INTELLIGENT WSN INTERCEPTOR FOR VEHICLES

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Introduction:

Now a day’s many of the things get controlled automatically. Everything is getting controlled using the mechanical or the automated systems. In every field machines are doing the human works. But still some area is controlled manually. For example traffic controls, road control, parking controlling, speed controlling. Keeping these things in mind we are trying to develop the project to automate the traffic tracking for the square with their speed on the road. Keeping these things in consideration proposed system is less with multiple methodologies which can be used in traffic control system. It is important to know the road traffic density real time especially in mega cities for signal control and effective traffic management. In recent years, video monitoring and surveillance systems have been widely used in traffic management. Hence, traffic density estimation and vehicle classification can be achieved using video monitoring systems. In most vehicle detection methods in the literature, only the detection of vehicles in frames of the given video is emphasized. However, further analysis is needed in order to obtain the useful information for traffic management such as real time traffic density ,number of vehicle types passing these roads and speed of each vehicle on the road. This paper presents emergency vehicle alert, speed alert mentioned to the owner and traffic density calculation methods using IR and GPS.

Objectives:

This project describes to overcome the problem of traffic jam on intersection at the Traffic Signal and the objectives are as follows:

- To calculate the density of vehicle on the road for flow traffic smoothly without congestion.
- Developing Priority Based Signalling which helps to give the higher priority to the emergency vehicles.
- To detect the speed of the vehicle on road and send them the alert message.

Methodology:

- Wireless Sensor Networks deployed along a road can be utilized to control the traffic load on roads and at traffic intersections.
- In case of priority signalling, IR Sensors are deployed on either side of roads at intersection points.
- In order to control this situation, we have proposed a system consisting of two parts: Smart Traffic Light Control System (STLC) and Smart Congestion Avoidance System (SCA) during
emergencies.

- STLC System controls the change of traffic lights at intersection points giving high priority to the heavily congested area based on the density.
- In case of the signalling and the density calculation we use a image processing algorithm to capture the vehicle on road.
- Traffic Signal Management when properly designed, operated and maintained yields significant benefits like less congestion, saving fuel consumption.
- Vehicle emissions are also reduced and it also improves the air quality and avoid the major accidents due to over speed of vehicles on roads.

Materials required

1. Wires
2. IR Sensors
3. Aurdino mega
4. Led
5. RF module
6. RF tag

Result and conclusion:

The expected outcome for this project yields the congestion avoidance and the priority signalling. This approach also proposes a traffic control algorithm for the signal control in an intersection. Since the vehicle state is monitored dynamically, the phase time is determined exactly instead of by forecasting. Compared with conventional algorithm, the advantages of the algorithm includes: 1) eliminate the phase time when no vehicle passing across; 2) Let all of the waiting vehicles pass if possible, which reduces the waiting time.

Scope for future work:

Here the two objectives, that are, first, calculating the density of the vehicle on the road for the flow of the traffic smoothly without congestion and second, developing SMS Based Signalling which will help to when accident occurred at the traffic junction. This Traffic Signal Management approach when properly designed, operated and maintained yields significant benefits like less congestion, saving fuel consumption. The proposed approach will consider not only the priority of the vehicles but also the density of the vehicles on the road and also will control the traffic light sequence efficiently and more accurately and the accuracy of the GPS is more than that of a Camera. This system aims at saving a large amount of man-hours caused by traffic problems and accidents, where prevention can save lives and property. It is able to manage priority emergency tag vehicles.