

Research Paper on Traffic Control System for Smart City

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Abstract : Now the scenario of city is try to modify in the form of smart city. The smart city is provide a better facilities in terms of transportation, education, economic condition and ICT-Information and communication is enable for development in the city.we are reviewing different work already done or draft by some research in the field of traffic control system for better monitoring, tracking and managing using a computer vision. Nowadays, most of the city install with C.C.T.V. camera for monitoring the traffic related activity.

Keywords : Transportation Management System (TMS), CCTV camera, Gaussian mixture model, Video, Image processing, smart city, parking system, smart phone, Vehicle Tracking.

INTRODUCTION

The currently government of India is trying to develop smart India and cities.In which minimum 60 cities are selected. In the earlier future the list of the smart cities will further increase.The two cities from Gujarat –Ahmedabad and Surat was mentioned in the list.The transportation system management in real time must be done with available resource and satisfied with better and better lifestyle for every human being with less rush of traffic so less noisy and healthy environment, short and less and time required to reach one place to another place, proper parking availability.As the ongoing development of human society, the number of cars and all vehicle with high pollution has increased sharply, in the result extremely

traffic congestion on roads, which has become one of the important factors stopping or resisting social development and human life. In most of the countries, standard three-light systems are used for their traffic signals.

- 1) Red - stop
- 2) yellow - prepare to stop/caution
- 3) green - go

But the lights are usually six inches in diameter and do little to catch the attention of driver's or motorist who are not focused on the road. Three-light system replaces a new technology called "digital virtual wall". The inspiration for this concept is based on the increasing road accident in every day, every year. Since the traditional traffic lights are overshadowed by large electronic advertising signs, because the lights are less visible, the focus is lost at these intersections. We know, future cars will be faster than today's machines. That's why the transition road to humans will be even more dangerous. So we are designing a new technology called "Digital Virtual Wall" instead of the traffic light. This is absolutely a new high technology.

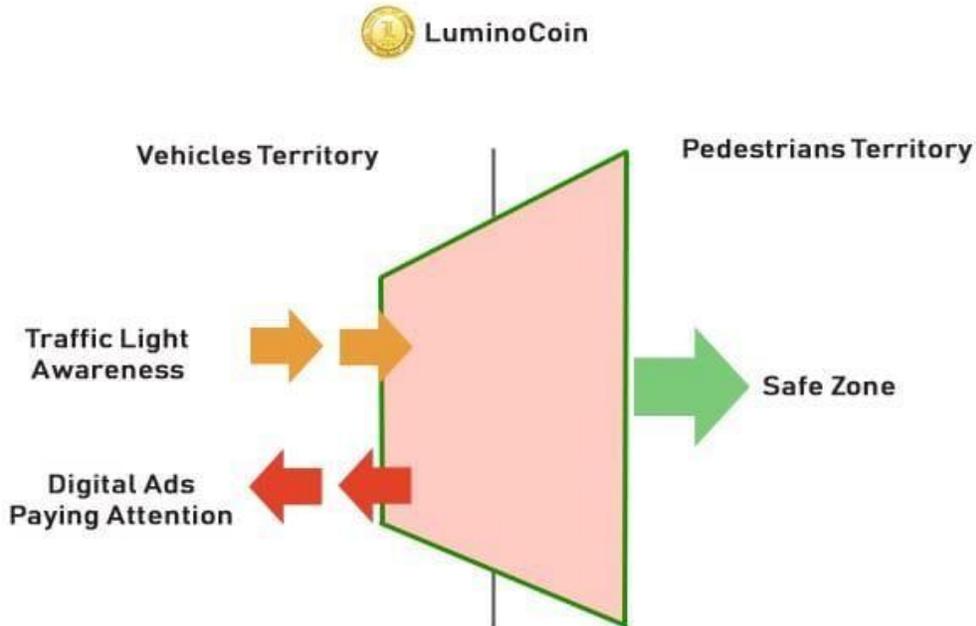
LITERATURE SURVEY

- International Conference on Mechanical Materials and Renewable Energy (ICMMRE) Smart Traffic Management System for Traffic Control Using Automated Mechanical and electronic devices by Mamta Rath, 2018.
- International Journal of Engineering Research and Technology (IJERT) Different Techniques Used In Traffic Control System : An Introduction by Siddamma G. Pashupatimath, 2018.

METHADODOLOGY

The prototype model provides a digital traffic wall. The virtual wall includes led light which makes up a red coloured virtual wall just before the zebra crossing on the road. The led are arranged on a bar joining the poles on the two sides of the road. This model, majorly designed for use in Indian subcontinent also includes a simple conventional timer for red light on top of the left pole.

