RFID BASED(THEFT) VEHICLE TRACKING SYSTEM

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ABSTRACT:

The paper aims at using RFID (Radio Frequency ID) for developing tracking systems for vehicles. The paper addresses three major problems: traffic signal timings, congestions on roads and theft of vehicles. A novel solution for each problem is presented here. The traffic signalling is made dynamic based on regressions over data archives, containing a detailed set of traffic quotient and time. This technique incorporates a simple, unique way to calculate traffic quotient based on the physical dimensions of the road and nature of traffic on the road. The theft of car is detected using track logs of vehicle. Analysis of congestion forms a key attribute for traffic signalling system and is used for suggesting faster routes to vehicle drivers and balancing the traffic across various routes. The RTSV requires installing RFID tags on all vehicles and RFID readers on various junctions of city for tracking.

The objective of this project is to monitor and track the vehicles in the road side and also theft vehicle using RFID technology. This project is very useful to track the stolen vehicle so we can easily monitor and find out the vehicle with RFID technology and with help of PC. Radio-frequency identification (RFID) is a technology that uses communication through radio waves to exchange data between a reader and an electronic tag attached to an object, for the purpose of identification and tracking. It is possible in the near future, RFID technology will continue to proliferate in our daily lives the way that bar code technology did over the forty years leading up to the turn of the 21st

century bringing unobtrusive but remarkable changes when it was new.

KEYWORDS:

Internet of Things, Radio frequency Identification, Microcontroller, Tracking System.

1.INTRODUCTION:

The unending cycle of technology innovation brings satisfaction and impart an exquisite outcome to the people. As technology evolved, everyone has been open in living with several state of the art control systems. Examples of which is the security at home, mobility and remote supervision applications. Security, nowadays, is the most important for us people that is why the search for a safe and sound living still remain around the need of everyone. Aside from home, schools are also in the main lists when it talks about safety especially public schools because of the number of vehicles moving into and out of the school premises.

Today, transportation has the important role in our society. However, as we notice, human population is growing bigger along with vehicles are also growing in number. Monitoring today is becoming a big challenge for everyone in securing their own properties. In many areas that vehicle passes, there are problems encountered when it comes to security. A lot of vehicles that enters and exits in one place to another is one of the realistic circumstances. It has been raised that there is difficulty of managing the entrance and exits of the vehicles manually. Manual monitoring makes the assigned guard difficult to monitor every vehicle that is entering the area from time to time as well as maintaining the records of vehicles are a complicated task. The plate number is only recorded information for the vehicle entering and exiting the gate. The primary aim of this study is to design and establish a vehicle monitoring system that is RFID-Based.

1.1 The Impact of Security Technologies to Transportation

With the growing and continuous improving state of technology today, it was not surprising that everyone deals with technologies most especially in securing their life and properties. It rapidly changed the economy, the society, and the way people live, work, and interact with each other. Transportations become the most technology's integrated part throughout the industry, especially in investing security technologies historically and over the years had passed, great improvements in the transportation systems are being made and

created with the help of numerous advances in science and technology [1]. The researchers concluded that having changes in transportation technologies have impact in the society as well.

1.2 Security Technologies Used in Vehicles

RFID is a technology that gathers and captures data about an object without the need of touching or seeing the data carrier. This is done through the application of inductive coupling or electromagnetic waves. This is also an emerging technology that uses wireless radio in order to identify objects from a distance without requiring a line of sight or even substantial contact [3]. With the use of Servo motors, barrier gates are well known in terms of securing road gates. Servo motors are best known for their rapid acceleration and deceleration capability, made possible by delivering high-peak torque in conjunction with a high torque-to-inertia ratio. Arduino is a tool and an open-source platform for making systems usually applied for controlling another system. It is a physical computing platform that is based on a simple microcontroller board and has a development environment for writing software for the board. Arduino projects can be stand-alone, network based or and can communicate with software running on other computer systems such as LabVIEW, Matlab and may others. Communication processes between human and devices were also renewed through the use of GSM modem.SMS notification, unlike its common purpose, is also used in warning and monitoring security systems.

