VVITRONICS

VASIREDDY VENKATADRI INSTITUTE OF TECHNOLOGY

ELECTRONICS & COMMUNICATION ENGINEERING

JULY-DECEMBER 2019

NEWS&EVENTS

- 399 VVITians are certified by NPTEL
- VVIT Got grade AA from SWAYAM-NPTEL, IIT Madras.
- A Two week Faculty Development Program on "Mixed signal design" at VVIT.
- Mr. M. Sunil Babu, Associate Professor, Dept of ECE awarded Doctorate.
- IEEE student chapter inauguration by Dr. Padma sai, HOD, VNR Vignan Jyothi, Hyderabad, and Dr. E Srinivasa Reddy, Academic Dean, Acharya Nagarjuna University, Guntur.
- VVITians Celebrated Independence Day on 15th August 2019.
- "AIKYA 2K19" a National level technical fest organized by IEEE chapter in September.

Chief Patron:
Sri Vasireddy Vidyasagar
Chief Editor:
Dr. Y. Mallikarjuna Reddy

Editorial Team:
Staff Members:
1. M. Sunil Babu,
2. V. T. Venkateswarlu.

Student Co-Ordinators:
1. M.Srimanth, II ECE,
2. P. Sri Lekha, III ECE,
3. R. Nivas, IV ECE,
4. M. Sai Prakash, IV ECE.

ECE DEPARTMENT VISION& MISSION:

VISION:

To produce globally competitive engineering graduates through high quality education, to instil high standards of ethics and professionalism, and to bring out quality research in the frontier areas of Electronics & Communication Engineering.

MISSION:

To impart high quality technical education to all students:
- To become active life-long learners with the necessary skills, competencies, and ethical values.
- To develop human resources with skills of creativity and research.
- To inculcate value-based, socially committed professionalism to the cause of overall development of students and society.

Faculty Achievements

1. Mr. K.Vasu Babu (Assistant Professor, ECE) published a Journal paper "Design of MIMO Antenna to interference inherent for ultra-wide band systems using defected ground structure" in Microwave and Optical Technology Letters, https://doi.org/10.1002/mop.31958, 2019.

2. Mr. K.Vasu Babu (Assistant Professor, ECE) published a Journal paper "Design of inverted L-shape & ohm symbol inserted MIMO Antenna to reduce the Mutual Coupling" in AEU- International Journal of Electronics & Communication, Vol. 105, 42-53, 2019.

3. Mr. K.Vasu Babu (Assistant Professor, ECE) "Design & analysis of wide-band MIMO antenna to reduce the Mutual Coupling" in Journal of instrumentation, Vol. 54, 42-53, 2019.

4. Mr. K.Vasu Babu (Assistant Professor, ECE) "Analysis of Multi-Band Circle MIMO Antenna Design for C-Band Applications" in Progress in Electromagnetic Research (PIER), Vol. 91, 185-196, 2019.

5. Mr. K.Vasu Babu (Assistant Professor, ECE) "Design and analysis of multi-band circle shape MIMO antenna using defected ground structure to reduce mutual coupling" in International Journal of Ultra wide band communications and systems, Inder Science), (ELSEVIER-SCOPUS Indexed), Vol. 4, 32-40, 2019.

Student Achievements

1. D. Sai Kumar, G. Mohan Krishna and E. Siva Kumar of II ECE Secured First Prize in Treasure Hunt at VVIT.
2. B. Yashwanth, G. Naga Sai and CH. Sai Teja of II ECE secured First Prize in Cricket at KITS Engineering College, Guntur.
3. M. Sai Prakash of IV ECE secured Brown Belt in KARATE at National championship, Mangalagiri.
4. J. Manisha of II ECE secured second prize in crack the query at VVIT.
5. P. Layanaya, S. Swetha of III ECE secured first prize in Cross-X at VVIT.

Student Contributions

1. Blood donation camp was organized by NSS of VVIT in co-operation with Rainbow   and Needs Blood bank
2. As a part of "Sresht Bharat" Programme, NSS students of VVIT planted trees in campus.

➢ 117 VVIT Students Placed in TCS.
➢ A One Day Seminar on "Effective Technical skills" by Dr. Rambir Sinha, scientist and winner of Guineas world record 2013 at VVIT.
➢ EEE department organized IEI EXOUSIA technical fest in September.
➢ Mechanical Engineering department conducted a student chapter of Indian value engineering society in September 2019.
➢ 6 students of ECE placed in WIPRO.
➢ VVITians Celebrated Innovation Day on 15th October 2019
➢ Mr. Rajan Choudary, Chief Officer, World Skills of India and APSSDC team visited VVIT in October.
➢ VVIT Hosted "Design thinking workshop and Business plan validation" for the Singapore team on 17th October 2019.

