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SMART ANTI VEHICLE THEFT DETECTION SYSTEM USING IOT

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Abstract:: In today's world vehicles form an important asset to us, without which our life would be incomplete. But, when it comes to the security of our vehicles, we are helpless. So, in this project we have focused on the security of vehicles. A vehicle is usually the most expensive and important thing next to a home, so this systemenables you to keep this asset at your fingertips using wireless technology. This whole system will allow you to connect with your vehicle from anytime, anywhere and confirm its security. This system includes Flow sensor to detect the petrol reading, an ESP8236 controller to detect the vehicle theft and to monitor the vehicle, MEMS for accident prevention and GPS to track the vehicle
.Keywords: Flow sensor, MEMS, ESP8236 controller, GPS

INTRODUCTION

Vehicle is the first place where safety starts. Hence we must need vehicles to equip it with the latest trend technologies and measures to make it a safe machine and also to make our self and our loved ones safe. Always be aware that safety begins and ends with the person who drives the vehicle. The cars and trucks found today are equipped with high range of inbuilt safety accessories to protect their passengers. Before it seems to be just seatbelts, but now many more features have been included which are more advanced and efficient than seatbelts.

Warning alerts and alarms are other security systems incorporated in the cars and trucks to alert us about various factors like exceeding speed limit or danger ahead. These are designed to make the passengers aware of crossing the limitations which is important in most of the time and in most cases.

In the same way here an embedded system has been designed and implemented to make the journey of the passengers inside a vehicle safe and secure with various recently found safety and security measures.

The main purpose of this project is to prevent vehicle theft. This functionality is achieved by detecting vehicle status in theft mode and by sending an Notification which is generated

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automatically. This Notification is then sent to the owner of the vehicle. The owner can then sendback the Notification tin order to disable the ignition of the vehicle. Thus in this way crimes can be reduced to a great extent as vehicles today are being stolen in large number. Hence, vehicles today require high security which can be achieved with the help of this application. How the system works is when a person tries to steal the vehicle, the microcontroller is interrupted and the command is sent to the IOT TCP TELENT APP to send Notification. On the receipt of the message, the owner sends back the Notification to the IOT TCP TELENT APP. This is done in order to stop the engine. This IOT TCP TELENT APP is interfaced to the microcontroller.

I.EXISTING SYSTEM

Domestic and overseas vehicle anti-theft products are technologically classified into two categories: mechanical lock devices, car alarm system. Themost commonly used mechanical lock device issteering wheel lock, which is relatively cheap but inconvenient to use and may be easily disarmed by skilled thieves. Car alarm devices are very popular these days. These car alarm systems do not cover large areas; the area is just less than 100m. Once the car is stolen, the owner and the police cannot track the position of it

II PROPOSED SYSTEM

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back the Notification tin order to disable the ignition of the vehicle. Thus in this way crimes can be reduced to a great extent as vehicles today are being stolen in large number. Hence, vehicles todayrequire high security which can be achieved with the help of this application. And adding the flow sensor to detect the fuel theft detection and detect the accident also by using MEMS sensor

III. HARDWARE DESCRIPTION

NodeMCU is an open source development board and firmware based in the widely used ESP8266 -12E Wi-Fi module. This is also an open source IOT platform. This module is programmed with the simple and powerful LUA programming language or Arduino IDE. With just a few lines of code it allows to establish a Wi-Fi connection and define input/output pins accordingly by turning the ESP8266 into a web server and a lot more. It is the Wi-Fi equivalent of Ethernet module. With its USB-TTL, the NodeMCU Development board supports directly flashing from USB port. It combines features of WIFI Access point and station
+ microcontroller. These features make the NodeMCU extremely powerful tool for Wi-Fi networking. It can be used as access point and/or station, host a web server or connect to internet to fetch or upload data.

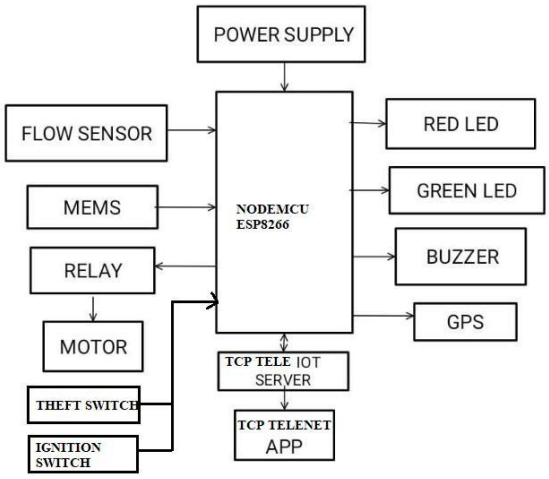

Fig 1: Block diagram

1. Node MCU

The NodeMCU (Node MicroController Unit) is an open-source software and hardware development environment built around an inexpensive System-on-a-Chip (SoC) called the ESP8266. TheESP8266, designed and manufactured by Espressif Systems, contains the crucial elements of a computer: CPU, RAM, networking (WiFi), and even a modern operating system and SDK. That makes it an excellent choice for Internet of Things (IoT) projects of all kinds

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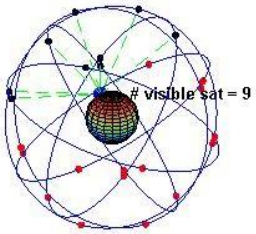
Fig.2: NodeMCU ESP8266

2. Wi-Fi Module - ESP 8266

The ESP8266 Wi-Fi Module is a self- contained SOC that can give any microcontroller access to your Wi-Fi network. Each ESP8266 module comes pre-programmed with an AT command set firmware. That is, it can simply have hooked up to Arduino device and get Wi-Fi ability. The ESP8266 module is an extremely costeffective board with a huge, and ever growing, community.

