

Density Based Traffic Management System

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Abstract - This project is designed and developed for density based traffic control system. The signal timing increased or decreased on the basis of detected traffic count. Traffic congestion is biggest problem in many major cities and high traffic places across the world and it has become a nightmare for the commuters in these cities. The current system has fixed time given to each side of junction which cannot be varied as per varying traffic density. Junction timings allotted are fixed. When higher traffic density at which side then that side has longer green signal is allotted. The IR sensors are placed at the every 5 meters of road side which can sense the object i.e. vehicles in this order if 1st sensor detect the vehicle and other return 0 i.e. no detected then that distance is get counted as 5 meters. If 2nd sensor detect then distance counted as 10 meters traffic density is there. By using this procedure we count the distance at which traffic is there. After calculating the distance of available vehicles we will come to know in which side the distance is high based on which signals will be allotted for a particular side. Arduino mega is used as a microcontroller which provides the signal timing based on the traffic density.

1. INTRODUCTION

One of the important things in the Internet of things in smart cities is the Intelligent Transportation System (ITS) ITS ameliorates Conveyance to conveyance and Conveyance to Infrastructure communication for ameliorating road facilities rather than incrementing road capacities or developing incipient roads.. This is possible because of ITS, it utilizes advanced information and communication, and this communication will be helpful for decreasing traffic congestion and to reduce the accidents on the road, which is dangerous in the urban areas. Managing the time of traffic signal is one of the key thing in many major cities. Managing to time on the road will decrement the waiting time of the drivers on the road, and that will avail to truncate the fuel consumption. This is done with the help of the ITS." In this system, we are going to use

IR Sensors. IR sensor is additionally called as an Infra-Red spectrum. IR sensors have 2 parts in it, one is the transmitter and second is a receiver. The transmitter is used to transmit the light and receiver keeps on receiving

the light. When this connection is interrupted, the counting process is started, i.e., when the receiver does not receive the light transmitted by the transmitter it is said that the object is there in between transmitter and

receiver. The line of optical discernment concept is utilized in this approach."

1.1 User based problem

1.2.1 Heavy Traffic Jams With incrementing number of conveyances on road, cumberdomeously hefty traffic congestion has substantially incremented in major cities. This transpired conventionally at the main junctions commonly in the morning, afore office hour and in the evening, after office hours. The main effect of this matter is incremented time wasting of the people on the road. The solution for this quandary is by developing the program which different setting delays for different junctions.

1.2.2 No traffic, but still need to wait At particular side, sometimes even if there is zero traffic, people have to wait. Because the traffic light remains red for the preset duration, the road users should wait until the light turn to green. The solution of this quandary is by developing a system which detects traffic flow on each road and set timings of signals accordingly. Moreover, synchronization of traffic signals in adjacent junctions is withal obligatory

2. List of acronyms

SMC secure multiparty computation

PPDM privacy preserving data mining

MRAR Multi-relational association rules

PRBAC Privacy Preserving Role based access control

ISL Increase Support of LHS

DSR Decrease Support of RHS

3. Problem Definition

Traffic congestion is a main quandary with foremost cities. In current traffic system the traffic lights are founded on timing system i.e. whether the conveyances are present or not the timing will remain constant which makes people to wait unnecessarily for longer time. The key characteristic of the traffic in cities categorically for developing the geographies is that even if the geographies are explicitly mentioned/marked on the roads it doesn't move through the lanes. In Emergency cases (VIP's) the signals are precise manually, which is a hard-hitting task and can't be executed prosperously. Due to this man power is required in substantial amount and is a waste of time

4. Literature review

In this paper , review on different object detection, traffic management, signal controlling using microcontroller and signal allotment methods which is based on detected objects count. This approach used towards increase the object detection with new ideas. Furthermore, detecting the object using the IR sensors with theoretical explanation is provided in bibliography content. The bibliography content is the most significant contribution of research since it will lead to a new area of research. We have identified and discussed the limitation/future scope of various methods. Also, we have noted some features and information about other sensors and microcontroller but have high cost and computational complexity. Specifically, the IR sensors are used for object detection and Arduino mega microcontroller is used for allotment of signal The sensors was able to detect the vehicles and microcontroller also able to manage the signal timing and based on detected vehicle count signal allotment is also done. This research can be further developed and used for traffic management in urban cities and high traffic density places.

5. System requirements

5.1 Hardware requirements

1. Primary component:

- Microcontroller
- LCD Display
- INFRARED LED Sensor
- Transformer

2. Secondary Component:

- Diode
- Resistor
- LED
- Capacitor

5.2 Software requirements

Vision Keil

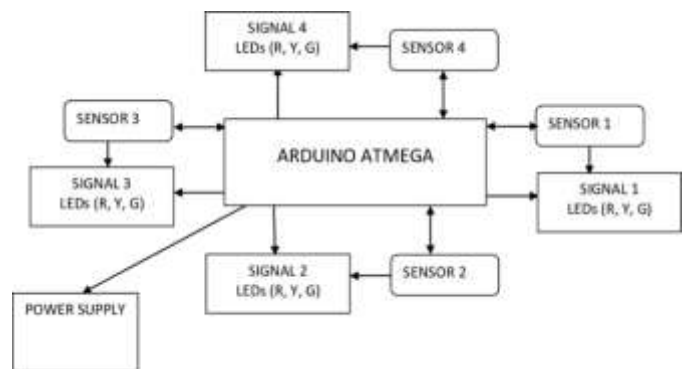
- Proteus
- Protel 98
- Eagle

6. Purposed Methodology

From present situation, an efficient solution to the quandary is not yet obtained. Hence in order to provide efficacious solution this archetype is designed. The block diagram of density based traffic control system is shown below.

In this proposed methodology we will provide solution to congestion, traffic clearance to ambulance and other emergency conveyances and tracking

of purloined conveyances is withal done. And one of the plus point of the system is we have designed the system in automatic mode. In automatic mode depending upon sensors output given to microcontroller the decision is taken. The Arduino mega is used in system takes controls on all. IR sensors are used to identify how long distance traffic is there.



7. CONCLUSIONS

In this design work, a density predicated traffic light control system was developed for traffic control at '+' road intersection to minimize nonessential time wastage and minimize road traffic casualties which the subsisting conventional traffic light control system has failed to ignore traffic signals. Lastly, the objectives of the design were achieved. This paper has presented an expedient of controlling traffic at '+' road intersection utilizing infrared sensors with an embedded microcontroller chip.

Concretely, it demonstrates a working software solution for controlling traffic predicated on the density of traffic on each lane at the intersection. It provides a denotes of succor away from the conventional traffic light associated with even timing of lanes of traffic irrespective of the number of conveyances on the lanes per kilometer which is the density associated with that lane.

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