



Smart Emergency Traffic light System

Guided by -

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Abstract :- Traffic congestion and traffic monitoring has now become a biggest problem. As the traffic light was invented, from then the use of traffic light monitoring has increased. And due to increased population there is a need to manage the traffic system efficiently. While observing the traffic management systems, there are many hardware and software solutions developing in this field. This paper aims to contribute to traffic signals improvement by developing a centralized traffic control system, using a unique wireless communication network. It gives an absolute solution of how a traffic control system should work during emergency situations.

Keywords:- smart traffic light, wireless communication, MCU, smart city, population.

Introduction :-

The concept of smart roads integrates advanced algorithms, improved sensors and computing and networking technology to predict and manage traffic flows. A smart road can improve travel time, road safety and reduce traffic congestions. Internet of Things (IOT) is the connectivity of physical devices such as sensors and actuators with a unique identifier to allow remote access to objects and automation in application domains like healthcare, transportation, surveillance, and energy

conservation. The work is intended to improve the existing traffic system by integrating better management and monitoring schemes as well as providing road users with real time information.

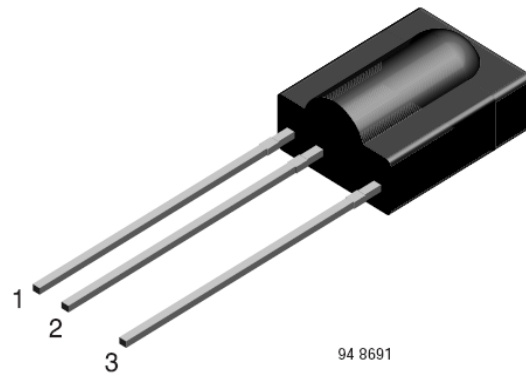
Literature review:

From its emergence to the present day, traffic light control systems have been widely used to monitor and control the flow of vehicles. However, with the increasing number of public (bus) and private vehicles (car, motorcycle, and truck), urban centers are becoming more and more populous. Density, speed, and flow are the three critical parameters for road traffic analysis. High-performance road traffic management and control require real-time estimation of road mean speed and density as input for large spatial and temporal coverage of the roadway network. In Adaptive Traffic Control System which receives information from vehicles such as position and speed and then it utilizes to optimize the traffic signal. The system specifies the use of onboard sensors in vehicles and standard wireless communication protocol Specified for vehicular applications. They implement various traffic Signal control Algorithms. Intelligent traffic systems for VANET suggest the creation of a smart city framework for VANET consisting of Intelligent Traffic Lights which transmit warning messages and traffic statistics. In That System Various Routing Protocols Have Been Discussed And Compared. They suggest that AODB is best suited for Intelligent Traffic Light]Priority

Based Traffic Lights Controller Using Wireless Sensor the author implements Adaptive Traffic control System t (WSN) wireless sensor Network. In that System manipulation Used for controlling Traffic Light. This Control Traffic over Multiple intersections.

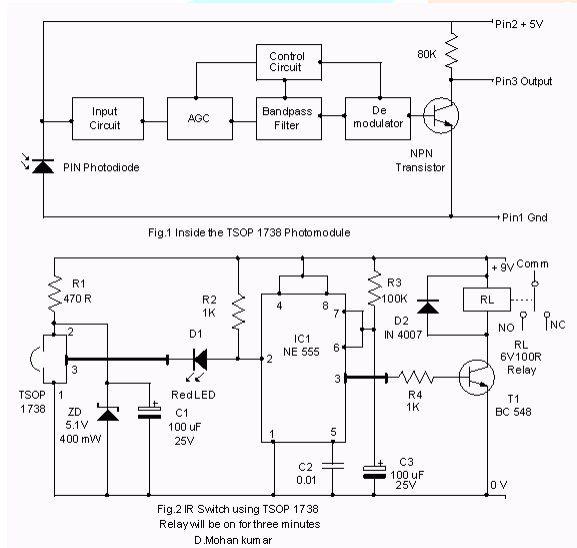
Implementation

Signal and traffic management is one of the biggest concern so while undertaking the project the ease of traffic management for emergency services was undertaken as this project focuses on ease of traffic for emergency services fo implementation we have taken 2 nodeMCUs and connected them with server or wifi function and and we actually establish a client server system which is use to control the both system and this is actually the main connection between two nodeMCUs.

