

## **LAN Based Traffic light control System with Emergency service Identification & Density Based Control**

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**ABSTRACT:** *Today, Traffic is most critical problem in major cities. Traffic control is more necessary to provide problem less, peacefully driving and pollution less life to people. Traffic control system based LAN networking is applied in many countries for well known purpose such as congestion prevention augmenting efficiency by minimizing travel times, improving traffic security and driving comfort, and reducing environmental damage.*

*Density of vehicles is increased day by day. So control of traffic problem is crucial task at this time. In this paper we implemented a traffic lights control system using LAN technology which has the capability of human intelligence for controlling traffic lights. It aims to do analysis, design, develop and deploy monitoring and information system jointly with the help of state of the art traffic equipment, to enable the safe and efficient and effective movement of traffic for all road users. In this work we implemented the first based on LAN networking. Its main goals are minimizing travel time, improving safety and public transport service.*

*Traffic control system through LAN network is to design and implement the network based traffic control system. This system made with signals hub and a central server that is connected to every traffic signal junction (clients). Its main task is to adjust, in real times, signal timings in response to variation in traffic demand and system capacity. Real time data from signal junctions or used sensor are collected and send to a central server or central computer for analysis. Based on these signals or information this system able to detect traffic incident in junctions. The results of this work are reduction in normal recurring, significantly enhanced operational tools congestion to effectively manage traffic incidents, reduced pollution, faster response to reports of faults, improved public transport service, reduction in emergency response times and safer travel and less congestion during road works.*

**KEYWORDS:** - *Traffic, Junctions, Server, Density, LAN network.*

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### **I. INTRODUCTION:-**

In the developing IT world, everything is so improving time by time. Transportation is very important for every country. Advances in transport technology have brought benefits, but growing vehicle fleets and escalating fuel use have also created problems. If transportation is clear, traffic jam and air pollution will be less. Moreover, by controlling car traffic, car accidents case will be reduced in every country. Traffic congestion is one of the main roles in every country. This leads to economic losses, argument the population and has great impact of the quality of life. One common approach to try to handle traffic congestion is to build infrastructure, such as roads and bridges by pass lane, fly over etc. But in the past year, it is becoming increasingly more difficult to build more infrastructures to at least diminish traffic jams. Not only the height cost, but also the lack of space and the environmental damage of building new road have to be considered. A different approach is needed, based on the applying intelligent in order to manage traffic flow in a more effective and efficient manner.

This lead to a relatively new research area called Intelligent Transportation System (ITS) which is basically concerned with the application of information and communication technologies (ICT) to the planning and operation of transportation system. Traffic observation, control and real-time management is one of the major components within future intelligent transportation systems (ITS). This involves, for instances design and construction of LAN based car traffic control system. It is widely accepted by the transportation community that ITS makes exiting transportation facilities efficient, minimizing the need to build more infrastructure. Intelligent Transportation Systems (ITS), advanced electronics, communications, and computer systems that increase the efficiency and safety of urban and highway transportation.

The intelligent traffic light that had been developed presents several advantages. Since the waiting time of the vehicles for the lights to change is optimal, the emission of carbon monoxide from the vehicles is reduced. This will give a positive effect to the green house effect towards the environment. The intelligent traffic system will also save the motorists' time and reduces their frustration while waiting for the lights to change since it helps reducing congestion in the traffic intersections. Another advantage is that there is no Interference between the sensor rays and there is no redundant signal triggering. By being able to interface with the software, the sensor based traffic system will easily accept feedback. Therefore there can be communication between the software and the hardware.

Car traffic control system based LAN networking is applied in many countries for well known purpose such as congestion prevention augmenting efficiency by minimizing travel times, improving traffic security and driving comfort, and reducing environmental damage.

In this paper we implemented a traffic lights control system using LAN technology which has the capability of mimicking human intelligence for controlling traffic lights. It aims to do analysis, design, develop and deploy monitoring and information system jointly with the help of state of the art traffic equipment, to enable the safe and efficient and effective movement of traffic for all road users. In this work we implemented the first based on LAN networking. Its main goals are minimizing travel time, improving safety and public transport service. Such improvements are beneficial to health, economy, and the environment.

