# Building of a Novel System for Detection of Stolen Vehicles

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**Abstract:** *Recently, wireless systems are broadly utilized in the street transport because they provide less expensive options in the current problem section, it may be observed that, existing technology is inadequate to handle problems of congestion control, emergency vehicle clearance, stolen vehicle recognition, etc. To resolve these complaints, we advise to apply our Intelligent Traffic Control System. This paper presents a smart traffic control system to pass through emergency automobiles easily. Every individual vehicle is outfitted with special rf identification (RFID) tag (placed in a proper location), that makes it impossible to get rid of or destroy. We use RFID readers, NSK EDK-125-TTL, and PIC16F877A system-on-nick to see the RFID tags connected to the vehicle. It counts quantity of automobiles that passes on the particular path throughout a specified duration. Additionally, it determines the network congestion, and therefore the eco-friendly light duration for your path. when an ambulance is approaching the junction, it'll communicate towards the traffic controller within the junction to show Around the eco-friendly light.*

**Keywords:** Wireless networks, Radio frequency identification, Traffic controller, Intelligent traffic control, PIC16F877A

## 1. Introduction

India may be the second most populous Country on the planet and it is a quick growing economy. It's seeing terrible road congestion problems in the metropolitan areas. Infrastructure growth is slow as in comparison towards the development in quantity of automobiles, because of space and price constraints. Traffic jam is an issue in metropolitan areas of developing Nations like India. Development in urban population and also the middle-class segment lead considerably towards the rising quantity of automobiles within the metropolitan areas. ZigBee works at low-power and could be used whatsoever the amount of labour designs to do predefined tasks. It works in ISM bands. Data transmission rates change from 20 Kilobits/second within the 868 MHz frequency band to 250 Kilobits/second within the 2.4 GHz frequency band. The ZigBee uses 11 channels just in case of 868/915 MHz rf and 16 channels just in case of two.4 GHz rf. Using RFID traffic control to prevent issues that usually arise with standard traffic control systems, especially individuals associated with image processing and beam interruption techniques are talked about. This RFID technique handles multivehicle, multilane, multi road junction areas. It offers a competent personal time management plan, by which, an engaged time schedule is laboured out instantly for that passage of every traffic column. The main focus of the jobs are to lessen the delay in arrival from the ambulance towards the hospital by instantly clearing the lane, by which, ambulance is travelling, before it reaches the traffic signal. This is often accomplished by turning the traffic signal, within the road to the ambulance, to eco-friendly once the ambulance reaches a particular distance in the traffic junction. Using RFID differentiates between your emergency and non-emergency cases, thus stopping unnecessary traffic jam. In the current problem section, it may be observed that, existing technology is inadequate to handle problems of congestion control, emergency vehicle clearance, stolen vehicle recognition, etc.

To resolve these complaints, we advise to apply our Intelligent Traffic Control System

## 2. Methodology

Indian visitors are non-lane based and chaotic. It requires a traffic control solutions, which aren't the same as the developed Nations. Intelligent control over traffic flows can help to eliminate the negative impact of congestion. Congestion on streets eventually leads to slow moving traffic, which boosts the duration of travel, thus stands-out among the major issues in metropolitan areas. A _green wave' may be the synchronization from the eco-friendly phase of traffic signals. Having a _green wave' setup, an automobile passing via an eco-friendly signal is constantly receiving eco-friendly signals because it travels lower the street. Additionally towards the eco-friendly wave path, the machine will track a stolen vehicle if this goes through a traffic light. Benefit of the machine is the fact that Gps navigation within the vehicle doesn't need additional power. The greatest drawback to eco-friendly waves is the fact that, once the wave is disturbed, the disturbance may cause traffic problems that may be exacerbated through the synchronization. In such instances, the queue of automobiles inside a eco-friendly wave develops in dimensions until it might be too big and a few of the automobiles cannot achieve the eco-friendly lights over time and should stop. This really is known as over-saturation. Visitors are a vital issues of transportation system in first and foremost the metropolitan areas of Nations. This is also true for Nations like China and India, in which the human population is growing at greater rate as show in figure. Real-time operation from the system emulates judgment of the traffic policeman working. The amount of automobiles in every column and also the routing are proprieties, where the computations and also the choice are carried out. The drawback to the work is it doesn't discuss what techniques can be used for communication between your emergency vehicle and also the traffic signal controller. We've used

passive RFID tags and RFID readers with frequency 125 KHz. RFID tag, when vehicle is available in the plethora of the receiver will transmit the initial RFID towards the readers. The microcontroller attached to the RFID readers will count the RFID tags read by 50 percent minute duration. We compare the initial RFID tag read through the RFID readers towards the stolen RFIDs kept in the machine. If your match is located, then your traffic signal is instantly switched to red for time period of thirty seconds Also an SMS is distributed indicating the RFID number by utilizing SIM300 GSM module. The signal consists of unique id and the three. The transmitter consists of PIC16F877A microcontroller and ZigBee module. The microcontroller transmits the instructions and knowledge towards the ZigBee via serial communication. Second part may be the receiver that is placed at traffic pole. Additionally, it consists of PIC16F877A microcontroller and ZigBee module. The receiver blogs about the the three received towards the three contained in its database. Whether it matches, it will turn the eco-friendly light on.
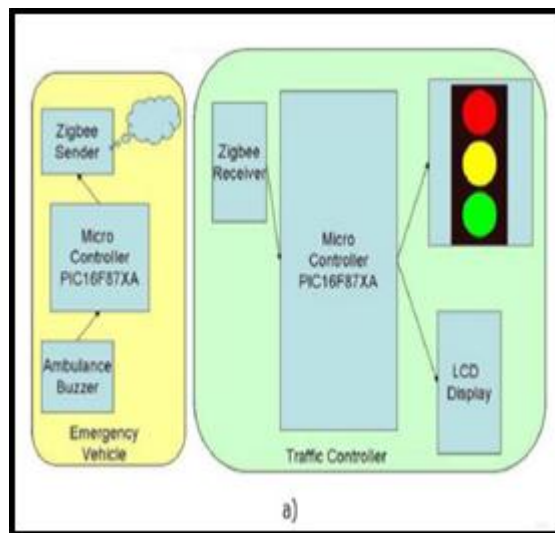

