Tracking Theft Vehicle and Detecting it using GPS

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Abstract:-- **At present most of the public people are having their own vehicle. Theft is happening on parking at some in secured places. The vehicles safety is extremely needed for vehicles parked in public places. We need to provide the security whenever there is any unauthorized persons using the bike, car, doors opening by giving horn by alarm. Another important feature is the vehicle cannot run for unauthorized persons the lock will not open. Vehicle tracking and locking system must be installed in the vehicle, to track the place and locking engine motor. The place where the vehicle is parked, is identified using Global Positioning system (GPS) and Global system mobile communication (GSM). When the attempt of theft is identified, the responsible people send SMS to the microcontroller, then microcontroller issue a control signals to stop the engine motor. Authorized person must send the password to controller to restart the vehicle. This is very secured, reliable and low cost .**

Keywords – RFID, Aurdino ,GPS and GSM

INTRODUCTION TO PRE-HISTORIC AGE

The main aim of this system is to provide security for all the vehicle. This system enables the user to observe and track particular vehicle and find out vehicle movement and its past activities.

This latest technology which created many wonders in the vehicle security is called vehicle tracking system. This hardware is assembled on the vehicle in such a way that it is invisible to the person inside or outside of the vehicle

This new technology popularly called as "vehicle tracking system" It is also useful for managing the traffic by simply viewing the location of the vehicle and if the accident is indicated the direction of their routes can be changed. So this is how tracking is useful for all the busy countries by controlling all the traffic problems with the help of this system.

This hardware is assembled on the vehicle in such a way that it is invisible to the person inside or outside of the vehicle. If any interrupt to the system then it sends location information to the monitoring unit. To find the location of vehicle, location information from tracking system is used in case if the vehicle is stolen and can be informed to police for taking actions. It also alerts the owner by detecting unauthorized movement of vehicle.

II. METHODOLOGY AND PROPOSED SYSTEM

The proposed system consists of GSM, GPS, IR sensor RFID and Keypad based access control for vehicle ignition system

capable of providing unauthorized access to start the vehicle and sending SMS alerts on unusual events.

This project consist of GPS receiver and GSM modem with a microcontroller and the whole device is attached to the vehicle. The GPS system will send the latitude and longitude values corresponding to the position of the vehicle, the SMS will be send to the GSM modem and then to the microcontroller and finally a data will be received in the form of message in the registered mobile number.

The system consists of RFID Reader, Keypad, GSM Modem, GPS system using triangulation technique, IR sensor Relays interfaced to a Microcontroller to form a vehicle access control system.

The password of the device can later be changed according to the user. And nobody can see the device who is inside or outside the vehicle.

III. PROPOSE SYSTEM

The block diagram mainly consist of a GPS receiver, crystal oscillator GSM, LED indicator, LCD, RSS 232interfacing and a power-supply. This system is mainly proposed to design a system which is used for tracking and positioning of any vehicle with the help of GPS (global positioning system) and GSM (Global system for mobile communication).

The system consists of RFID Reader, Keypad, GSM Modem, GPS system using triangulation technique, IR sensor Relays interfaced to a Microcontroller to form a vehicle access control system. The user has to swipe his RFID card against the reader to authenticate the system. Once right card is

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swiped, the system prompts him to enter the password to enable the ignite System.

GSM modem is used to send the position (Latitude and Longitude) of the vehicle from a remote place. The GPS modem will continuously give the data i.e. the latitude and longitude indicating the position of the vehicle and LCD display which displays the current status of the vehicle and the serial converter IC uses RSS 232 protocol to convert TTL level voltage levels into RSS 232 voltage levels.