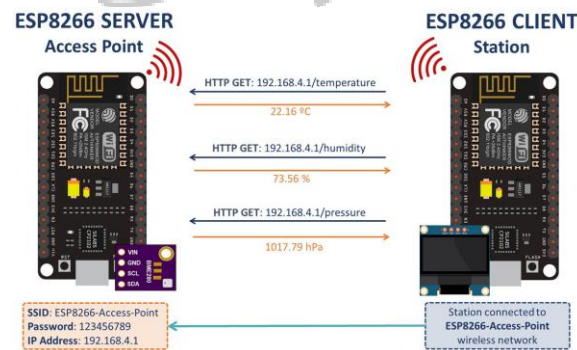


tsop sensor.

After this in our project, when an emergency vehicle approaches from any lane, the TSOP1738 sensor, connected on the client nodeMCU, receives IR signal from the vehicle and requests the server to turn on the emergency sequence for the lane. When the vehicle has passed the traffic light, the lights start working according to the normal timings. The server also uses NTPclient library to get realtime, date and time. The precoded timings for rush hours, non-rush hours and nighttime are compared with the realtime time and then the traffic sequence for the hours is executed.

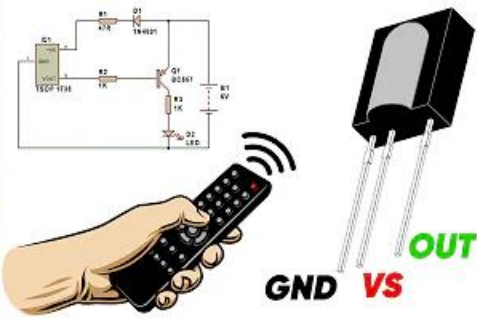


When implementing a client server protocol we need to implement two different programs, one as a client program and another as a server program. They both have different configurations to perform different functions. The client program and server program are uploaded to different microcontrollers. They are connected over a WiFi network. Next part is taking time under consideration as traffic is time considerate as perto the active or heavy traffic time are different in different metropolitan area so we have also consider that in the regular traffic signal programing and using this implementation we create a regular and automatic TIRF signal configuration due to which we don't need to implement it from control room, it gets totally automated.



Result

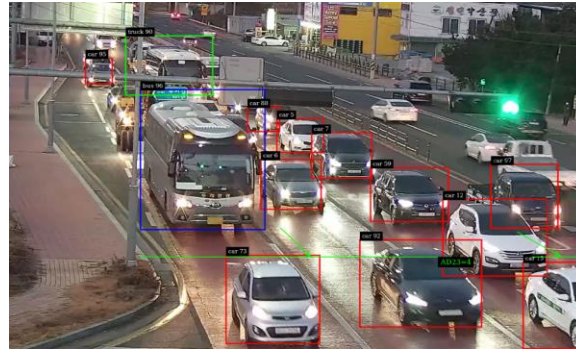
TSOP 1738



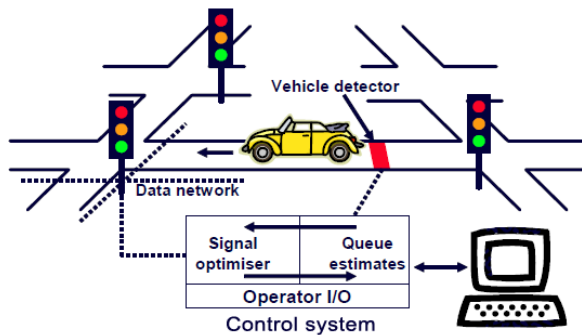
than using this system manually it can be automated as we can implement computer vision as today traffic signal already use cameras to catch the law breaker we can use the same cameras and implement the technology it would revolutionize the emergency public systems by spending time saving lives rather than spending time in traffic

Conclusion

We don't want this project to be limited only. Medical emergencies instead should be used for So we have successfully completed a working emergency like Fire breakouts, Government Model of our smart traffic light with the integration convoys & quick police investigation or road of two Esp8266s over a web server and all range purposes. Actuators & sensors also we have the also we want to implement latest technologies code compiled with the help of Arduino IDE for the demonstration.



Understanding Current circumstances many developing country does not have such technology due to which atlas 1000 to 2000 life are lost due to the traffic or any other traffic problems considering this topic this can be a great opportunities for upcoming startups to create business option and with that they can improve the government system



This systems can be observe in cities like canada and USA and it has significantly improve the pedestal life and aged people can also benefit with this

As this is small scale implementation we can increase the accuracy of the technology and considering the concept it gives freedom to all the emergency services and as we are able to implement it with such small technology it can be great option for government and this also create wide range of option for using iot in improving in saving peoples life

Future Scope

This type of system are needed in metropolitan areas as this technology does not require high amount of prices and can have massive impact on the lives that can be saved as this technology can be modified by using deep learning and and rather

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