**Figure:** An overview of emergency vehicle clearance

## 3. An Overview of Proposed System

Technologies like ZigBee, RFID and GSM may be used in traffic control to supply economical solutions. RFID is really a wireless technology that utilizes rf electromagnetic energy to hold information between your RFID tag and RFID readers. Some RFID systems is only going to work inside the range inches or centimetres, while some may go for 100 meters (300 ft) or even more. A GSM modem is really a specialized kind of modem, which accepts a Sim and works on the subscription to some mobile operator, as being a cell phone. AT instructions are utilized to control modems. These instructions originate from Hayes instructions which were utilized by the Hayes wise modems. In the current problem section, it may be observed that, existing technology is inadequate to handle problems of congestion control, emergency vehicle clearance, stolen vehicle recognition, etc. To resolve these complaints, we advise to apply our Intelligent Traffic Control System. It mainly includes three parts. Each vehicle is outfitted by having an RFID tag. As it pertains in the plethora of RFID readers, it'll send the signal towards the RFID readers. The RFID readers will track the number of automobiles have undergone for

any specific period and see the congestion volume. Accordingly, it sets the eco-friendly light duration for your path. Once the RFID readers read the RFID tag, it compares it towards the listing of stolen RFIDs. If your match is located, it transmits SMS towards the police control room and changes the traffic light to red, so the vehicle is built to stay in the traffic junction and native police may take appropriate action. Each emergency vehicle consists of ZigBee transmitter module and also the ZigBee receiver is going to be implemented in the traffic junction. The buzzer is going to be started up once the vehicle can be used for emergency purpose. This can send the signal with the ZigBee transmitter towards the ZigBee receiver. It'll make the traffic light to alter to eco-friendly. When the ambulance goes through, the receiver no more has got the ZigBee signal and also the traffic light is switched to red. For testing purpose, we used short range RFID readers within our prototype. First, the receiver part is switched on. The red and eco-friendly signal is going to be on for ten seconds duration and orange light is going to be on for just two seconds duration one by one. Next, we bring the RFID of stolen vehicle into the plethora of RFID readers. Then your signal will use red for time period of thirty seconds along with a SMS is received. Thirdly, we bring 12 RFIDs into the plethora of RFID readers, and so the eco-friendly light duration can change to thirty seconds. Fourthly, we bring an urgent situation. Vehicle transporting ZigBee transmitter into the plethora of ZigBee receiver, and traffic light can change to eco-friendly up until the receiver has got the ZigBee signal. Within the default condition, red and eco-friendly light sets for ten seconds. The timeframe is going to be varied based on the traffic conditions, stolen vehicle, and emergency vehicle. The transmitter part is positioned within the ambulance. It transmits ZigBee signal continuously. The stolen vehicle RFID number ought to be up-to-date within the database. If stolen vehicle is located, it will immediately switch on sore point within the signal. It transmits immediately a note to approved person.
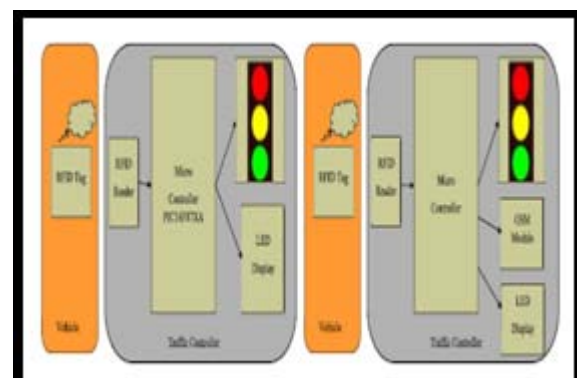

**Figure:** An overview of automatic signal control detection system

## 4. Conclusion

With automatic traffic signal control in line with the traffic density within the route, the manual effort for the traffic policeman is saved. Because the entire product is automated, it takes very less human intervention. We use RFID readers, NSK EDK-125-TTL, and PIC16F877A system-on-nick to see the RFID tags connected to the vehicle. It counts quantity of automobiles that passes on the particular path

throughout a specified duration. Additionally, it determines the network congestion, and therefore the eco-friendly light duration for your path. With emergency vehicle clearance, the traffic signal turns to eco-friendly as lengthy because the emergency vehicle delays within the traffic junction. The signal turns to red, after the emergency vehicle goes through. Further enhancements can be achieved towards the prototype by testing it with longer range RFID visitors. Also Gps navigation can be put in to the stolen vehicle recognition module, so the exact place of stolen vehicle is famous.

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