2. LITERATURE SURVEY:

A RFID-based monitoring system was design for vehicles in Brunei Darussalam primarily to track the speed of vehicles. The RFID kit is associated with Raspberry-pi board and Central Control Unit (CCU) to establish connection with a remote administration server [5]. There is also a Vehicle Monitoring System that uses RFID which generates and maintain daily reports of vehicles under monitor. Through this RFID vehicle monitoring system, information can be collected automatically for efficient and safe vehicle management. Automatic vehicle identification increases the security and hence, can prevent loss of vehicles.

Additionally, a similar system was established in Malaysia to track the school children in school vehicles. The design used the Global Positioning System (GPS) as a ways of tracking the school vehicle. A passive RFID technology was integrated for

recording the presence of the children in the vehicle. Parents will know the location of the vehicle while their children are on board. Hence, this paper concerns most on the safety on their children with the RFID and GPS technology [7].

An implementation on Vehicle theft alarm and tracking the location using GPS and RFID was also established. The System consists of a microcontroller circuit board, keypad, alarm system and a display board with the combination of RFID and GSM. The key used by the automobile is an RFID card that is convenient, contactless and secure [8].

Vehicle Security System Using Zigbee is designed and implemented to check and secure the car based on combination of Zigbee system, Peripheral Interface Controller (PIC) 16F877A microcontroller, vibration sensor (body), temperature sensor and micro switch (engine), alarm, buzzer, fan and magnetic sensor (door). Users can monitor the status of car remotely using the Liquid Crystal Display (LCD) display which is attached to the controller. The authors concluded that this system is successfully tested for its performance [9].

The system about embedded Vehicle Monitoring system based on Web Technology used level sensor, pressure sensor, tilt sensor, gas sensor, and alcohol detector. These sensors are applied for Liquid Level, State of Vehicle, Pollution by Vehicle, alcoholic taste of driver and so on are being checked. These sensors provide the information to the Arduino (ATMEGA 328P-P0). Web Technology is used to check the information needed. The author concluded that this project can be improved by using a camera and by integrating a mobile based application to get the information from the vehicle in real time [10].

3. EXISTING SYSTEM:

3.1 Existing Monitoring System for Vehicles

There are vehicle monitoring system are now available and sold in the market. A system was presented to monitor the location of the vehicle along with its parameters, like speed, compartment temperature, fuel consumption, from a centralized location for research and development purposes. This system can also store data for further analysis and records keeping but it uses internet-of-things technology..

3.2 Differences with existing system

With the emerging of transportation technologies today, a lot of changes have been made. Most of the literature and studies focused on the automation of vehicle identification, monitoring of vehicle using camera, and tracking using RFID and GSM. Hence, the researchers designed and implemented technologies and systems that are applicable to Automatic Vehicle Identification (AVI), Intelligent Transportation System (ITS), and Internet of Things (IOT) which bring great improvements in solving transportation security problems. The literatures and studies are also different in terms of structure, in areas of study and with the other purposes. The literatures presents the idea of using RFID technology.

It collects, records, maintains, and saves data detected from the vehicles running in road, passing through road gates, monitoring vehicle status, and entering/leaving an area using RFID Tags as well as gathering and sending Tag ID information into a base station in which the researchers would want to incorporate and adapt in this paper. [2] emphasized that people who are visually impaired have a hard time navigating their surroundings, recognizing objects, and avoiding hazards on

their own since they do not know what is going on in their immediate surroundings. These provides brief detailed references on the functionality of each device, mainly the microcontroller used. Thereby, the proponents adapted the combination of RFID and GSM as well as the camera and incorporate a barrier gate system using servo motor in order to secure the implementation scope of the study. [4] emphasized that Security is an important issue in current and next-generation networks. Blockchain will be an appropriate technology for securely sharing information in next-generation networks. Digital images are the prime medium attacked by cyber attackers. [6] discussed about Positioning Of a Vehicle in a Combined Indoor-Outdoor Scenario, The development in technology has given us all sophistications but equal amounts of threats too. This has brought us an urge to bring a complete security system that monitors an object continuously