If vehicle has been stolen then user can track the vehicle by sending „DATA1‟(TRACK) and by using GPS system installed in the vehicle. Once the location of stolen vehicle discovered then user can trap the thief by using control messages such as ʺDATA2ʺ (IgnitionOFF) ʺDATA3ʺ (Doorlock)ʺ , ʺDATA4 ʺ(Door Unlock).
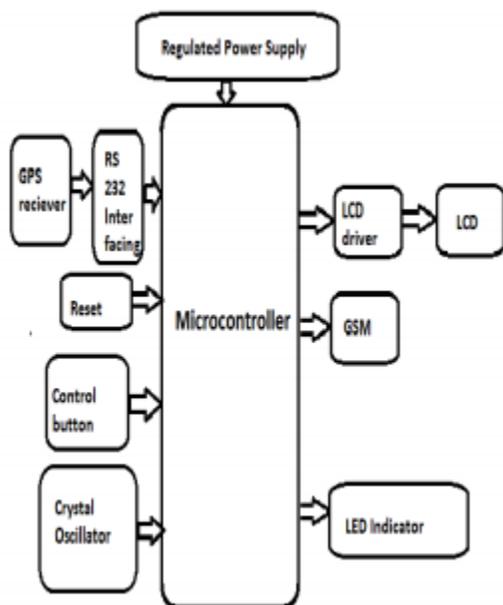

IV. TECHNOLOGY USED

IR Sensor Technology
An IR sensor is a device which detects IR radiation falling on it. The principle of working of IR sensors is explained in the Fig. 1. IR LED is used as IR transmitter and photodiode as receiver. When the vehicle passes through the booth, IR rays going to receiver are cut and signal is send to microcontroller[1]. An IR sensor consists of an IR LED and an IR Photodiode; together they are called as Photo – Coupler or Opto – Coupler. When the IR transmitter emits radiation, it reaches the object and some of the radiation reflects back to the IR receiver. Based on the intensity of the

reception by the IR receiver, the output of the sensor is obtained.

RFID Technology.
 RFID stands for Radio-Frequency Identification. The acronym refers to small electronic devices that consist of a small chip and an antenna. The chip typically is capable of carrying 2,000 bytes of data or less[2]. The RFID device serves the same purpose as a bar code or a magnetic strip on the back of a credit card or ATM card it provides a unique identifier for that object. And, just as a bar code or magnetic strip must be scanned to get the information, the RFID device must be scanned to retrieve the identifying information.
Radio Frequency Identification (RFID) technology is a wireless technology, mainly consists of three components, RFID tag or smart label, RFID reader, and an antenna. RFID tags contain an integrated circuit and an antenna, which are used to transmit data to the RFID reader also called an interrogator.
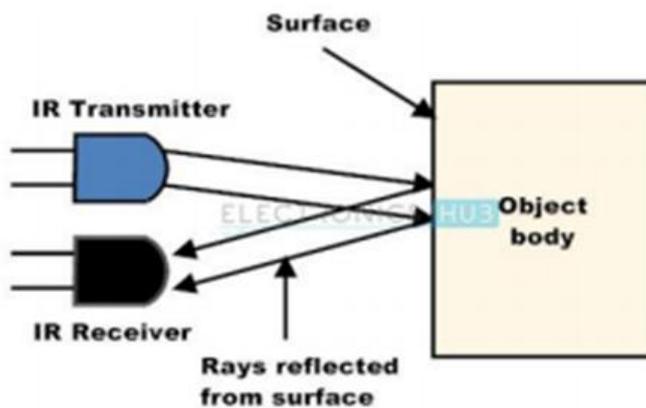

V. IMPLEMENTATION

When the system is initialized, it keeps on checking for 2 conditions, that is towing and stolen. If the vehicle is towed, user receives an sms with the location.
If the vehicle is stolen by forcible unlocking of door, then the user will get an SMS about it. And if there is no forcible unlocking and the vehicle is missing, then the vehicle can be tracked by sending "DATA1" to the system.
User can also switch off the ignition by sending another control message "DATA2" to the system. Other control messages "DATA3" and "DATA4" are used to lock and unlock the door respectively, which can be used to trap the thief.
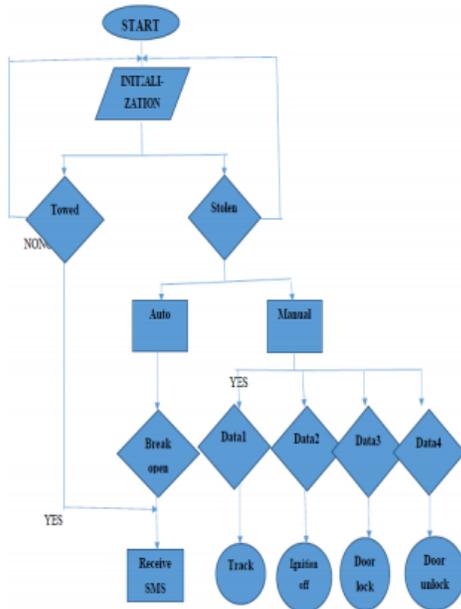
V. CHOICE OF COMPONENTS