3. As a part of "Swachhata Hi Seva" programme, NSS students of VVIT organized an awareness program on cleanliness at Netaji nagar mandal parishad primary school, Guntur.
4. Dental camp was organized by NSS team of VVIT.

Faculty Articles

IOT BASED VEHICLE THEFT DETECTION

Abstract - Property crimes is said to hover around 10 million annually. Of this, vehicle theft tops the list and often occurs in all parts of the world. There are so many recent technologies evolving and new methods are being upgraded in overcoming this issue. The methods involved in vehicle theft detection have become aware to everyone including the burglars and they try to break the system and steal the vehicle. The proposed system presents a mechanism to make vehicle thefts almost impossible. The system provides security by sending an alert message as soon the vehicle stolen or moved without knowledge of owner. System also offers location updates periodically to the registered user through internet of things. This provision for vehicle tracking is provided by GPS technology. GSM technology is used to send an alert message to intimate the owner when the vehicle is started.

Keywords: Arduino UNO, GSM, GPS, Wi -Fi Module - ESP8266, DC Motor, Switch, Battery.

1. INTRODUCTION

Vehicular theft constitutes a high percentage of reported criminal acts. The number of automobiles involved in travelling each grows drastically high and it becomes impossible to identify the stolen vehicle. If the stolen crosses the national border then the probability of capturing the vehicle is quiet low. Today GPS used in cars, ambulances, fleets and police vehicles are common sights on the roads of developed countries. All the existing technology support tracking the vehicle place and status The GPS/GSM Based System is one of the most important systems, which integrate both GSM and GPS technologies. It is necessary due to the many of applications of both GSM and GPS systems and the wide usage of them by millions of people throughout the world. This system designed for users in land construction and transport business, provides real-time information such as location, speed and expected arrival time of the user is moving vehicles in a concise and easy-to-read format. This system may also useful for communication process among the two points. Currently GPS vehicle tracking ensures their safety as travelling. This system installed for the four wheelers, Vehicle tracking usually used in navy operators for navy management functions, routing, send off, on board information and security.

- APSSDC conducted One -week Faculty Improvement Program on Advanced python at VVIT.
- APSSDC conducted one week FIP on Machine Learning at VVIT.
- K. Sri Pravallika, IV ECE selected for JNTUK Prathiba Award.
- 2 students of ECE placed in prestigious TECHNOVERT.
- VVIT Hosted the Inauguration of the book named "Virachitha Kasi satakam" written by Sri Adibhatla Narayana Dasu.
- VVIT BALOTSAV-2019 Broacher and mobile App released on 31st October.
- Several events are organized as part of VIVA-VVIT and Anniversary celebrations.
- 34 ECE students placed in Infosys.
- VVITians celebrated Semi Christmas on 15th December 2019.

INTERNET OF THINGS

IOT systems allow users to achieve deeper automation, analysis, and integration within a system. They improve the reach of these areas and their accuracy. IOT utilizes existing and emerging technology for sensing, networking, and robotics. IOT exploits recent advances in software, falling hardware prices, and modern attitudes towards technology. Its new and advanced elements bring major changes in the delivery of products, goods, and services; and the social, economic, and political impact of those changes.

2. Existing Method

A. Facial Recognition System

The human face is one of the easiest characteristic which can be used in biometric security system to identify a user. Face recognition technology, is very popular and is used more widely because it does not require any kind of physical contact between the users and device. Cameras scan the user face and match it to a database for verification. However, it is still not as unique as its counterparts such as retinal, iris or DNA. On the other hand, time is the most negative affective factor with face recognition technology because as the user ages will change over time

