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Density Base Traffic Control Light system Using SCADA

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ABSTRACT

The project is designed to develop a density based dynamic traffic signal system. The signal timing changes automatically on sensing the traffic density at the junction. Traffic congestion is a severe problem in many major cities across the world and it has become a nightmare for the commuters in these cities. Conventional traffic light system is based on fixed time concept allotted to each side of the junction which cannot be varied as per varying traffic density [1]. Junction timings allotted are fixed. Sometimes higher traffic density at one side of the junction demands longer green time as compared to standard allotted time. The IR transmitter gives the signal for heavy traffic which collects by the IR receiver which sends the signal to the junction who give command for green signal on which side density is high.

Keywords: SCADA, IR sensor, Adaptive Traffic light System, Traffic sign Recognisation, Traffic Density.

1) INTRODUCTION:

Traffic research has the goal to optimize traffic flow of people and goods. As the number of road users constantly increases, and resources provided by current infrastructures are limited, intelligent control of traffic will become a very important issue in the future. However, some limitations to the usage of intelligent traffic control exist. Avoiding traffic jams for example is thought to be beneficial to both environment and economy, but improved traffic-flow may also lead to an increase in demand. There are several models for traffic simulation. In our research we focus on optimization of traffic light controller in a city using IR sensor. Traffic light optimization is a complex problem. Even for single junctions there might be no obvious optimal solution. With multiple junctions, the problem becomes even more complex, as the state of one light influences the flow of traffic towards many other lights. Another complication is the fact that flow of traffic constantly changes, depending on the time of day, the day of the week, and the time of year. Roadwork and accidents further influence complexity and performance. In this paper, we propose two approaches, the first approach - to take data/input/image from object/ subject/vehicle and in the second approach - to process the input data by Computer and Microcontroller and finally display it on the traffic light signal to control the Closed Loop System.

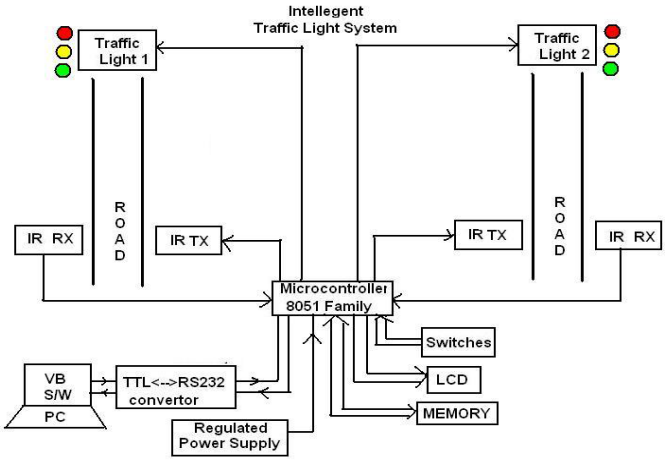
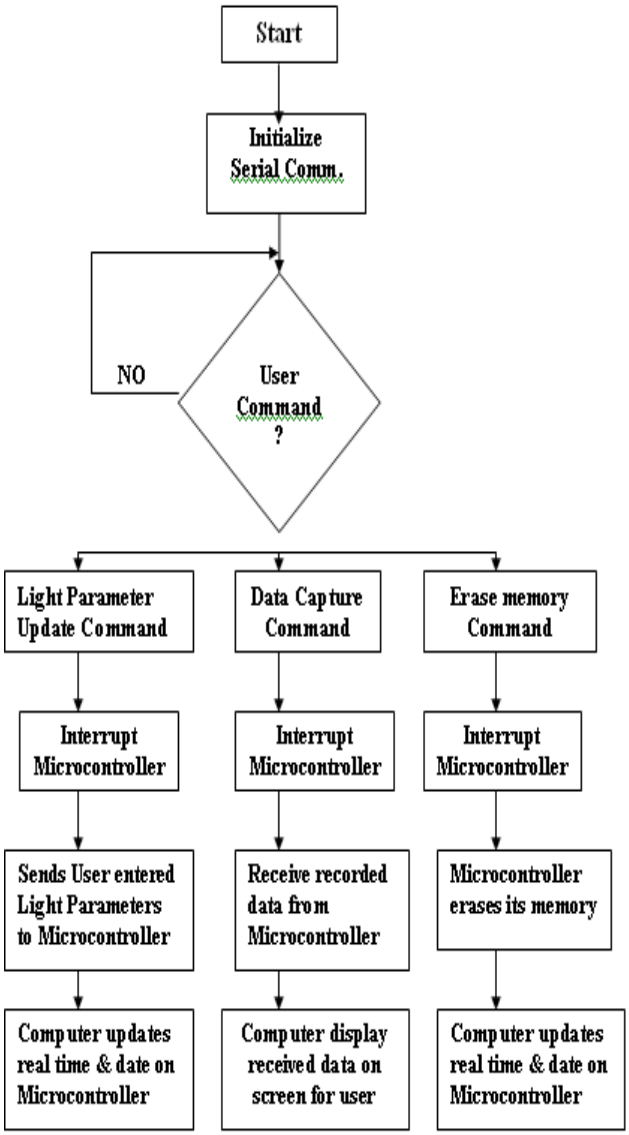


Fig 1 : Block Diagram of system

Generally, traffic signs provide the driver various information for safe and efficient navigation Automatic recognition of traffic signs is, therefore, important for automated intelligent driving vehicle or driver assistance systems. However, identification of traffic signs with respect to various natural background viewing conditions still remains challenging tasks. Real time automatic vision based traffic light control has been recently the interest of many researchers, due to the frequent traffic jams at major junctions and its resulting wastage of time. Instead of depending on information generated by costly sensors, economic situation calls for using available video cameras in an efficient way for effective traffic congestion estimation. Thus, given a video sequence, the task of vision based traffic light control list: 1) analyze image sequences; 2) estimate traffic congestion and 3) predict the next traffic light interval.