A. The Microcontroller unit (MCU)

There are two ways to control an electronic circuit either using: Microprocessor or MCU. The Microprocessors are usually referred to as generalpurpose microprocessors because they do not contain RAM, ROM and I/O ports. So, system designers have to add an external RAM, ROM and I/O ports to make a system functional. Addition of these components will make the system bulkier and much more expensive. The advantage of using microprocessor is that the designer can decide the amount of RAM, ROM and I/O ports needed to accomplish a task The MCUs are designed for embedded applications and can be used in remote controls, power tools, toys and other appliances. Invention of MCUs has reduced the size and cost of designs. MCUs are suitable where cost and space are critical. There are four types of MCUs (8 bit): 8051 family, PIC, Zilog and Freescale. The MCU families are not compatible with each other, which means, if we write a code for 8051 MCU it will not work on PIC MCU. This is mainly due to different instructions and registers set in each MCU.
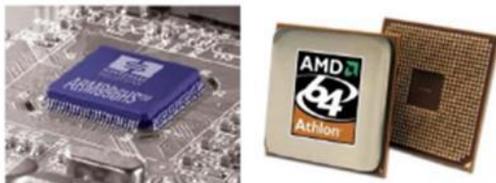
(b) A Microcontroller pin

To choose among these MCUs, there are specific criteria set for designers: MCU should meet the task at hand efficiently and cost effectively [34]. Software development tools such as compilers, assemblers and debuggers should be available in the market [34]. Wide availability and reliable sources of the MCU used. Designer should also consider the speed, Packaging, power consumption, the amount of RAM, ROM on chip and cost per unit . A Zilog Microcontroller

B. GSM Modem A GSM module is a second generation digital mobile cellular technology, which covers a fairly broad geographic area. This offers customized travel, financial, reference and commercial information to the users [38]. It can operate in 400MHz, 900MHz and 1800MHz frequency bands. The GSM modem can accept a SIM card just like a mobile phone and operate on a subscription to a network of mobile data transfer. The GSM Modem supports three types of services namely bearer or data services, supplementary services, and telecommunication services.
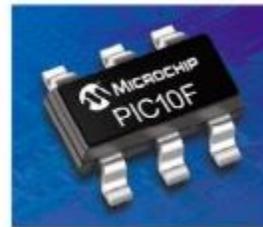
C. GPS Modules

The first GPS (navigation system) was designed by Honda in 1983 [40]. Pioneer claims to be the first with a GPS-based auto navigation system, in 1990. Magellan claims to have created the first GPS-based vehicle navigation system in the U.S in 1995. Each GPS (satellite) transmits data that indicates the current time and its location. It transmits signals to a GPS receiver. This receiver requires an unobstructed view of the sky, so they can only be used effectively outdoors.

VI. CONCLUSION

The vehicle tracking system presented in this paper can be used for positioning and navigating the vehicle with an accuracy of 10 m. The positioning is done in the form of latitude and longitude along with the exact location of the place, by making use of Google maps. The system tracks the location of a particular vehicle on the user's request and responds to the user via SMS. The received SMS contains longitude and latitude that is used to locate the vehicle on the Google maps. The vehicle tracking system allows a user to: remotely switch ON the vehicle's ignition system, remotely switch OFF the vehicle's ignition system, remotely lock the doors of the vehicle, remotely unlock the doors of the vehicle, and remotely track a vehicle's location. Some changes were made in which most notable change was alteration of the tracking methodology. The vehicle tracking system was built successfully. However, the vehicle tracking system could be made more robust by using more accurate GPS unit.

Vehicle tracking system makes better fleet management and which in turn brings large profits. Better scheduling or route planning can enable you to handle larger jobs loads within a particular time. Vehicle tracking both in case of personal as well as business purpose improves safety and security, communication medium, performance monitoring and increases productivity. So in the coming 1year, it is going to play a major role in our day-to-day living.

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