B. Voice Recognition

Biometrics technology created voice recognition systems in order to verify each person's identification using only their voice. Mainly, voice recognition will focus on the vocal tract because it is a unique characteristic of a physiological trait. It works perfectly in physical access control for users. However, there are still some factors which can affect the quality of the system. Firstly, unauthorized users can record authorized users' voices and run it through the verification process in order to get user access control to system.
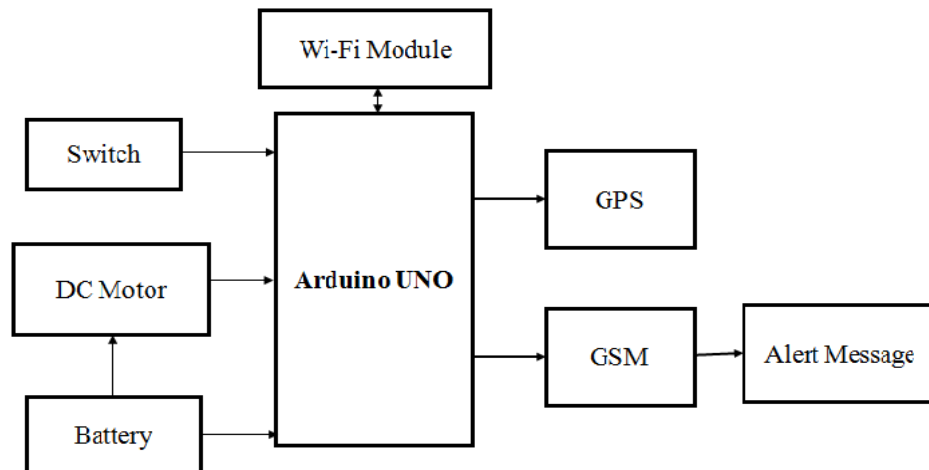
3. BLOCK DIAGRAM

Fig. 1 Block Diagram

This system presents an IOT based vehicle theft detection system. As there are many systems used till date to detect the robbed vehicle, proposed system overcomes most of the limitations of existing systems and methods. Here DC motor is used to represent vehicle. In this mechanism as soon as the dc motor starts i.e., vehicle starts without owner permission, i.e., vehicle theft occurs, Arduino sends an alert message to the owner and the longitude and latitude readings of vehicle are obtained by activating GSM (Global System for Mobile communication) and GPS (*Global Positioning System)* and the

same are posted using internet of things with the help of Wi-Fi module. The entire mechanism can be operated with a switch for user convenience.

A. Hardware Components Used

1) Arduino UNO

The **Arduino Uno** is a microcontroller board based on the ATmega328. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack and a reset button. Connecting it to a computer with a USB cable or power it with a AC-to-DC adapter or battery gets it started. The board can operate on an external supply of 6 to 20 volts.

Fig. 2 Arduino UNO

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. The ESP8266 module is an extremely cost effective board with a huge, and ever growing, community.This module has a powerful enough on-board processing and storage capability that allows it to be integrated with the sensors and other application specific devices through its GPIOs with minimal development up-front and minimal loading during runtime.

Fig.3 Wi-Fi Module ESP8266

3) Global Positioning System (GPS)

Global Positioning System (GPS) is a satellite based navigation system. NEO-6M GPS module is compatible with a variety of GPS receivers and it has a built-in ceramic antenna. Integrates with a 3v button battery. A GPS receiver must be locked on to signal of at least 3 satellites to estimate 2D position (Latitude and longitude).

Fig. 4 GPS module with antenna

4) GLOBAL SYSTEM FOR MOBILE COMMUNICATION (GSM)

SIM900A Modem is built with Dual Band GSM. It works on frequencies 900/ 1800 MHz. SIM900A is a compact and reliable wireless module. Here as soon as the motor initializes an alert message is sent to the owner using GSM module. The GSM system is capable enough to instruct user via SMS from a specific cell number. The aspect is that security alert which is achieved in a way that on the detection of intrusion, the system allows automatic generation of SMS thus alerting the user against security risk.
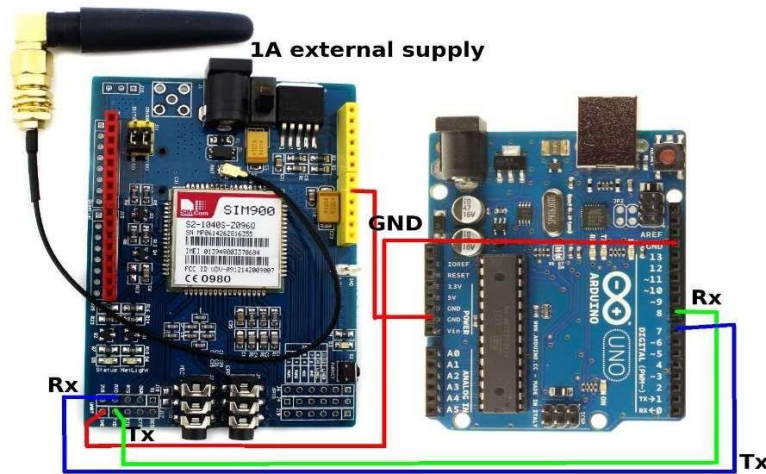

Fig.5 GSM connections with Arduino

5) DC Motor

Most common type of motor. DC motors normally have just two leads, one positive and one negative. If two leads connected directly to a battery, the motor will rotate and if leads are switched, it moves in opposite direction. Small DC motors are used in tools, toys, and appliances. The universal motor can operate on direct current but is a lightweight motor used for portable power tools and appliances. Larger DC motors are used in propulsion of electric vehicles, elevator and hoists, or in drives for steel rolling mills.

