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Vehicle theft Detection

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Abstarct - In today's world where most of them have there own vehicle they prefer their own transportation over the public transportation .It becomes important to make sure of our vehicle security. In the world of technology and advancement even the intruders have found new ways to make there work done ,so its important for us to have security unit which secures the vehicle ."Vehicle Theft Detection" comes into picture where it can be used a security appliances to prevent the theft. In the above proposed system ,firstly if the key is ignited and the motor is started then the motion is sensed using a motion sensor and immediately SMS is sent to the user using GSM(Global System for Mobile communication) along with GPS location to the user using the GPS(Global Positioning System) which shows the positioning of the vehicle so the vehicle can be tracked. Then depending on the user it decides if its a false alert (The vehicle being used under his intervention) or a genuine alert (The vehicle under threat).If its a threat to the vehicle then the user should send a SMS saying "MOTOR OFF" to stop the motor, then the vehicle is in rest state and successfully prevented from any further theft .In this way it can be retrived and tracked back.

Keywords-Vehicle theft unit ,theft detection

I.INTRODUCTION

In recent years, we can see vehicles are being stolen at a high rate around the world and people have started to use security appliances such a theft unit to the vehicles . In the present day vehicle tracking is becoming essential for the purpose of improving our life condition. Convenience is what our proposed system is all about . Vehicle theft lets an individual gets to control his vehicle using a smart phone, it also offers an efficient use of technology. To acquire such system installation will cost a lot of money and that is the major reason of why vehicle tracking has not received much demand and attention, adding to that also the complexity of installing it and configuring it. Thus it is essential to make it cost effective and easy to configure Theft detection systems at the market is at high cost. Hence, we are designing and developing simple and low-cost vehicle theft unit which can be utilized by public. This can be of great contribution to the society and people. The vehicle theft detection works on Arduino as a hardware tool using C++ software it uses a tilt sensor which detects the motion and a alert message is sent through GSM having a proper connectivity to the network to the No provided .Along with the alert message the Global positioning of the vehicle is also given .Then based on the user choice it is differentiated as user mode and theft mode.

Basically the Theft detection works in two modes:

- User mode
- Theft Mode

In User Mode the vehicle works under users intervention so the vehicles motion is with users Knowledge and no message is required to be sent else if the vehicle is in motion without the user knowledge then it is taken a Theft Mode and by a notification alert, the Motor can be put into OFF state and prevented from further loss to the user the vehicle.

II.LITERATURE SURVEY

Seema et al.[1] The proposed embedded system, upon installation in the vehicle's engine along with the GPS and GSM modem, permits the activation of the engine ignition by entering the correct password. This enables the vehicle to start. In the event that someone attempts to guess the password randomly, the MCU will restrict any further password entries after three unsuccessful attempts. Consequently, the buzzer will be activated, generating a loud noise to startle the intruder and attract public attention. Simultaneously, a message stating "Alert: Car Is Under Threat, and location of car" will be sent through the GSM modem to the owner's mobile device. This will allow the owner to take appropriate measures to

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safeguard their vehicle. The prototype model dictates that once the correct password is entered, the car will begin moving and respond to commands for forward, reverse, left, or right movements. The embedded C language is employed to write the source code, which is then compiled using Keil-4.

Lalit et al.[2] The module being used is a GPS module responsible for receiving location information from satellites. This information is then processed by the Node MCU and sent to the Firebase real-time database. The block diagram of the system includes six components: satellite, GPS antenna, GPS module, Node MCU, Mobile device, and Cloud. The GPS module receives the location information, including latitude and longitude, through the GPS antenna. To ensure optimal reception, proper impedance matching, typically 50Ω, is required between the GPS antenna and the GPS module. Subsequently, the processed information is transmitted to the cloud via the Node MCU. The Global Positioning System (GPS) is a satellite-based navigation system comprising a network of 24 satellites in orbit. In addition to determining the latitude and longitude, the GPS unit can also provide other data such as speed. The GPS modem continuously provides data, indicating the vehicle's position based on latitude and longitude, making it easily trackable.