The virtual wall in the prototype model is novel in design and full in humanization, can separate pedestrians from vehicles, and provides more eye-catching reminding or warning to the pedestrians and drivers, thereby enabling people to pay more attention to traffic marks ahead, and reducing probability of occurrence of traffic accident.



ADVANTAGES

- It will be one time investment and also cheap.
- Here we are using solar plates, That means no electricity costs
- This will create a virtual wall which will Make them stop.
- We can maintain a high discipline and which will leads least accident.

WORKING

The traffic signal management and traffic control by using virtual wall, we will use a prototype of a square for example RBI square this design includes 4 Ways traffic as you can see in the picture below. We have 4 ways connected at square. With virtual wall signal system device at each end. The wall will include Laser or LEDs and reflectors which will makes up a red coloured virtual wall just before the zebra Crossing on the road. The laser or LEDs will arrange on a bar joining the poles on the Road.

The main objective of this traffic light controller (virtual traffic wall) is to provide sophisticated control and coordination to confirm that traffic moves as smoothly and safely as possible. This project makes use of LED lights for indication purpose and a microcontroller is used for auto changing of signal at specified range of time interval. LED lights gets automatically turns on and off.

A prototype of traffic light control system is made by using Infra-Red sensors along with major components Microcontroller and LEDs which are used for controlling traffic signals based on the density of the traffic. The junction taken into consideration is a four-side junction with the traffic

flow on each side is only in one direction. This traffic light control system consists of the following three main components:

Display Unit: It consists of LED: Red on each side of the junction— a total of 12 LEDs of red colours are placed at the junction.

Detector Unit: It consists of a combined arrangement of photo diode and IR LED at every junction for detecting the presence of vehicles based on the change in resistance.

Controller Unit. This control unit contains a microcontroller which receives the output data from the IR Sensors and controls the glowing of LEDs based on the programming.

The aim of this project is to design and develop a density based dynamic traffic signal system. The signal timing changes automatically by sensing the traffic density at every junction

This traffic light control system works on the concept of fixed time allocation at each side of the junction which cannot be changed as per varying traffic density. Timings allotted at every junction are fixed. Some times higher traffic density at one side of the junction demands longer time duration for green signal compared to the standard allotted time.

This proposed system makes use of a microcontroller which is properly interfaced with the IR sensors to change the junction timing automatically to accommodate the movement of vehicles for avoiding unnecessary waste of time at each junction.

The sensors used in this project IR and photo diodes are in line-of-sight configuration across the loads to detect the density at the traffic signal. The density of these vehicles is measured in three zones i.e., low, medium and high respectively – based on certain time duration allotted at respective zones, accordingly.

This article is about a project on traffic light controller and Density based traffic light system used to control the traffic at each junction with the help of microcontroller and LEDs. Furthermore, for any help regarding this topic, you can contact us by commenting in the comment section given below.

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APPLICATIONS

Nowadays all people used smart phone for not only communication purpose but also for entertainment, for social media interaction, education, health tips and many more. If we combine a smart phone with vehicle together make smart transportation system. Smart phone support GPS location, Wi-Fi availability, in building the blue tooth device and many more things are very much useful for better transportation management.

For maximum use of public transportation, consist mobile application for data related to bus the stop and its route respectively, build a route from the collection and synchronization using

map- matching and sting matching algorithms. My Ford mobile application useful for monitoring of electrical vehicles, charging status of electrical vehicles, other electric vehicle charging station, etc. The application of other Smart-phone discussed in same paper which can be able to detect and notify accidents, for that the camera of smart phone also useful for awareness about accident situation. systems are useful for drivers, due to their services regarding location, shortest route towards destination, etc. Easy tracker [6] systems are developed for tracking, mapping and measure different parameter in the context of traffic management. For location, purpose we can use Google maps and Map Quest such like applications.

F application uses M2M technology, for servicing fast parking in certain areas. Toyota developed- Toyota friend [8], private social network for Toyota car owners for their facilities. And so many other companies also trying to make better and better application for transportation management system (TMS) like – sharing personal details with their vehicle, with the other groups and members so maybe, if they want to wish to Join they can join you. So in this way also we can reduce use of traffic and that is also one great step moment towards TMS services.

CONCLUSION AND FUTURE WORK

The paper based on different research paper read in the context of transportation management service, explain different algorithms already used, different project and systems working related to TMS, smart-phone involvement regarding improvement in traffic monitoring as well as tracking and in other applications also. Most of the work explained or designed in a foreign country for smart city and what's actually required as per our Indian government, they are trying to develop smart city concept step by step. So for that initiative from the smart city different parameter better implementation TMS is required. So now from these review papers, our aspects of future work –on transportation management service for INDIAN smart cities and give some solution regarding problem related to traffic management already discussed in section II C. we review TMS service with reference to different literature available from TRANSPORTAION RESEARCH Part and different IEEE conference and journal Papers.

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