Fig.6 DC motor

B. Software Used

1) Arduine IDE Software: Arduino is an open-source platform used for building electronics projects consists of both a physical programmable circuit board(often referred to as a microcontroller) and a piece of software, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board.

2) THINGSPEAK

ThingSpeak is an IOT analytics platform service that allows aggregating, visualizing and analyzing live data streams in the cloud. ThingSpeak provides instant visualizations of data posted by devices to ThingSpeak. ThingSpeak is an open source internet of things platform to collect data from another device, from another channel or from web using thingSpeak we can identify the location of vehicle by continuous latitude and longitude readings obtained. ThingSpeak has integrated support from the numerical computing software MATLAB from MathWorks, allowing ThingSpeak users to analyse and visualize uploaded data using MATLAB without requiring the purchase of a MATLAB license from MathWorks.

Fig.7 ThingSpeak

4. EXPERIMENTAL SET UP WITH RESULTS

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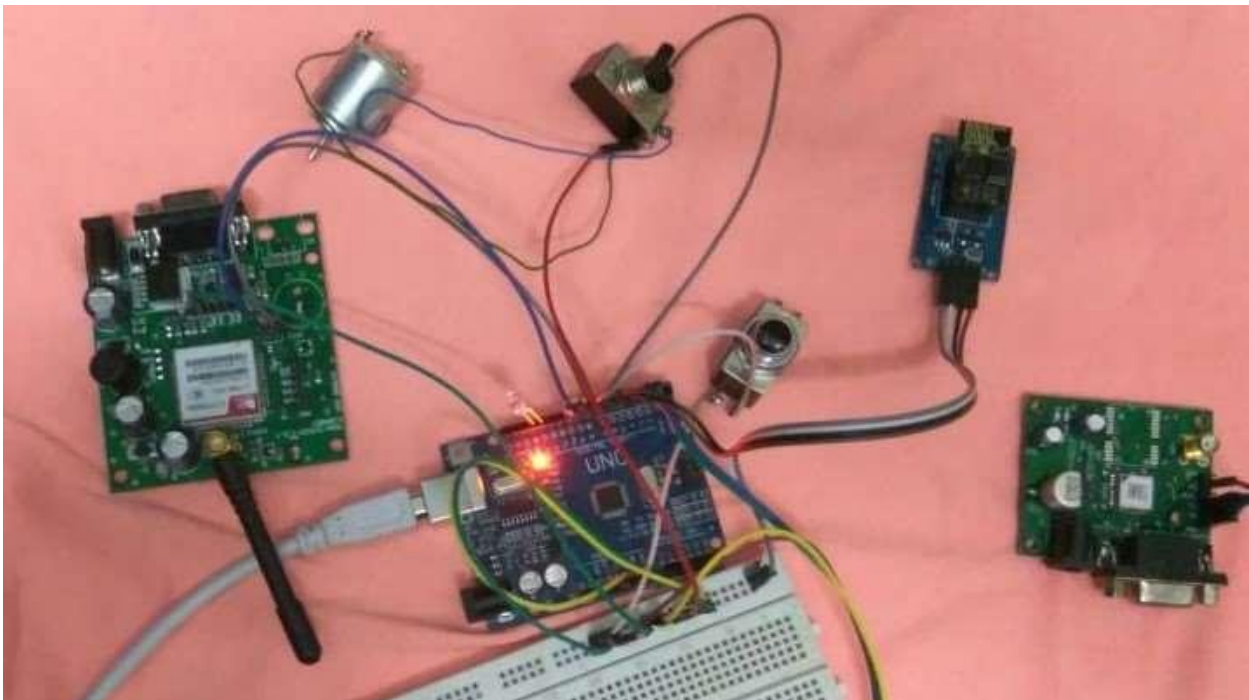

