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# DESIGN AND IMPLIMENTATION OF NOVEL APPROACH FOR TRAFFIC CONTROL SYSTEM

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**Abstract:** Vehicular traffic system is very beneficial for valid intersecting control of traffic. It is very importance to require sophisticated and coordination between traffic light to smooth traffic controlling. For smooth controlling it requires accuracy between coordination in traffic light and required accurate timing, and also it is important point of view to take proper decision for controlling traffic system. This paper not only focus on traffic controlling but also implements much more services which is very important to smooth traffic control system. It involves monitoring and accurate time controlling lights, emergency vehicle priority based module, and crowd density which focus on priorities release traffic based on more lane traffic. The electronic system consist of micro-controller and pressure sensors to sense the vehicles and generate input/outputs regarded for controlling of traffic. The hardware circuit and integrating software makes reliable use of this system and also less cost effective. In this scenario the traffic light automatically changes the priority based on the study on conducted the number of vehicles on particular lane and also on the basis of if emergency services required such as ambulance, fire brigade and etc. Third mode is zebra crossing where any object is identifies if it break during stop mode.

**Keywords:** Embedded system, Pressure sensor, piezoelectric sensor

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## INTRODUCTION

Control the crowd on road using the pressure sensor for automatic traffic control, Power generation using pressure sensor which is based on the piezoelectric sensor, identify the emergency vehicle and micro-controller to formulate the operation more capable.

A bunch of sequence connected pressure sensor and piezoelectric sensor installed on the road near the signal. When vehicle approaches the signal it exerts weight on the pressure sensor and the piezoelectric sensor. The pressure sensor count the weight on the road and give the first priority to these road which having maximum load and first free the traffic on that lane. Also piezoelectric sensor generate the electricity by using the pressure on the road.

When the vehicle is going to enter on the road the first aim is to identify the vehicle. For that we are using here Radio Frequency Identification Card (RFID) system. In this system RFID card is present at the front glass of the vehicle. RFID reader detected the vehicle and the data matched with the data base provided at each signal. If the vehicle is emergency vehicle they give the first priority to that vehicle. This is the simple concept of our project.

## II.PRAPOSED METHDOLOGY

In this paper we are defining three module (1)Crowd density using pressure sensor,(2) Emergency vehicle using RFID, (3)Electricity generate using piezoelectric sensor.

### 1) CROWD DENSITY

In our traffic control scenario we have seen that set a timining for release the traffic. In that system give the chance each and every road for release the traffic whether the road having maximum weight or having minimum weight. By using this system problem of traffic are generate. Due to this problem people loss their time, opportunities and not reach in time at their destination and get frusteded. To overcome this problem we are make the new system but at the same time is smart this is the crowd density.

In crowd density we are using pressure sensor it is used for to count the pressure those road having maximum crowd to give first priority to release the traffic. This cycle completed in clockwise. Because of increasing traffic there is necessary to manage crowd to avoid accident so the system consist of crowd management module to handle it efficiently .In the future the GPS and ad-hoc to identify signal status before signal , also added vehicle communication system to avoid congestion traffic and avoiding from accident.

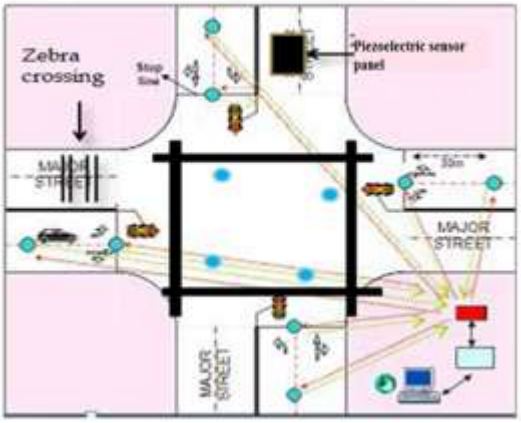


**Fig (1): Automatic traffic control density**

The system tries to reduce possibilities of traffic jams, caused by traffic lights, to an extent. The system is based on microcontroller. The traffic jams are the common problem in most of the city in the world. The one of the main cause of this problem is accident. To find the way to maximize the traffic flow smoothly can reduce the numbers of the accident and can reduce the people time in road. The government 5has carried out a few rules to overcome this problem. Beside take the punishment to all the traffic offenders, the traffic lights have been made at the location that high risk in accident.

