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AUTOMATED TRAFFIC CONGESTION AVOIDANCE IN ROADWAYS BASED ON DENSITY AND EXIGENCY

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Abstract- In order to bring out the automated traffic control system more efficient and better model to overcome the traffic jams. The proposed system exposes the new criteria that are the density control using infrared sensors and emergency dealt with RFIDs(Radio Frequency Identification) using microcontroller. Here the drawbacks of existing systems like traffic elusion, more waiting time at the junctions and congested traffic flow during emergency are eradicated. Hence this model provides better traffic control system to this generation.
Keywords- *microcontroller, RFIDs, infrared sensors*

I.INTRODUCTION

At first, the traffic control system were developed by an Utan policeman Lester wire in the year 1912 using red and green lights. Then America came out with the new idea that improves traffic signal system. It includes three color lights red, green and yellow. After that there are numerous technologies developed to ensure safety traffic flow but still the flaw exists. So, this idea will neglect these flaws tremendously and provide safety traffic flow. The infrared sensor is introduced here to control the density at the junctions and simultaneously clearing out the pedestrians to move beside and aside. RFID tag and reader can works under exigency. Hence the clear traffic can be achieved.

II.LITERATURE SURVEY

An intelligent traffic control system where RFID module plays a major role[1]. An Automatic traffic control system for the clearance of vehicles during emergency (during arrival of ambulance) using the sensors or by using transmitter and receiver[2].The automated traffic control system using Zigbee and RFID to sense the density of vehicle by vehicle count and to provide free traffic flow[3]. The thermal based traffic control system evolved by detecting the density of the vehicles using thermal imager principle. This is cost efficient technique when compared to all other techniques [4].

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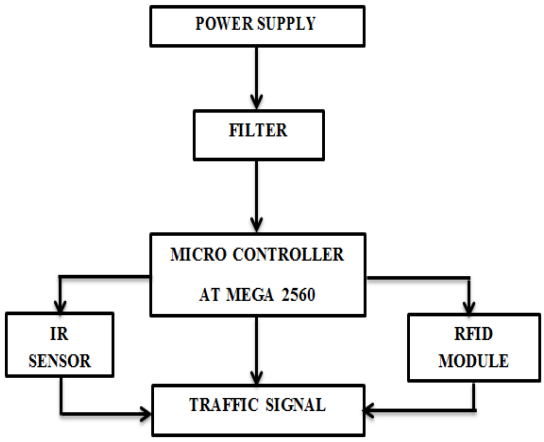
III.PROPOSED SYSTEM

In proposed system the density is pointed out and it is cleared out using IR sensor. Where it can detect the vehicle count and thus the density is found. By this way normally the traffic control system works. When the system under exigency it jumps to the emergency condition where the RFID tag fetches the information to the RFID reader. By the way exigency vehicle is cleared. When two emergency vehicles reach the junction at the same time priority will be given to the first vehicle reaching the junction and this followed by normal condition.

IV. BLOCK DIAGRAM



V. BLOCK DIAGRAM DESCRIPTION

POWER SUPPLY

The filtered 5V DC supply is given to the AT mega microcontroller through step down transformer and filter circuit.

MICRO CONTROLLER ATMEGA 2560

At mega microcontroller is also known as arduino mega 2560. Totally it has 70 pins of which 54 can be used as digital input or output pins and 16 analog input pins. It also has 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header and a reset button. It is compatible for more complex project too. So ATMEGA 2560 microcontroller is used. It is used to interface overall traffic control system under normal and emergency

FILTER

Filters are used in rectifier circuit where the low voltage ac input is changed into pure dc output provided when the voltage is below 30V. In this project filter is used to acquire the required voltage for microcontroller.

IR SENSOR

An Electronic infrared sensor is the one which can send the infrared rays and simultaneously receive it. When the infrared rays get disturbed then it is recorded. Counting can be achieved easily. By this way vehicle count can be easily recorded and density can be dealt easily.

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RFID MODULE

RFID MODULE is a wireless electronic device. It has three major parts tag, reader and antenna. Tag consists of magnetic chip where we can fetch the information. Reader is used to receive the information and the antenna is used to transfer the signal. The module is used to detect exigency.

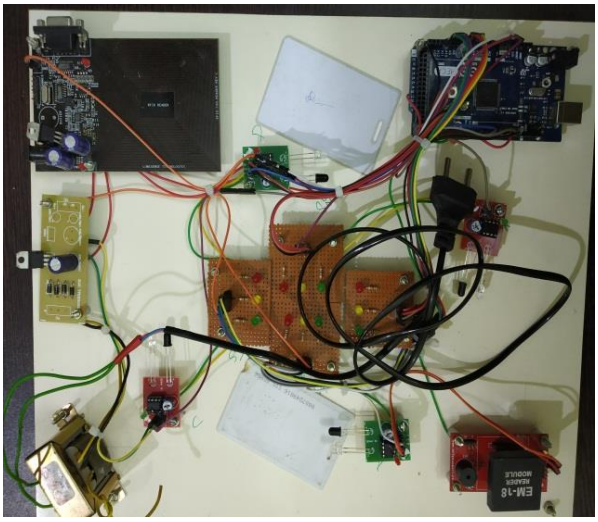
TRAFFIC SIGNAL

There are totally four signals at the junction facing four ways. Each signal has three lights red, green and yellow. Each signal is interfaced with RFID and IR SENSOR, so that the signal responds accordingly with respective lights.

VI. WORKING

In the proposed system "AUTOMATED TRAFFIC CONGESTION AVOIDANCE IN ROADWAYS BASED ON DENSITY AND EXIGENCY" new technology is implemented where both vehicle count and emergency can be controlled simultaneously. Traffic jams are higher at the junctions. In order to reduce the density at the junctions and emergency this is developed. When the density of the vehicle is increased to the maximum during the signal is in red condition the IR sensor placed in the roads meeting the junction is sensed. Then the signal to that road changes to yellow for few seconds followed by green. Same way the density is controlled. Emergency is traced by the RFID module where the tag is placed in the ambulance and the receiver at the road meeting the junctions. When two emergency vehicles pass the priority based signal is followed. Always priority flows from emergency to density. This is the main concept made in this project.

VII. PROOF OF THE CONCEPT



VII. CONCLUSION

Now a days traffic jams are increased due to overpopulation. In order to reduce these conditions different strategy can be used. By this technique density and emergency can be drastically controlled and experience better traffic flow.

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ADVANTAGES

- Accident occurrence at the junctions can be avoided
- Policeman maintenance is not mandatory
- Perfect flow of traffic due to controlled exposure of density and emergency
- Provide peaceful traffic flow at junctions.

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