Fig. 8 Circuit connections with Arduino and other components

Vehicle theft alert message along with link for location tracking in Google maps is provided and message is sent to user or owner's mobile using GSM technology.
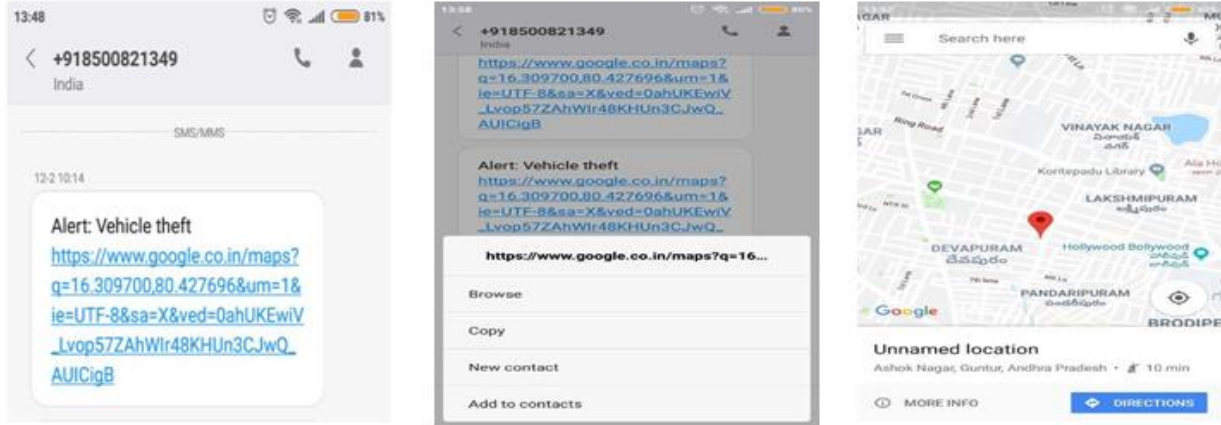

Fig.9 Alert message and location sent to vehicle owner

For continuous tracking the longitude and latitude values are posted in ThingSpeak using Internet of Things (IoT) as shown by using Wi-Fi Module ESP8266 and GPS.
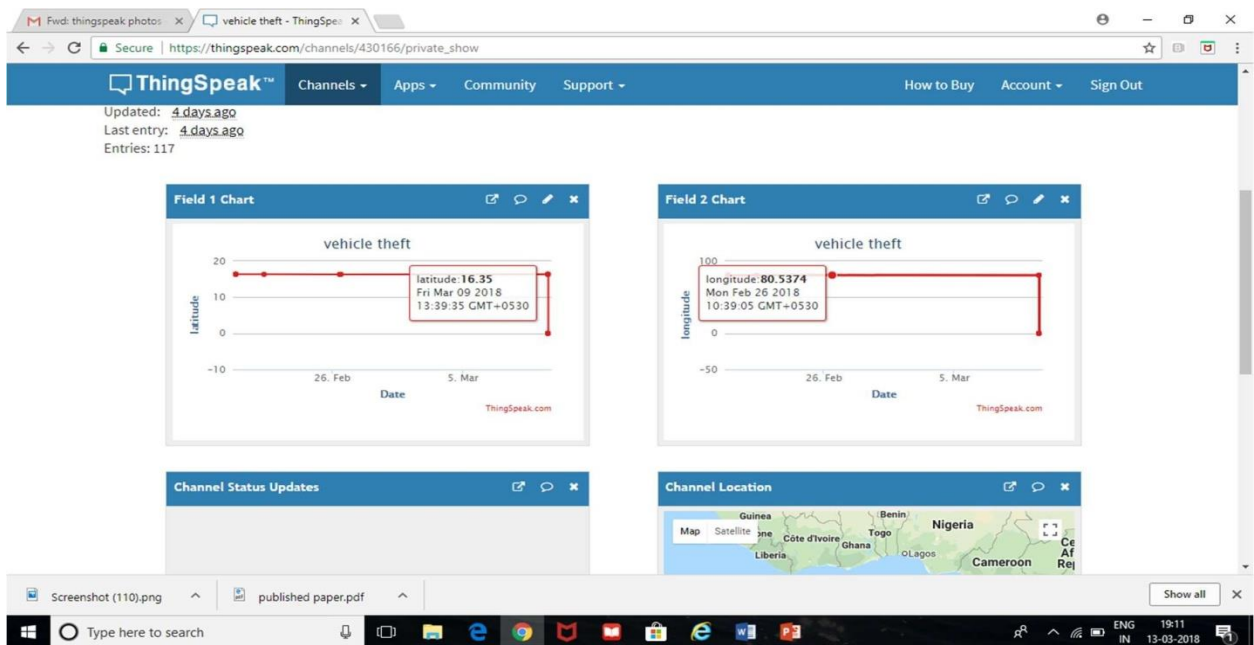

Fig.10 Latitude and longitude readings posted using internet of things in

ThingSpeak

5. CONCLUSION

A real time automobile theft detection and tracking system is presented. System includes two main components interface with GPS and GSM in order to determine and send automobile location and status information via SMS. The transmitted location of the vehicle has been accurately tracked. The accuracy of estimated vehicle coordinates has been enhanced. 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.