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Vehicle Security Monitoring and Control System Using IOT

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ABSTRACT: An estimated 10 million property offences occur each year. Top on the list among these is automobile theft, which happens often anywhere in the world. There are several reason to solve this problem, new technology and improved procedures are being developed. The techniques used to identify car theft have come to the attention of everyone, including the thieves, who now attempt to circumvent the system and take the vehicle. This essay suggests a system with a mechanism to reduce car thefts. As soon as the car is stolen or moved without the owner's knowledge, the security system sends an alarm message. Additionally, the system regularly provides registered users with location updates via the internet of things. Tracking stolen vehicles is made possible hereby this provision.

KEYWORDS : Theft Monitoring, Four-Way Lock Security, GPS Monitoring,

I. INTRODUCTION

A serious problem that has to be tracked down and stopped in recent years is automobile theft. It is crucial to ensure the car's security and safety. Even so, there are several. Currently used methods are expensive and have several drawbacks. It is therefore necessary to have an effective security system.Vehicle theft is discovered via this project. The key element that connects a dc motor to GPS and GSM is Arduino. The location of the car was determined using the Wi-Fi module ESP 8266, the Global Positioning System (GPS), and the Global System for Mobile Communication (GSM). A vehicle's location can be determined in any weather thanks to the space-based navigation system known as GPS, which is also used to monitor moving objects. Using GPS, it displays the device's latitude and longitude

II. EXISTING METHOD

Alarms, beepers, and biometrics are the most often utilised systems. However, the prices for all of these commercially accessible goods are exorbitant. using the horn of the vehicle Defending your car from theft is simple. The buzzer or alarm detection might not be very useful, though, if your automobile is far away.The use of various types of sensors, including pressure, tilt, shock, and door sensors, is a key component of automobile alarm tactics used to deter auto theft. However, there are significant drawbacks to these systems, including their high cost, high false-alarm rate, and simplicity of disabling. Recent improvements in computer hardware and software have made it possible for the automotive sector to create practical, automated biometric identification and verification systems at a reasonable cost. There are several biometrics, such as face detection and facial

III. PROPOSED METHOD

An IOT-based car theft detection system is presented in this research. As there are several technologies in use today to identify the car that was robbed, the suggested system addresses the majority of the drawbacks of present systems and techniques. The Arduino in this system activates GPS, GSM, and sends an alarm message to the owner as soon as the dc motor begins, indicating that a car theft has occurred. The Node MCU also posts the vehicle's longitude and latitude readings to the internet of things. For user convenience, the entire system may be controlled by a switch and Four way lock System for the security of the vechile they are Key, Biometric, Facial Regonisation and Voice Regonisation.The proposed system block diagram is displayed in Fig. 1 below
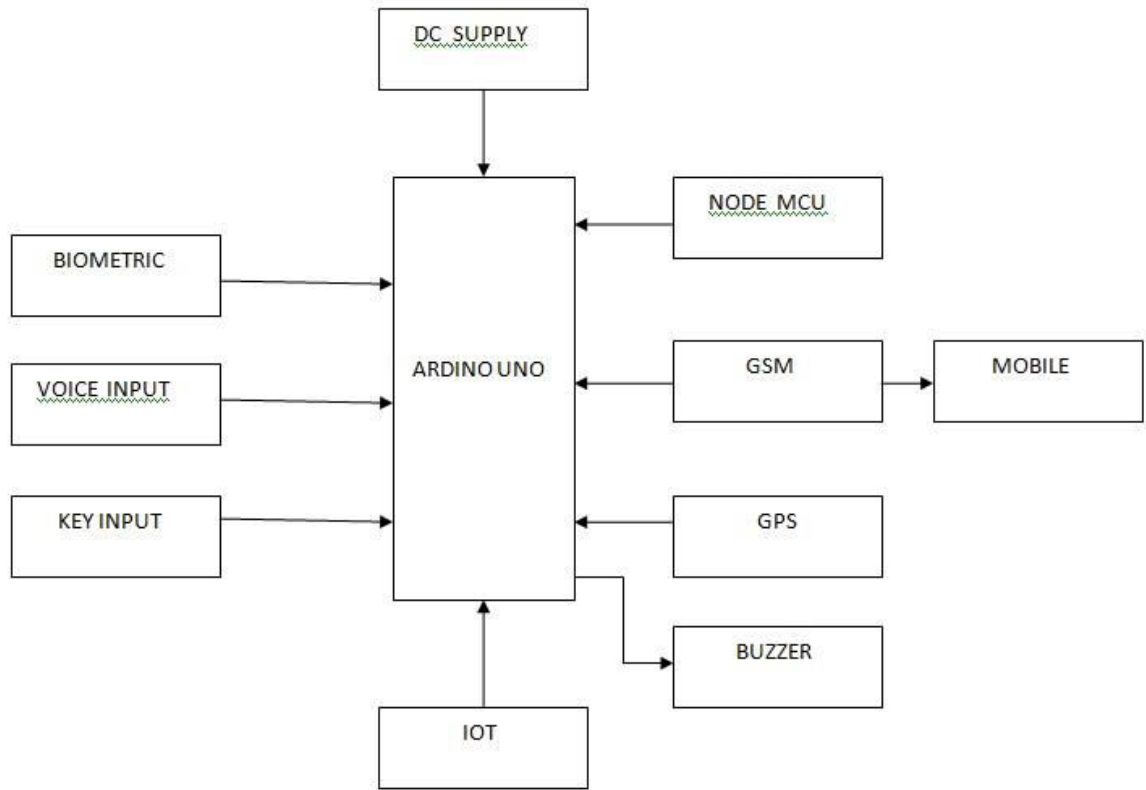
IV. BLOCK DIAGRAM