## **II. PURPOSED WORK:-**

Traffic control system through LAN network is to design and implement the network based traffic control system. This system made with signal junction, central server and sensors. A server connected to all traffic signals junctions. In this paper signal junctions works according to density of vehicles. If any lane have less traffic than signal junction will green for less time and if any lane have more traffic than signal junction will green for more time. Signal junction controls density of vehicles through a LAN network with a connected sensor. A sensor detect the density of vehicles passed in two seconds and send signals to server computer for further action. Every signal junction have own sensor that is connected through central computer. Every signal junction light be green for two second initially. Within two second sensor detect more than four vehicles passed to this lane than central computer (server) increased the time of signal junction by two second. This process is continuing whenever time reached to 10 second or sensor detect less than four vehicles passed on this lane. After 10 second or sensor detect less than four vehicles next signal junction will green. This procedure follows for every signal junction.

This paper also gives an idea for passing of emergency vehicles or VIP vehicles without any barrier. Sensor is situated before 300 meter from traffic light to every signal junction. When any emergency vehicle or VIP vehicles will pass from this light then sensor detect siren voice or light of emergency vehicles. A central server detects these signals and server send the signal to that junction light and junction light will green for 10 second. After passing of these vehicles server again set junction light to current light.

For density based control:-

1. Set initial value to 2 sec to signal junction light.
2. If less than four vehicle passed within 2 sec. than step 3 else step 4.
3. Next signal junction light is green and goes to step 1.
4. If green light time is equal to 10 sec. then goes to step 3 else goes to step 5.
5. Green light time is increase by 2 sec. and goes to step 2.

For emergency control:-

1. A sensor is situated at 300 meter before traffic light
2. When any emergency vehicle or VIP vehicles pass than sensor detect signal through light or voice.
3. Sensor convert these signal into electric signal and send to traffic light controller or hub.  
LAN controller stop current session of traffic light and green that side where emergency .
4. After 10 sec. traffic light is set to initial value of last stopped session.

Sensor is a crucial element in an intelligent traffic control. The most common sensor is inductive loop. It is very common in vehicle actuated system to detect vehicle presence. It is also very common in an urban traffic control system to count the number or to measure headway of approaching vehicles. However, the main drawback of the inductive loop is its failure to measure queue length accurately. Another type of sensor is video detection system. This system is very flexible and able to carry out traffic count and measure queue length accurately. The price of commercial video detection system is very high as compared to inductive loop system.

### III. CONCLUSION:-

In this research we applied a traffic lights control system using LAN technology which has the capability of simulating human brainpower for monitoring and controlling traffic lights. It purposes to do investigation, project, cultivate and organize nursing and information system jointly with the help of state of the art traffic equipment, to allow the harmless and capable and operative movement of traffic for all road users. In this work we executed the first based on LAN networking. Its main goals are minimizing mobile time, refining safety and public transport service. Such improvements are helpful to health, economy, and the environment.

The proposed system offers many advantages such as:

- Minimizing the traveling time for Vehicles and passengers
  - Minimizing pollution,
- Minimizing the traffic congestion as likely that saves energy and lessening in disaster response time.

### IV. LIMITATION:-

Everything in this world have some error, limitations. This project also has some limitations. That are:-

- (1) Problem occurring on passing of emergency vehicles or VIP vehicles if they do not passed in 10 sec.
- (2) If any sensor does not work properly.
- (3) If central server becomes dead than complete system will fail.

### FUTURE WORK:-

There are a number of problems occur to control traffic. This paper gives some idea to control traffic. But day by day new technologies are coming in the market. We use many technologies to control traffic. In future we can see the use of GPS system to control traffic. A GPS system use to control the density of vehicles. A GPS system gives the view of traffic to control the density of vehicles on route. A GPS system gives the information about traffic to traffic control server and server change route of vehicles according traffic.

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