3.GPS

Global Positioning System (GPS) is a satellite-based navigation system. We use NEO-6M GPS module as it is compatible with a variety of GPS receivers. It has a built-in ceramic antenna. Integrates with a 3V button battery. Normally GPS works in any weather conditions at anywhere in the world. A GPS receiver must be locked on to signal of at least 3 satellites to estimate 2D position (Latitude and longitude).



literature. The vast majority is based on piezoelectric crystals, but they are too big and to clumsy. People tried to develop something smaller, that could increase applicability and started searching in the field of microelectronics.

Fig 4: MEMS SENSOR

5. FLOW SENSOR

A flow sensor is a device for sensing the rate of fluid flow. Typically a flow sensor is the sensing element used in a flow meter, or flow logger, to record the flow of fluids. As is true forall sensors, absolute accuracy of a measurement requires functionality for calibration.

There are various kinds of flow sensors and flow meters, including some that have a vane that is pushed by the fluid, and can drive a rotary orsimilar devices..

Fig.5: Flow sensor

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Fig 3: Segment of GPS

4. MEMS SENSOR

An accelerometer is an micro-electromechanical device that measures acceleration forces. These forces may be static, like the constant force of gravity pulling at our feet, or they could be dynamic - caused by moving or vibrating the accelerometer. There are many types of accelerometers developed and reported in theTelnet (short for "teletype network")is a client/server application protocol that provides access to virtual terminals of remote systemson local area networks or the Internet. Telnet consists of two components: (1) the protocol itself which specifies how two parties to communicate and (2) the software application that provides the service. User data is interspersed in-band with Telnet control information in an 8-bit byte oriented data connection over the Transmission Control Protocol (TCP). Telnet was developed in 1969 beginning with RFC 15, extended in RFC 855, and

standardized as Internet Engineering Task Force (IETF) Internet Standard STD 8, one of the first Internet standards.

7. RELAY

A relay is an electromechanical switch, which perform ON and OFF operations withoutany human interaction. General representation of double contact relay is shown in fig. Relays are used where it is necessary to control a circuit by a low-power signal (with complete electrical isolation between control and controlled circuits), or where several circuits must be controlled by one signal.

Fig .6: Relay

Fig.6: Ignition Switch

IV . WORKING PRINCIPLE

In this system, track the location by using TCP TELENET IOT APP and GPS, when the vehicle theft by the unauthorized person the engine automatically lock because of in this using theft key and ignition key also. when the bike is in theft mode ,the unauthorized person is trying ON the ignition key then engine automatically lock, here inadvanced using the flow sensor foe fuel theft detection when the key in theft mode, when vehicleis falling down MEMS sensor detected then give the alert by the buzzer and send the location to Iot application .

8. ADVANTAGESIGNITION SWITCH

The ignition system consists of several components working together, controlled by the vehicle's internal computer, to get your vehicle started. Beginning with the ignition coil, it takes power from the battery and turns it into a spark powerful enough to ignite fuel vapor.

The coil itself is made up of two windings called the primary and secondary. The primary winding gathers the power to create a spark and the secondary's job is to send it to the distributor. The distributor is a precise spinner that distributes the sparks via the spark plug wires to the individual spark plugs with precise timing by the use of a rotor.

The spark plugs are plugged into the cylinder head. When the intake valves have distributed the proper amount of fuel and vapor into the cylinder, the spark plug produces a hot spark that ignites, creating combustion.

- Vehicle Unique authentication.
- IOT based web server updating and alert.
- FUEL Alert detection.
- Accident alert detection.
- Vehicle theft detection.

V. APPLICATIONS

- We can use this project in all vehicles
- This can be fitted in transportation buses to detect the petrol theft
- Various industries or companies with buses or cabs for their employees safety

VI. CONCLUSION

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Antitheft Vehicle Security System is the total protection to vehicle and fleet management solution. By using the GPS technology we can protect and monitorcar,truck, bike . We are using GPS technology beca usethe extensiveavailability of GPS network in India and its roaming facility ensure that vehicle can be tracked even on the national highways and in many remote areas. The user or operator can monitor the vehicle in any dangerous condition and thus can perform various tasks including turning off the vehicle and inform to the police station. The impact of doing this project is that

we will learn a lot from this project and will carry on this project in future in order to make this system standalone so that it can be deployed with integration with GPS operator/carrier. The company that uses this system will achieve higher level of accuracy and satisfaction.

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