Santosh et al.[3] A fingerprint security system is employed to regulate the engine ignition system. The microcontroller is powered by a regulated power supply board, which receives power from the vehicle's battery. The fingerprint sensor draws current supply from the battery and is connected to the system. To handle higher voltage and current, a digital switch is utilized instead of a conventional board. The relay in the system is responsible for allowing or cutting off the current flow based on the input logic voltage and wiring configuration .When an authorized individual's fingerprint is provided as input and matches the stored fingerprints in the sensor's memory, the relay is activated. This activation triggers the starting coil, turning on the engine. Following that, the fingerprint sensor is connected and ready for the enrollment process, which is carried out for authentication purposes. Each person's fingerprint is saved in a distinct address within the fingerprint sensor's memory. The entire system is securely installed within the vehicle, and when an authorized person scans their fingerprint, the engine starts. Otherwise, the vehicle remains in a deactivated status

Kruthika et al.[4] A system has been proposed to enable real-time monitoring of personal vehicles and school vehicles. This system allows continuous monitoring and provides information in case of unauthorized access attempts, key detection, engine status, and rash driving incidents. Alerts are sent to the owner's smartphone to keep them informed. The system utilizes a Raspberry Pi board installed inside the vehicle. It operates in two modes: user mode and theft mode. The owner can switch between these modes using a GSM module. To activate the user mode, a message with the content "User mode" is sent to the system. Similarly, sending a message with the content "Theft mode" activates the theft mode. If an unauthorized person tries to insert a key, an IR sensor will detect it and send a message to the owner. Additionally, if the engine starts, a message will be sent to the owner as well. The GSM module is responsible for delivering these messages to the owner's mobile number. The Raspberry Pi receives these inputs and processes them accordingly. Furthermore, the system incorporates a MEMS ADXL 345 accelerometer sensor, which detects instances of rash driving based on the vehicle's motion and acceleration patterns.

Anirban et al.[5] RFID, an acronym for Radio Frequency Identification, encompasses various contactless technologies that utilize radio waves to automatically identify individuals or objects. These technologies employ different identification methods, but the most prevalent approach involves storing a unique serial number on a microchip connected to an antenna. The combination of the antenna and microchip is referred to as an "RFID transponder" or "RFID tag." These tags work in conjunction with an "RFID reader." An RFID system typically comprises a reader and one or more tags .In the context of vehicle security, the passive RFID tags play a vital role. These tags are discreetly embedded within the vehicle and serve as unique identification numbers. The information of all these tags is centralized and maintained by a dedicated server. In the event of a car theft, an authorized user can log a report into the server, prompting a search for the reported tag by a network of RFID scanners strategically positioned at various checkpoints, traffic signals, or toll plazas across the city. Once the reported tag is detected, appropriate security measures are activated to apprehend the stolen vehicle.

Block Diagram

The following components are used in block diagram:

- Arduino

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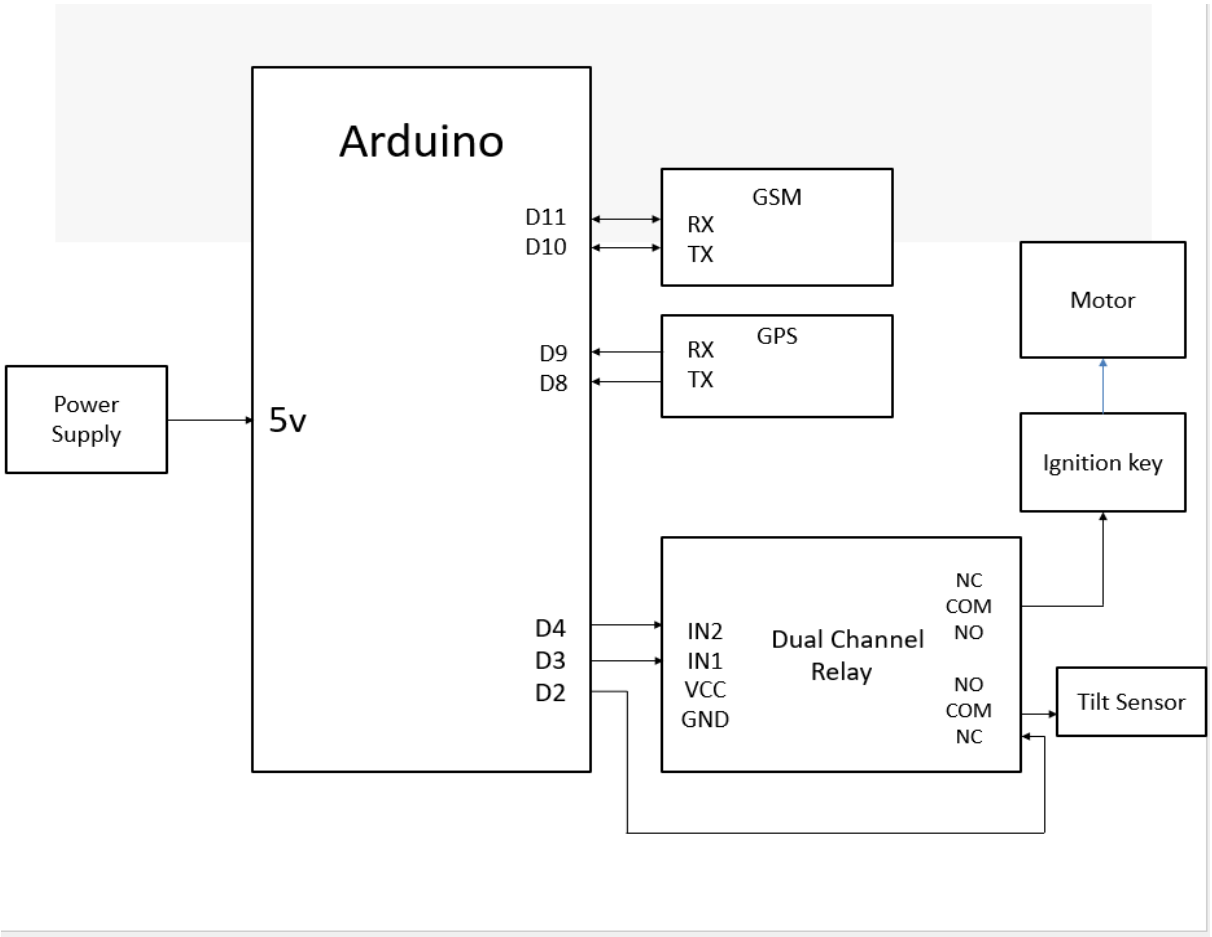
- GSM Module
- GPS Module
- Tilt Sensor
- Ignition Key
- Dual channel relay
- Motor

The below in fig1 is the vehicle theft Detection

Fig1:Block diagram

Hardware components



1. Arduino Uno: Arduino is a open-source software used for integrating with electronic components. Arduino consists of both hardware component a circuit board and a piece of software that runs on your computer, used to write and upload code to the board.
2. GSM:A GSM module is a wireless modem that works with a GSM wireless network. Like a GSM mobile phone, a GSM modem requires a SIM card from a wireless carrier in order to operate
3. GPS: GPS module sends out data on the serial port and this data contains various information including the Latitude and longitude of the vehicle's current location.
4. Tilt Sensor :It acts a motion sensor and detects the motion and sends the required signal.
5. Dual channel Relay : It separates the low voltage circuit from a high voltage circuit. It's an electromagnetic device that establishes an electrical link between two points for circuit or device control.

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Algorithm

1. The Key is inserted in the ignition socket to start the vehicle.
2. Power supply is given to all the components through Arduino.
3. When there is a motion then it is detected using the tilt Sensor.
4. The alert message and GPS location from the GPS module is sent to the user using the GSM module.
5. Now the user decides if it's a genuine threat or just an alert of the motion of vehicle.
6. The vehicle being at genuine threat the user sends a message "MOTOR OFF" to the GSM module
7. The Relay turns off the motor and the theft is prevented