FIG :1

V. HARDWARE & SOFTWARE REQUIREMENTS

Hardware Requirements	Software Requirements
Arduino UNO	Arduino IDE
Nodu MCU	Embedded C
Mic	
Biometric	
GSM	
GPS Mobile	
Face Regonisation	OpenCV

V. COMPONENTS USED

ARDUINO BOARD:

The widely used Arduino board is an open-source microcontroller development platform that enables designers, artists, amateurs, and engineers to rapidly and simply construct a variety of electronics projects. An Atmel AVR microprocessor, digital and analogue inputs and outputs, a variety of connections, and communication interfaces are all included on the board, making it simple to communicate with other devices.There are several variants of the Arduino board, each with unique features and characteristics. The Uno, Nano, and Mega are the most common variations, and they vary in terms of size, pin arrangement, memory size, and processing speed.The simplicity of usage of the Arduino board is one of its key benefits. A variety of libraries are available to make programming and interface design simpler, and it is developed using a condensed version of the C++ programming language.

VI.BIOMETRIC

A biometric device serves as an authentication and security identification tool. These gadgets rely on automated techniques to confirm or identify a real person's identification based on a physical or behavioural trait. These traits include voice recognition, iris, face, and fingerprint recognition.Since ancient times, there have been biometric devices in use. Since 500 BC, when ancient Babylonians would sign their financial transactions by pressing their fingertips onto clay tablets, non-automated biometric devices have been in use.The first biometric devices with automation appeared in the 1960s. In order to keep track of criminal histories, the Federal Bureau of Investigation (FBI) established the Indentimat in the 1960s. The initial methods took measurements of finger length and hand form. even though abandoned

VII. RELAYS

Relays are electrical switches that are used to control the flow of electricity. They are commonly used in a variety of applications where a low-power signal is used to control a larger electrical current, such as in automotive and industrial settings.
Relays work by using an electromagnet to control the movement of a switch. When a small current is passed through the coil of the electromagnet, it generates a magnetic field that attracts or repels a metal armature. This movement of the armature, in turn, opens or closes the contacts of the switch, allowing or preventing the flow of current through the circuit. Electromechanical relays: These are the most basic type of relay and use a physical switch to control the flow of electricity.Relays are an important component in many electrical systems and are used in a wide variety of applications, from simple light switches to complex industrial control systems.

VIII.GLOBAL POISTIONING SYSTEM

GPS is an essential element of the global information infrastructure. The free, open, and dependable nature of GPS has led to the development of hundreds of applications affecting every aspect of modern life. GPS technology is now in everything from cell phones and wristwatches to bulldozers, shipping containers, and ATM's.
GPS boosts productivity across a wide swath of the economy, to include farming, construction, mining, surveying, package delivery, and logistical supply chain management. Major communications networks, banking systems, financial markets, and power grids depend heavily on GPS for precise time synchronization. Some wireless services cannot operate without it.

GPS saves lives by preventing transportation accidents, aiding search and rescue efforts, and speeding the delivery of emergency services and disaster relief. GPS is vital to the Next Generation Air Transportation System (NextGen) that will enhance flight safety while increasing airspace capacity. GPS also advances scientific aims such as weather forecasting, earthquake monitoring, and environmental protection.

