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Implementation of Smart Anti - Theft Vehicles Security System using IoT

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***Abstract*—** At recent time vehicle following structure is getting most reputation because of the rising number of the taken vehicles. Be that as it may present enemy of robbery frameworks come up short on the following and observing capacity. Vehicles taking from the unbound spots like leaving capacities Shopping Center College. The evaluation work analyzes how to maintain a strategic distance from this sort of taking and gives progressively noticeable security to the vehicles. the actualizing keen security framework contains single-load up which installed with the AVR micro controller and Node MCU it will monitor the WIFI to on/off the vehicle engine through an relay installed in the vehicle which is furnished with overall structure for flexible GSM and overall arranging system GPS the use of GSM and GPS developments allows the structure to follow the thing. The system also applied buzzer whether vehicle starts it gives an alert system purpose. The structure further more applied buzzer whether vehicle starts it gives prepared system reason.

Keyword: AVRAtmega328, Node MCU, GSM, GPS, Relay, Web Application.

1. INTRODUCTION

Motor vehicles have become an essential part of our day to day life. Our aims are to prevent fraud. We are going to use for user switch on/off the vehicle via GSM and Web Application. Users who are going to use without internet for them applied manual switch activation in this case whether vehicles tilted or someone vehicle thefted and user get notify and he can easily on/off the invert via GSM. Whenever user wants a security for vehicle he could apply manual switch activation also off security system buzzer also applied for module whenever bike tilted buzzer sound without using WIFI. users who are going to be use with network for those applied Blynk web application this case whether vehicles are tilted or someone vehicle theft user get the notifications and he can easily on/off invert relay via Blynk with help of Node MCU .whenever user wants security system for vehicle he can applied the switch activation and also off the security system buzzer also applied for the system whenever bike tilted buzzer sounded with using WIFI., in any case in every practical sense all the advancing pushed security frameworks are sorted out particularly for vehicles. There are totally genuine hindrances with the present security frameworks for bicycles.

The proposed security just plays out a customer affirmation process does not confirm vehicle itself. It is viewed as weak considering the way that it cannot guarantee the relations of the vehicle and the contraption inside. At the present time, paper assesses the present foe theft structure proposes an improved system to much more securely ensure the in vehicle gadgets.

Hostile to burglary security framework requires genuine quick time distinguishing proof, the solid entryway maintain the solid framework which is given to on/off the vehicle, signal passing on capacity to proprietor of the vehicle for unapproved access with exact vehicle area utilizing GPS and GSM which utilizes sequential correspondence. For completing this, a strong system is proposed to control the gateway with the help of the one of a kind finger impress, RFID gives strong security structure which immobilizes the vehicle, arranged to offer message to the proprietor for unapproved access with definite locale vehicle utilizing GPS and GSM headway. In this paper, an enemy of burglary vehicle insurance framework is created to defeat the disadvantages it will offered a totally self-governing activity.

2. PROPOSED METHOD

An Anti-Theft System is executed the vehicle robbery in the leaving regions by utilizing the Micro controller, RF transmitter and beneficiary module .The vehicle antagonistic to thievery following system subject to Internet of things is organized in which can give all-alter dynamic help of the owners. This framework is constrained by RFID module to ON and OFF. This paper clarifies the working of GSM and GPS module. After the power supply unit switch on, GPS (Global Positioning System) stores the degree and longitude information it accumulates in E2 PROM chip. Exactly when cheats get into the vehicle, the vibration sensors mounted in the portals will be enacted.

Security vehicle utilizing another innovation to open the entryway of the vehicle just as wearing safety. This examination gives a point of view toward the diverse asks about that have been made before finish endeavor.

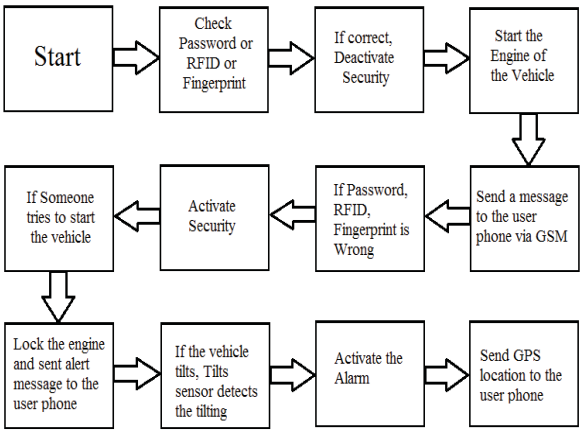

Figure 1: Proposed system.

