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Remote Controlled Engine Locking System

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ABSTRACT: The Remote Controlled Engine Locking System is developed to work as an Antitheft System in Cars. The Operation of this System was Monitored and Controlled by Arduino Uno which employ Global System for Mobile Communication technology to inform the theft Status to the Owner and to turn on the Actuator System after receiving Message from Owner. The Vibrations in the Actuator are detected by Piezo Electric sensor which makes the Arduino to Short Circuit the Power Supply to the ECU using the Relay System. So that the ignition of the Engine cannot be made and the motion of the Car and Steering of the Car is controlled.

KEYWORDS: Engine locking, Theft control, remote based control, Engine status

I. INTRODUCTION

Nowadays, automobile thefts and the production of vehicle are increasing in yearly world. So, vehicle theft is a universal problem. To solve this problem, most of the vehicle owners have started using the theft protection systems. It is easy to assume that the number of car theft would be higher in public places, however it is not always the case. The common Cause of theft are insufficient protection in Cars. More than 40 percent of all car theft Occur at night. Due to lack of theft Knowledge to the Owner, it is easy for the thief to steal the car using hot wire. Since the older technology uses buzzer mode, it is easy to remove the buzzer sound from the Car Power Supply. These day's car theft cases are higher than ever, give your car an excellent protection with the only reliable anti-theft device. Car Electronic control unit ensures the best guarantee to protect your car from different kinds of theft cases. It is a car security device that offers excellent protection to your car. These type of theft can be avoided only if the owner get knowledge of theft and activate the Protection system. The Protection system plays a preventive role in car theft by stopping motion of the car and turning off the Electronic Control unit Power Supply.

II. LITERATURE SURVEY

2.1 VEHICLE THEFT ALERT & ENGINE LOCK SYSTEM

The Paper "Vehicle Theft Alert & Engine Lock System" by **Prof.R.M.SAHU** in the year 2017 mainly aims to reduce the Vehicle Theft to a great extent. Whenever a person tries to steal a Vehicle, The ARM7 is being interrupted. After which the GSM modem is responsible to send SMS to the User indicating that is vehicle is being stolen.

2.2 VEHICLE THEFT DETECTION BY GSM

The Paper "Vehicle theft detection by GSM" by **Dr.SREEJA MOLE** in the year 2018 Proposed to prevent vehicle theft. The functionality is achieved by detecting Vehicle status in theft mode and by sending an SMS which is generated automatically through the GSM. This SMS is then sent to the Owner of the Vehicle The Owner can Sent back the SMS in order to disable the ignition of the Vehicle.

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2.3 GSM BASED VEHICLE THEFT CONTROL SYSTEM

The Paper “GSM Based Vehicle Theft Control System” by **GRIFFIN EJ** in the year 2018 Proposed that a GSM based Vehicle antitheft System is designed with the GPS implemented module. When the theft was detected the GPS system sends Location of the Car to the Owner and helps to protect the Car.

2.4 NOTIFICATION AND REMOTE ENGINE LOCKING

The Paper “Notification and Remote Engine Locking” by **YOGESH PAWAR** in the year 2016 Proposed the System with the RFID reader inside the car beside driver seat once after you enter the vehicle you have to keep the RFID tag in TRFID reader for clearing the security check, if the RFID tag is matched then vehicle ignition will be on else alert signal will be sent to car owner along with the location with the help of GPS and GSM for message sending and the Car will make emergency sound with the buzzer, engine ignition and fuel pump will get off with help of a relay. If a Stranger tries to open the door we have sensors like sound which will detect the sound like when the strangers breaks the glass or hit with hammer etc.

III. WORKING OF REMOTE ENGINE LOCKING SYSTEM

In this project, we are using Arduino Connected to the Global System for Mobile Communication (GSM) and a Relay Switch. Whenever the Arduino sensor detects the Short Circuit, the GSM activates and sends Signal to the Owner. Owner sends back the reply signal to the GSM which makes the Arduino to activate the Linear Actuator. When there is any vibrations detected in the Actuator, the relay short circuits the power supply going through the electronic control unit. Thus the motor of the car stops running and ignition does not happen further.

The following figure shows the Complete block diagram 3.1 of Remote Engine Locking System:

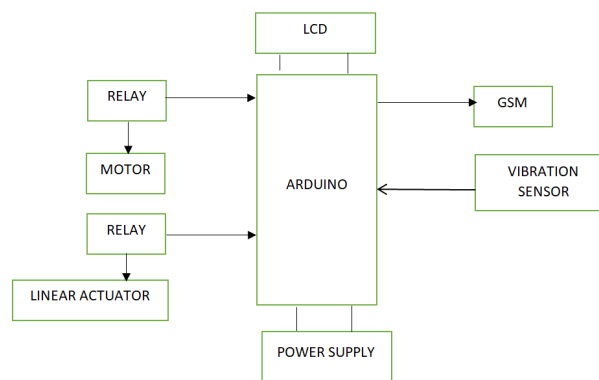


Fig 3.1 Block Diagram of Remote Engine Locking System

The Arduino is connected to the GSM module along with the LCD display. The motor is controlled with the help of relay and the linear actuator works through the Arduino Program designed using the Arduino IDE. The Arduino module works when it detects the hot wire in the Engine Ignition system which means the transducer which was used between the power supply and the Car key System was short circuited and two wires are jointed to make the ignition without the checking of Matching Key code. When this type of hot wire detected by the Arduino, GSM module coded with the phone number sends the message to the owner and Wait for the reply message from the owner for further actions. If the response from the owner was positive the Arduino makes the Linear Actuator to release the piston which will be mechanically connected under the Accelerator pedal. So that the Accelerator cannot be pushed also when the thief tries to break the Actuator, the vibration sensor detects it. Through this Arduino sends the Signal to the relay which short circuits the ECU power supply going to the Ignition System.