Finally, GPS remains critical to U.S. national security, and its applications are integrated into virtually every facet of U.S. military operations. Nearly all new military assets -- from vehicles to munitions -- come equipped with GPS.
This website describes just a tiny sample of existing GPS applications. New uses of GPS are invented every day and are limited only by the human imagination.

IX.POWER SUPPLY

The power supply is a crucial aspect to consider.Arduino boards typically require a 5V DC power supply, which can be provided through various methods, such as:

USB Cable: The easiest way to power an Arduino board is through a USB cable connected to a computer or a USB power adapter.

DC Power Adapter: Another option is to use a DC power adapter that provides a stable 5V output. Make sure to check the voltage and current rating of the adapter before using it with your Arduino board.

Battery: You can also power your Arduino board using a battery, such as a 9V battery or a LiPo battery, by connecting it to the Vin pin or the barrel jack of the board. However, the battery capacity and voltage should be sufficient to power all the components of the project.

When selecting a power supply for your smart home automation project, consider the power requirements of the various components, such as the Arduino board, sensors, actuators, and other peripherals. Make sure to use a stable and reliable power source to prevent damage to your components and ensure the smooth operation

X. GSM

GSM stands for **Global System for Mobile Communication**.It is a standard developed by the **European Telecommunication Standards Institute(ETSI)** to describe protocols for 2G networks. It acted as a replacement for 1G cellular networks.GSM is basically an open, digital cellular radio network and operates in almost all the countries. It is not only used for voice calls but also for data computing and text messages. While CDMA(Code Division Multiple Access) doesn't support calls and data computing at the same time.

XI. NODE MCU

There are open source prototype board designs for the Node MCU open source firmware. "Node MCU" is a combination of the words "node" and "MCU" (micro-controller unit). In actuality, the firmware rather than the related development kits is what is meant by "NodeMCU" in this context.

XII. MIC

microphone is a tool that converts sound waves in the air into electrical signals, which are then recorded into a media for storage or broadcast loudspeaker-style. Numerous audio recording devices are made possible by microphones for a variety of communications, music vocalists, speech, and sound recording applications.

In this project the mic is used to check the user ,if the mic verifies the voice then it starts the car.

XIII. BUZZER

A buzzer is a simple audio device that produces sound from an incoming electrical signal. It is also known as a sounder, audio alarm, or audio indication. Piezo buzzers and magnetic buzzers are the two main types of buzzers**.**

XIV. RPI CAMERA

The Pi camera module is a portable lightweight• camera that supports Raspberry Pi. It is normally used in image processing, machine learning, or surveillance projects. 8MP color camera module without a microphone for Raspberry Pi Supports both Raspberry Pi Model A and Model B. Omni vision 5647 Camera Module. Resolution: 2592 * 1944. Supports: 1080p, 720p and 480p. Lightweight and portable (3g only).

XV.RESULTS AND DISCUSSION

The below figures show the alert message received as soon as the motor starts and location of the vehicle can also be sent in message (figure 2) and the vehicle longitude and latitude readings are also posted using internet of things (IoT) as shown in figure 3.
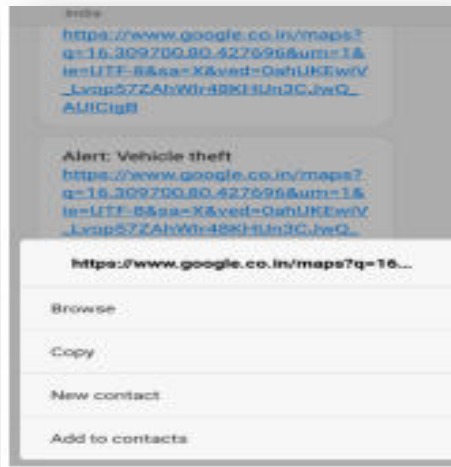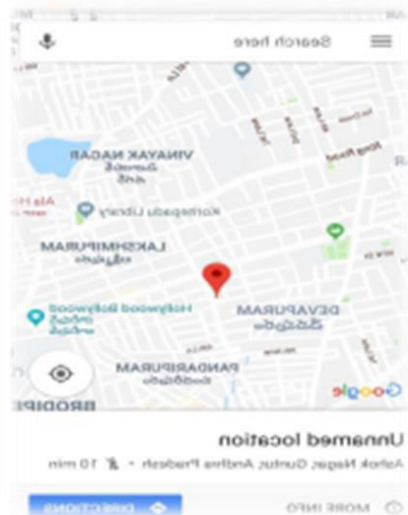
FIG 1: Message alert