The proposed arrangement of hostile to robbery security framework utilizing unique finger print, RFID module with an enact the ready framework as appeared in Figure1. For getting the free arranging structure that can transmit the common data reasonably, Active structures are made .The gadget is a mix GPS/GSM module and criticism framework. Principle equipment in the vehicle unit GPS/GSM a remote following server. This one of least complex works utilizing GSM innovation separated GPS framework. The client just by a SMS and the vehicles subtleties will be sent to the closest base station. In spite of the fact that the straightforward structure, it expends more opportunity to work entire activity .The cost of the security framework ought to be sensibly low or else the car makers cannot execute such a framework, as it will build to expense by a major edge.

3. METHODOLOGY

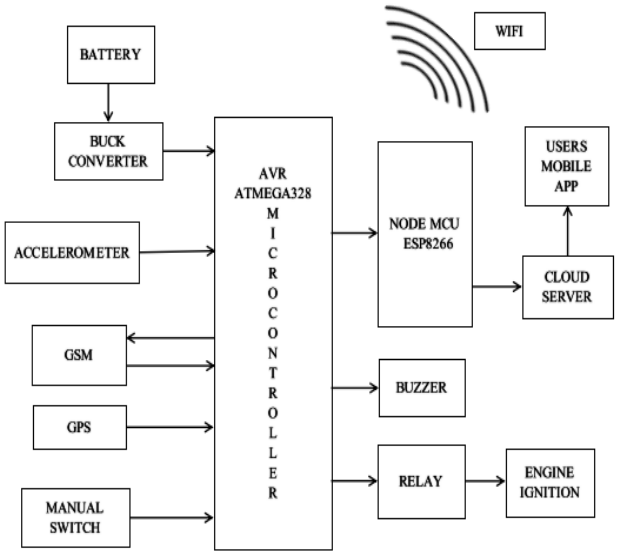

Figure 2: Block diagram anti theft security system.

Against robbery security structure requires genuine quick time distinguishing proof solid protection structure. Implement protection structure shown in figure2 .It consists the tracking wheels when its engine started or motion, vibration, moving send information user he can monitor wheels from is device .Suppose wheels thefted can easily track

navigation an also stop the wheels by Blynk application. It interface 5v power supply of micro controller running at 16MHZ AVR, it can be read and change in order typically used for store components are selected below.

TWO CASES:

CASE1: Vehicle owner using mobile without internet for them applied manual switch activation in this case whether vehicles are tilted or someone vehicle theft user get the notifications and he can easily ON/OFF the Relay through GSM. Whenever user wants security system for vehicle he can applied the manual switch activation and also off the security system buzzer also applied for the system whenever bike tilted buzzer sounded as shown in figure3 without using WIFI.

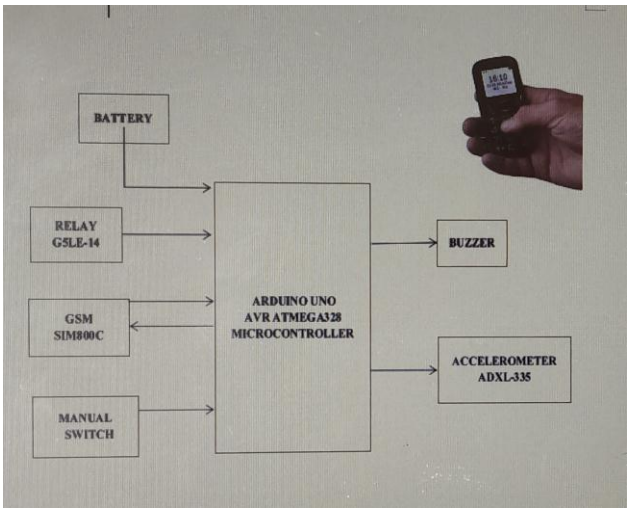

Figure 3: Without using Internet.