2) DEVELOPMENT OF SOFTWARE OF INTELLI-GENT TRAFFIC LIGHT CONTROL AND MONI-TORING SYSTEM:

Assembler: Assembler is used to convert the assembly language code to machine code. A51 assembler is used for this purpose. Figure 2 shows the A51 assembler GUI.



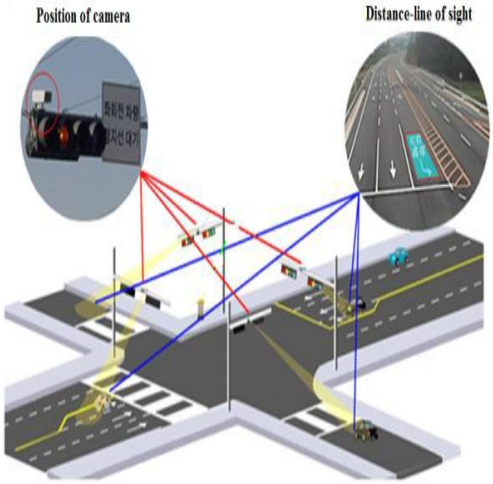
3) PROBLEM DEFINITION AND LIMITATION

They used spot sensors such as loop detectors and pneumatic sensors to quantify the traffic flow However; the sensors are very expensive and need a lot of maintenance especially in developing countries because of the road ground de-formations. In addition, metal barriers near the road might prevent effective detection using radar sensors. It is also found that traffic

congestion also occurred while using the electronic sensors for controlling the traffic. In contrast, video based systems are much better compared to all other techniques as they provide more traffic information and they are much more scalable with the progress in image progressing techniques. This is the main reason for the motivation to develop vision based tool for traffic light control in this work. In recent years, vision based traffic light control, which is based on video processing for traffic flow or traffic density estimation, has attracted the attention of many researchers. The value of traffic density measures only the ratio between the density of the vehicles and the total density of the road. So based on his measure, the traffic control system will compare between different roads in the intersection to take the decision for the traffic light and the time interval given. However, most of the previous vision based monitoring systems suffered from lack of robustness on dealing with continuously changing environment such as lighting conditions, weather conditions and unattended vehicles. All these mentioned factors considerably affect the traffic density estimation

4) ARCHITECHTURE FOR THE CONTROL SYSTEM:

In this architecture camera is placed on the top of the signal to get the clear view of traffic on the particular side of the signal so that it will capture the image and analyze the traffic in that particular side and get the count of the number of vehicle. With this count the density of that particular side will be determined and corresponding signal will be provided.



CONCLUSIONS

We conclude the Density measurement by using open tool as software for image processing by just displaying the various conversion of image in the screen and finally surrounding the box on the vehicle in the given image, the number of vehicle is calculated. We can calculate the density of the vehicle by using MAT-LAb tool by comparing the four side of the image which is given as a input. we can simulate the result of the four given input image but this cannot be used in real time applications as it is very slow and the software is not free of cost like opencv to overcome this disadvantage of mat lab, opencv software is used which is very easy to install and is open source software and can be used in real time application in a quick manner. In this paper we have shown the density measurement in the signal by using opencv in the System.

REFERENCES

[1]. Vivek, Tyagi, Senior Member IEEE, Shivakumar Kalyanaraman, Fellow, IEEE, and Raghuram Krishnapuram, Fellow, IEEE "Vehicular Traffic Density State Estimation Based On Cumulative Road Acoustics" in IEEE Transaction on Intelligent Transportation System.Vol.23. No.3 September 2012
[2]. MD.Hazrat ALI, Syuhei KUROKAWA, et al,"Autonomous Road Surveillance System proposed Model For Vehicle Detection and Traffic Signal Control "in Procedia Computer Science 19(2013)
[3]. Marco Wiering. "Intelligent Traffic Light Control". Institute of information and computing sciences, utrecht university
[4]. W. Wen & C. L. Yang. "A dynamic and automatic traffic light control system for solving the road con-gestion problem".
[5]. Cihan Karakuzu. "Fuzzy logic based smart traffic light simulator design and hardware implementation". Kocaeli University, Engineering Faculty, Electronics & Tell. Eng. Department, 41070 Veziroglu Yerleskesi, Izmit-Kocaeli, Turkey
[6]. Kok, Khiang Tan and Marzuki. "Intelligent Traffic Lights Control by Fuzzy Logic". Malaysian Journal of Computer Science