FIG 2: Location of a vehicle

**FIG 3:** Latitude and longitude readings posted using internet of things

XIV.CONCLUSION

Vehicle theft, although not as intrusive as violent crimes, causes greater loss to its victims in terms of monetary value and also in secondary economic effects. Proposed system provides vehicle safety and detects theft efficiently and effectively at very low cost. RE

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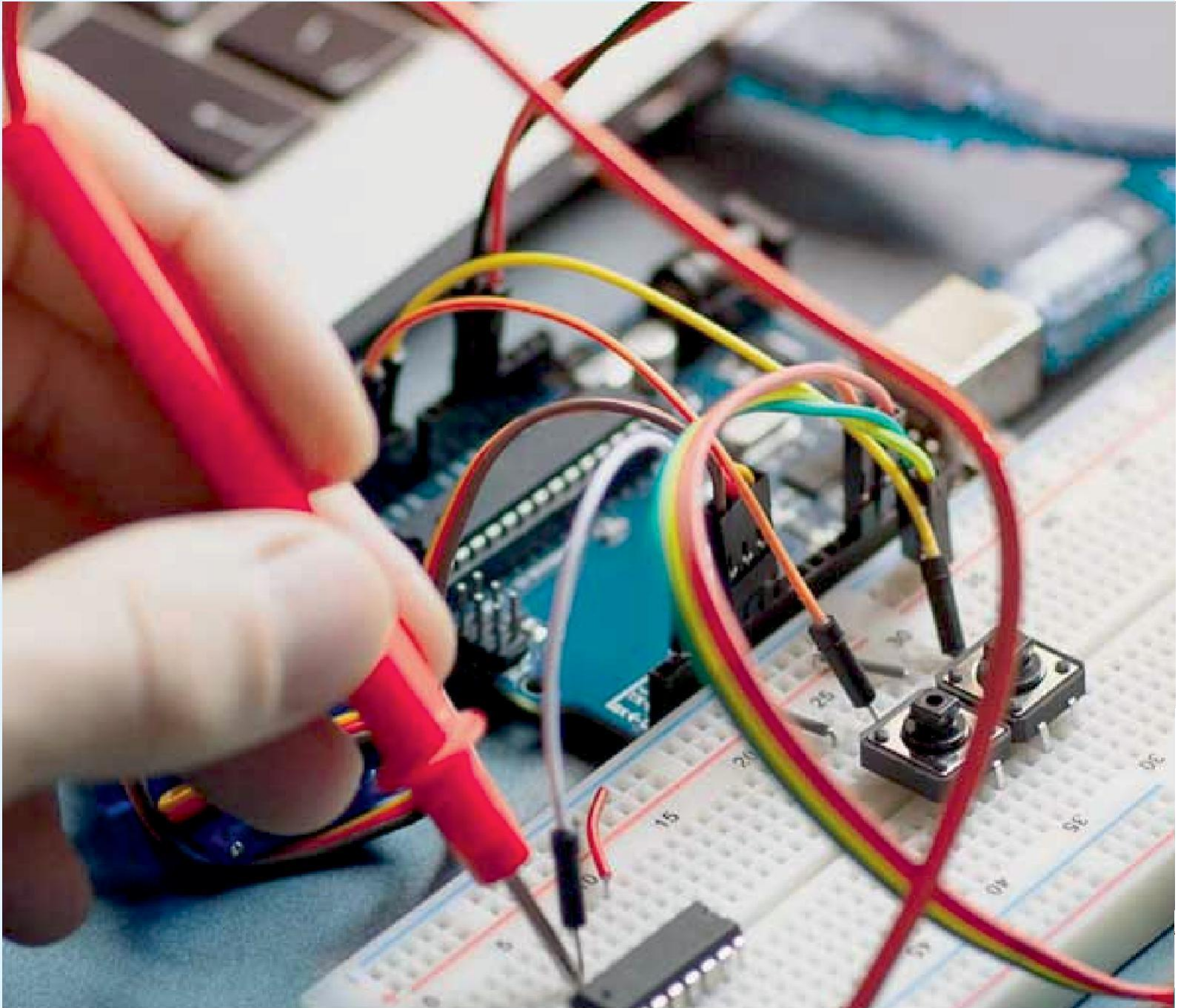
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