CASE2: vehicle owner uses with internet for them applied blynk web in this case whether vehicles are tilted or someone vehicle theft user get the notifications and he can easily on/off the relay by nodemcu via blynk application. Whenever user wants security system for vehicle he can applied the switch activation and also off the security system buzzer also applied for the system whenever bike tilted buzzer sounded as shown in figure4 with using wifi.

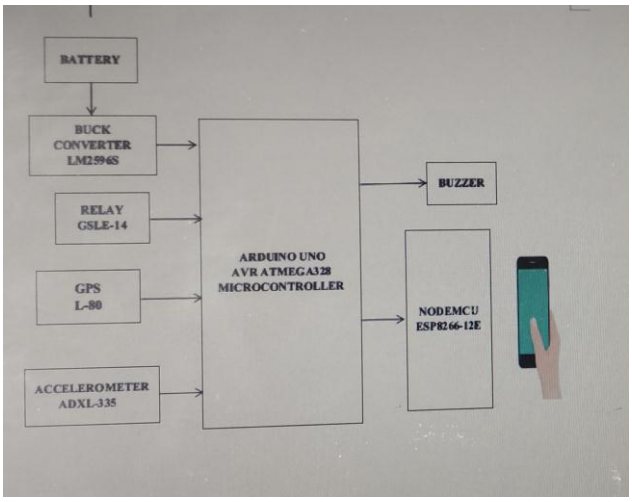

Figure 4: With using NodeMCU WIFI module.

Components Selection
The hardware portion are included:

- NodeMCU ESP8266 12-E
- AVR ATMEGA328 Micro controller
- BATTERY
- GSM SIM800C
- GPS UBLOX NEO 6M
- ACCELEROMETER ADXL 335
- BUCK CONVERTER LM2596
- RELAY G5LE-14x
- BUZZER
- SWITCH
- ANDROID MOBILE

The software components included the following:

- ARDUINO IDE SOFTWARE
- BLYNK APPLICATION

NODE MCU ESP8266 12-E:

Figure 5: Node MCU ESP8266 Controller

ESP8266x WIFI SOC design enabled. It is 32 bit controller its operating voltage 2.5v to 3.6vand operating current at 80ma and on board at 3.3v 600ma regulator and 20 micro amps at sleep mode.

It as external SPI flash memory which is mounted in the module of 4MB external to store the each bit. Clock speed bolster 80 MHz is the minimum and160 MHz is the maximum clock speed..It will monitor through an WIFI network of the module. In our implementation when the vehicle stared easily on/off the engine through an NodeMCU Device as shown in figure5.

AVR ATMEGA328:

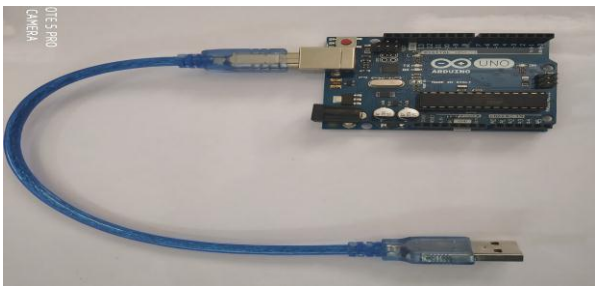

Figure 6: AVR ATMEGA328 Microchip Controller.

Arduino micro controller based AVR ATmega328. It as low power 8-bit controller..General purpose register. High Endurance non-volatile memory segments,. It as two 8 -bit Timer / counters, one 16 - bit timer /counter with separate prescalar .Operating voltage 1.8v to 5.5v for ATmega328p temperature specific ranges from -40 to 85 c speed grade recommended input rising voltage 7-12v limit input voltage 6-20v it have 14 digital write pinout them 6 PWM signals used for analog read write functions in figure 6.The power uno via USB maybe power supply.

GSM SIM800C:

Figure 7: SIM800C GSM.

This document can help to customer quickly understood the SIM800C Electrical and Mechanical with internal specifications details depends on AT commands to send text to notify user with flash 24 bit and ram 32 bit.

Features

- AT command interface
- Input Voltage : 5V-12 V
- Sim card socket
- Network, Status and Power indication LED's.
- Network, modem status, CTS/RI and RTS/RF SYNC can be taken via DB9 connector.
- On board SMA connector for GSM antenna.
- Audio jack.
- Temperature: -40 °C to +85 °C.
- Provision for firmware updation.
- Low power consumption.