4. PROPOSED SYSTEM:

4.1BLOCKDIAGRAM
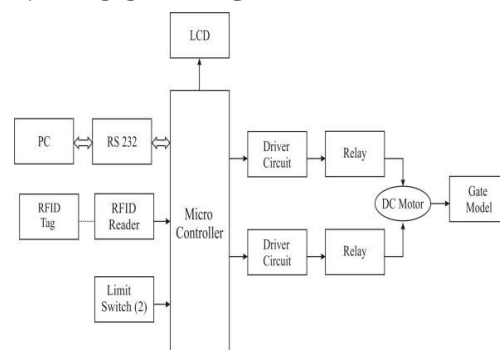
4.2 WORKING PRINCIPLE

Radio-frequency identification (RFID) is an automatic identification method, relying on storing and remotely retrieving data using devices called RFID tags or transponders. An RFID tag is an object that can be applied to or incorporated into a product, animal, or person for the purpose of identification using radio waves. Some tags can be read from several meters away and beyond the line of sight of the reader.

RFID is the special type wireless card which has inbuilt the embedded chip along with loop antenna. The inbuilt embedded chip represents the 12 digit card number. RFID reader is the circuit which generates 125KHZ magnetic signal. This magnetic signal is transmitted by the loop antenna connected along with this circuit which is used to read the RFID card number.

Figure 4.2

Drawing for RFID based (theft) vehicle

4.2.1 Tracking system

In this project we attach the RFID card to each vehicle and RFID reader is placed in the road side checking place. Whenever the vehicles come near the gate, the readers sense the RFID card and send the card number to the control unit. Here the control unit is the flash type reprogrammable microcontroller in which we have already programmed according to our objective. Then the control unit transmits card numbers to PC. Here the PC is interfaced with control unit through RS232 communication. In PC the corresponding vehicle number and information is stored. The PC will compare the received vehicle number and corresponding vehicle number stored in PC if this both number match's the PC will give signal to control unit as "ALLOWED" then the control unit activate the relay to open the gate. Suppose vehicle number in PC and received number do not match the PC will give signal to control unit as "NOT ALLOWED" then the control unit activate relay driver circuit to close the gate. Here the PC will maintain the database in MS access. The database we can control by visual basic 6.0.
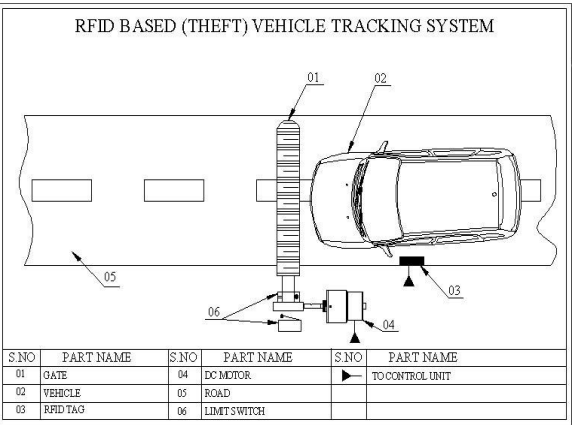
5. CONCLUSION:

Based from the result of the study, it was concluded that the developed RFID-Based Vehicle Monitoring was successfully tested and demonstrated. Incorporating highlights of all the equipment parts utilized have been produced in it. Each module has been consistent out and it is carefully placed, which causative to the best working of the unit. Secondly, with the use of highly advanced IC's and with the assistance of developing innovation, the project has been successfully implemented. In this paper RFID tag is used for authentication purpose. RFID reader reads the tag values and this values are given to the Raspberry pi processor. We can enter the theft vehicle's RFID Tag details using any browser which is in turn given as input to the arduino. Further, the developed RFID-Based Vehicle Monitoring is tested and it is working properly as to its purpose. It was also perceived to be functional, usable, and reliable.

6. REFERENCE:

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