**(2)EMERGENCY VEHICLE**

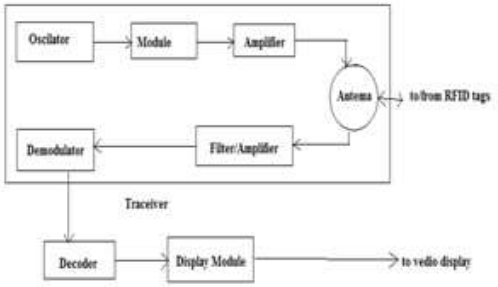


**Fig (2) Block Diagram for RFID**

The difficulty of traffic light can be solved by RFID based system. RFID use the three main component (1) RFID card (2) RFID reader and (3) Database. In emergency vehicle we are using

Radio Frequency Identification Card for identify whether the vehicle is emergency or not .The emergency vehicle, such as ambulance, fire- brigade and police will be jammed especially at the traffic light junction. RFID is a method that uses the radio waves to identify the unique vehicle. RFID detects the vehicle which is having the RFID card in it and respective balance will be detected. The problem of traffic light control can be solved by RFID based system. With this system, we can consider the priority of different type of vehicles and also consider the density of traffic on the roads by installing RF reader on the road inter. Radio frequency identification is a technique that Uses the radio waves to identify the object uniquely. The complete automation of the traffic control signal is possible by using RFID system RFID is a technique that is widely used in the various application areas like commerce (data warehouse mall), security (Banking), Electronic toll collection system, Access control etc. This system is used in different application area like medical science, commerce, security, access control etc. RFID is an electronic device that emits and/or detects infrared radiation in order to sense some aspect of its surroundings.

**(3) ELECTRICITY GENERATE**

In our traffic scenario we are seen that lots of electrical energy is wasted at signal for lighting. Nearly 500 unit of electrical energy is required for operate signals in one day. If we considered all the signals huge amount energy is needed. Electrical energy can be generated at signals by using piezoelectric sensor to overcome this problem. In recent years most of the application uses the piezoelectric sensor. Piezoelectric sensor have several beneficial properties such as, flexible, lightweight, wide frequency range and no need of electricity as it is self-generating.

Bunch of series connected piezoelectric sensor is installed on near road. When the vehicle approaches the traffic signals it exerts pressure on the piezoelectric sensor which in turn generates electricity. Piezoelectric sensor which produce electricity when the pressure is exerted on the sensor by the moving vehicle. Piezoelectric sensor will generate 3 volt of energy and this generated energy is used for light.

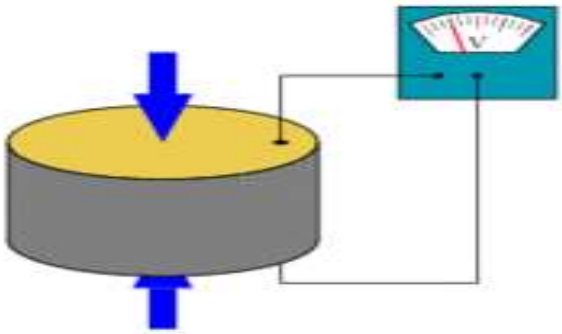

**Fig (3). Piezoelectric Sensor**

**III. RESULT**

Result include the successful operation of the traffic light control and monitoring system. Suppose, we consider that A,B,C and D as light. When light A is active that means on that road maximum crowd is present and that road give the first priority to free , at the same time other three light B,C, and D having a low weight and that road wait for some time to free. At the same time electricity is generate and this electricity is used for signal and don't required any external electrical energy for the signal. By using this system we are save the electricity.

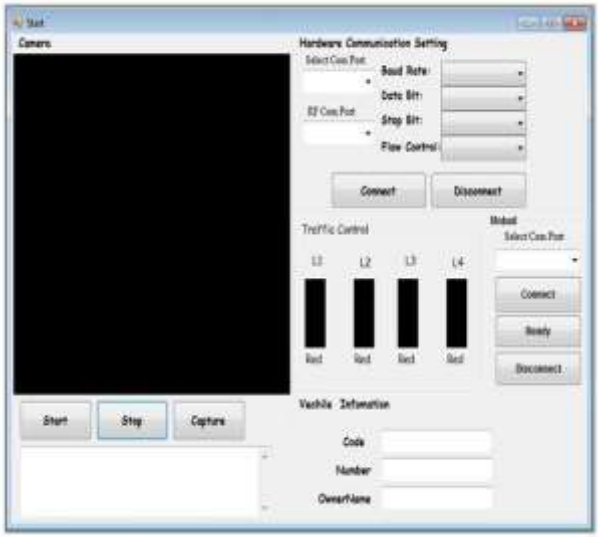


**Fig (4). Display when system is running**

## IV. CONCLUSION

In this paper we studied the minimization of traffic light controller in a City using pressure sensors and microcontroller. We have concluded that by using our system we can get reliable traffic control system and it is beneficial for peoples to avoid crowded traffic. Because of use RFID we can easily detect upcoming emergency vehicles and from that we can manage traffic as in manner that the emergency vehicle can get first priority. In this system most important factor is it will produce electricity when vehicle standing on signal so it will become more beneficial to our country and we will use this electricity to glow the signal light.

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