L-80 GPS CHIP:

Figure 8: L- 80 GPS chip.

The module L-80GPS chip gauges not exactly the size of postage its little casing. It follow up to 22 satellites on 50 stations and accomplishes the business' most significant level of affect ability for example - 161 dB following, while at the same

time devouring just 45mA stockpile current. Component chip gives is Power Save Mode. It permits a decrease in framework power utilization by specifically turning pieces of collector. Its significantly diminishes power utilization module simply 10mA making it appropriate for power supply touchy as figure 8.

ADXL 335 ACCELEROMETER:

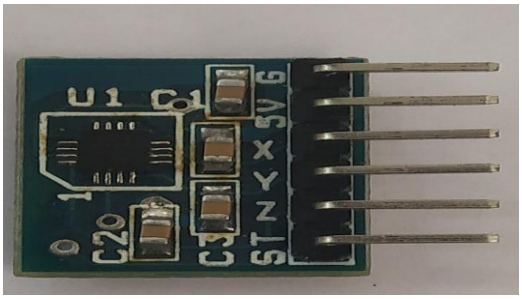

Figure 9: ADXL 335 ACCELEROMETER.

The core is little, medium force accelerometer from Analog signal device very small commotion – ADXL335. This tilt as full detecting scope of ±3 g as appeared in figure 7. It can quantify the static quickening because gravity in tilt-detecting applications, just as powerful increasing speed coming about because of movement, stun, or shake. It works operated voltage between from 1.8V to 3.6VDC (3.3V optimal), and typically current operates at 350µA. It as 3 axis x,y,z for direction of gravity as shown figure 9 accelerometer.

BUCK CONVERTER LM2596:

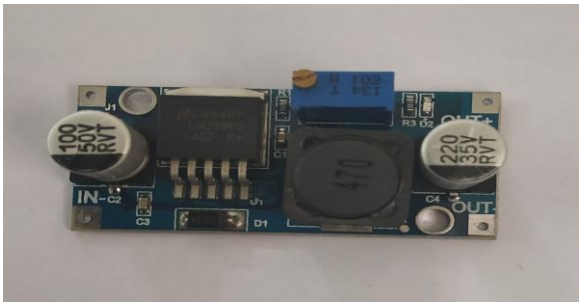

Figure 10: LM2596 BUCK CONVERTER.

This is a LM2596 DC-DC buck converter step-down force device with the high accuracy potentiometer, fit for driving a heap up to 3Amps with high effectiveness, which can work with Arduino different main boards and fundamental devices. At the point when the yield current keeps more noteworthy than 2.5A (or yield power more prominent than 10W) , please include a warmth sink it.

RELAY HW-307:

Figure 11: RELAY HW - 307.

Transfer Cubic, Single channel 10A Power Relay Ideal for a wide assortment of uses, for example, home apparatuses, its act like a switch to monitor from mobile devices to start and stop the output in the device inner part have the magnetic coil. When relay is open the current will flow through coil and vice versa making to start and stop the condition.

IDE SOFTWARE:

Arduino is simple to understand the Assembly Level language and its open source to keep learning with analog digital for, ms of data writes and read .Over all some project use the uno.

BYLNK APPLICATION:

Blynk is utilized as the client interface. Blynk is an equipment rationalist IoT stage with adjustable versatile applications, private cloud, gadget the executives, investigation, and AI. Blynk is an equipment skeptic IoT stage with adjustable versatile applications, private cloud, gadget the board, examination, and AI.

IMPLEMENTATION:

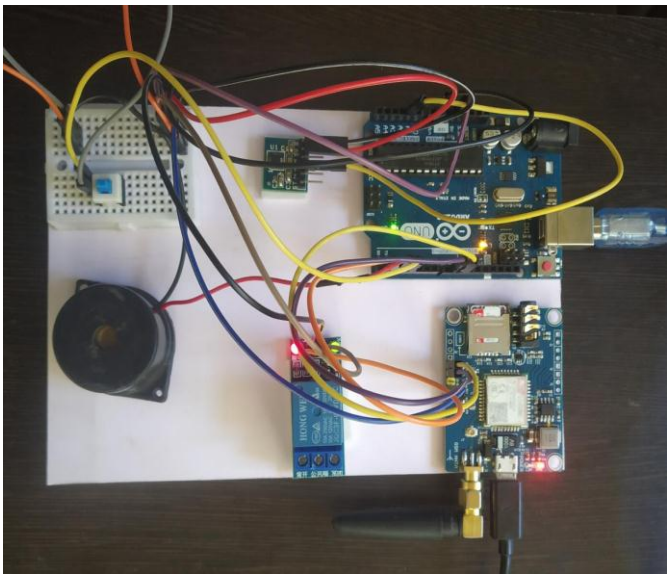

Figure12: Implementation for on/off the relay using **GSM.**

When manual switch in activation mode whether vehicle is tilted send the message through GSM " Ur Bike is Tilting " then vehicle ignition off through relay via send the SMS Bike off then relay off when Bike on then relay will on that time

particularly buzzer is sounded certain seconds when we have to alert security on that conditions applied the manual switch in on state we don't want security on that conditions manual switch can be off as shown in figure12.

4. RESULTS

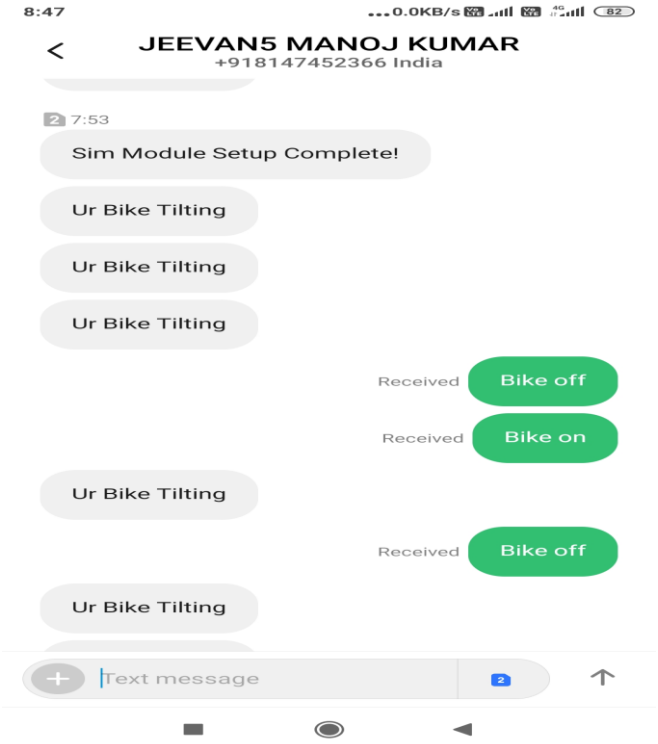

Figure 13: Turn ON/OFF Relay using GSM.

As the outputs of the system are Vehicle engine ignition to turn ON and OFF through a GSM. Figure 13 shows the overview of the system.

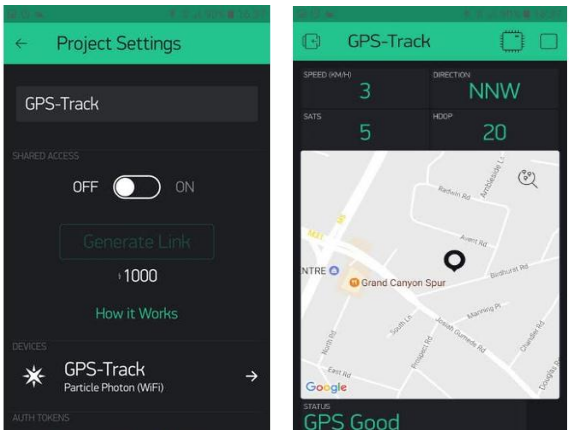

Figure 14: (a) Overview (b) Direction

As the outputs of the system are Vehicle tracking using GPS to turn ON and OFF through a GPS NEO 6M using Blynk Application. Figure 14(a) shows the overview of the system. Figure 14(b) shows the direction and satellite and also speed of the GPS Track.GPS is working in good condition will shows in application.

5. CONCLUSION

This work mainly how to keep away and secured vehicles from thief .Implemented smart secured device this model mounted in secured place on the vehicle. Suppose vehicle is theft or vibration, shake, tilting module will notify then easy to stop it through handset and track it also getting notify alertness smart secured device.

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