The following can be out in a sequential form as shown in fig 2

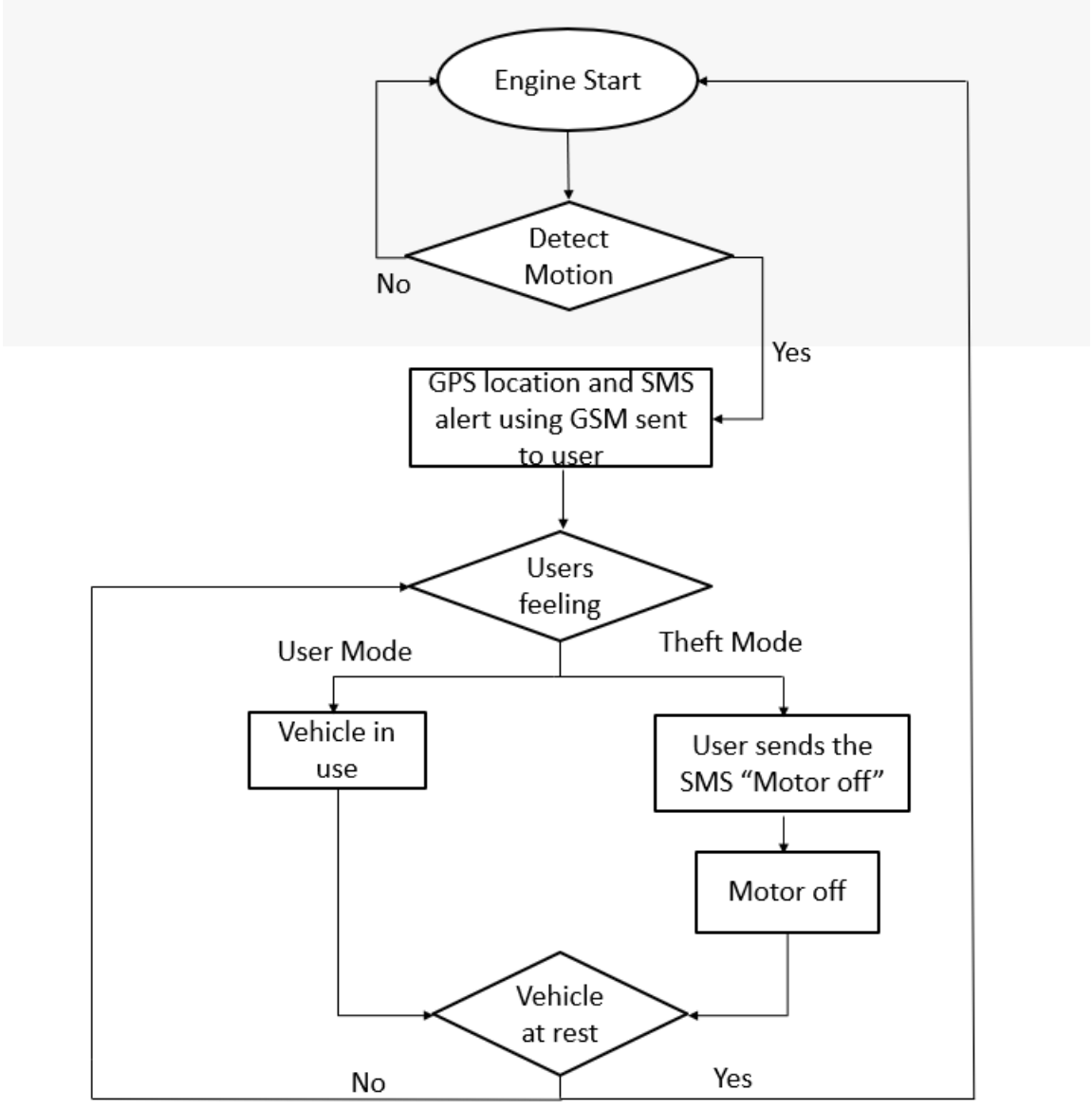

Fig2:flowchart

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CONCLUSION

In the above proposed project we have tried to implement the theft unit using GPS and GSM module for retrieving and preventing the theft by a notification to the user.

REFERENCES

[1]. Seema S.Lavate "Embedded based Vehicle Security using GSM and GPS System " International Journal of Innovative Research in Electrical,Electronics and Control Engineering ,Vol.5,No.4 pp.12-14 ,2017
[2]. Lalit Kumar ,A . Deshmukh "Vehicle Theft detection technique" International Research
[3]. Journal of Modernization in Engineering Technology and Science Vol.4,No.8 pp.11-22,2022
[4]. B santosh Kumar , N.Bharati "Vehicle anti-theft System using Fingerprint recognition technique" Open Academic Journal of Advanced Science and Technology Vol.1,No.1
[5]. pp.36-41,2017
[6]. Krithika Patel , TN Sawant "Vehicle theft Detection using gsm on Raspberry Pi" International Review of Education Vol.3,No.11 pp.24-56,2022
[7]. Anirban Chowdhury , Siddhartha Sarkar" RFID based Automated car theft detection
[8]. and arresting System" International Journal of Scientific Research and Engineering
[9]. Trends Vol.2,No.5 pp.15-22,2019