics like the travel time. This paper is part of a project entitled ‘V2IoT’ which aims to use the techniques and concepts of the Internet of Things to improve ITS and the vehicular communications, namely, the V2V and the V2I systems within smart cities.

References


Index Terms

Computer Science

Control Systems

Keywords