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 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 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 2.4 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 RFIDIs 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.

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 RFIDIs. 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.

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.

References