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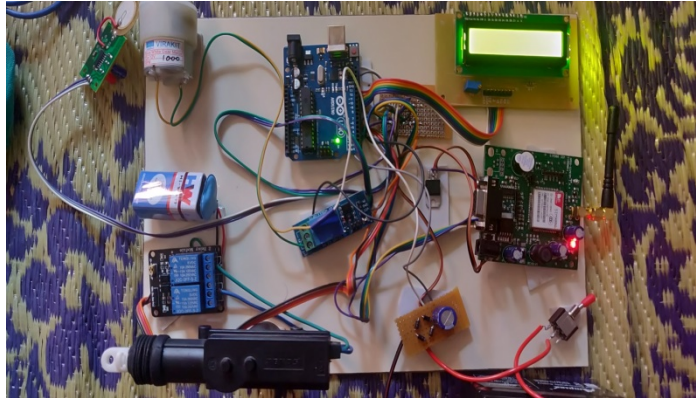


Fig 3.2 Setup model of Remote Engine Locking System

IV. RESULT

4.1 INPUT POSITION OF PISTON:

The following figure 6.1 shows the Model of piston position before receiving the user command. In this, we have the motor remaining in working condition and the piston is in the initial position. Now the gsm module sends the current operation state of the motor to the user.

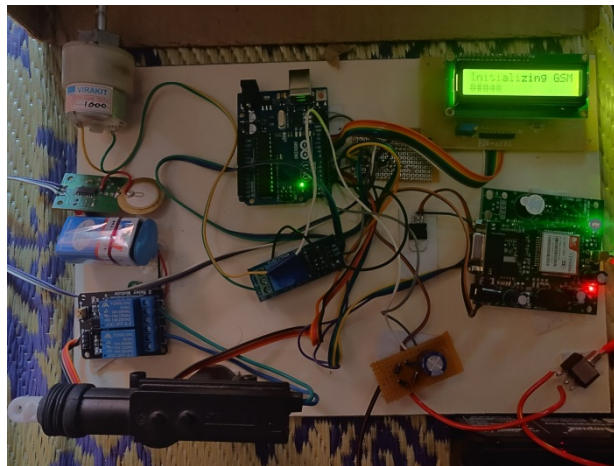


Fig 6.1 Piston position before receiving command

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4.2 OUTPUT POSITION OF PISTON:

The following figure 6.2 shows the piston position after receiving the user command. Here we can see that the piston has moved to the other side after the user sends the necessary stopping signal to the gsm module. And now when any signal is received by the pressure sensor the arduino now send the command to stop the motor operation.

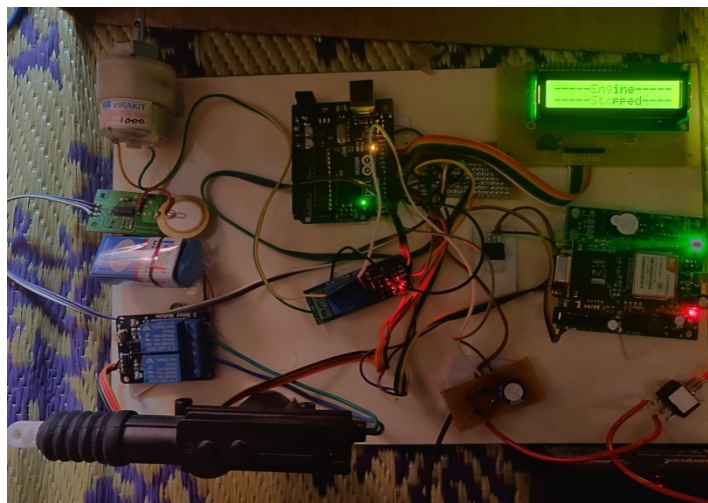


Fig 6.2 Piston position after receiving command

V. FUTURE SCOPE

For the last 20 or 30 years, Vehicles theft was increased with the insufficient technology development in Car Protection System. At present technologies are developing rapidly in such a way that it helps to alarm the Car theft. Our project helps in reducing the number of Car theft and in future it can be incorporated with the Hydraulic Piston for the Mechanical Strength and Automatic Engine Locking System without the Use of receiver message from the GSM. GPS technology and reflow of the Power Supply after receiving the signal from the Owner can be implemented in future. This project will play a vital role in reducing Car theft by controlling and informing the owner about the theft and to take necessary actions on further.

VI. CONCLUSIONS

Remote Controlled Engine Locking system in automobiles has been experimentally proven to work satisfactorily by connecting simple components such as actuator, vibration sensor, GSM module, DC motor and more. The developed prototype was tested with various cases and it can be implemented in the real life projects with the updated technology. With this simple technology the number of theft can be reduced and protection awareness would be created in the society.

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