

IoT based Secured Transport System

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Abstract:- Nowadays internet of things plays a crucial role in different applications such as smart home, smart transportation, etc. Vehicle theft as well as safety is the major problem faced by the people in society. With the help of the internet of things, provide security and safety to the system is the main intention of the proposed system. The latest survey report shows that vehicles that get stolen out of five only one get recovered. In some places Cctv cameras are present. So with the help of that, we can find the vehicle, but in many places Cctv cameras are absent due to that, we are unable to track the vehicle. With the help of the proposed system we can find the vehicle immediately after theft happens, and also the vehicle owner can control their vehicle remotely. In the proposed system a Gps is interfaced in the vehicle it helps to find the location of the vehicle at any time. An Arduino microcontroller is placed inside the vehicle and it is controlled by an android application. When a second person takes our vehicle without our permission, we can send a command using our smartphone to the Arduino. While receiving the command sent from the smartphone, the Arduino microcontroller off the ignition motor and immobilizes it with a buzzer sound, and the owner can track the location. There is an Associate in Nursing accident detection system enclosed in our projected model, whenever an accident is detected it'll a message is sent to the nearest police station. The system developed is reliable, low cost, and user-friendly which may facilitate the recovery of the vehicle if it gets taken.

Keywords —*Internet of Things; Safety; Arduino; GPS; Theft Prevention; Accident Detection; Accelerometer; Mobile Application.*

I. INTRODUCTION

Nowadays in India, around 38,000 vehicles are purloined that is the price of Rs.120crore of cash. Out of this only, 40% of the vehicle get recovered. In fewer safety areas, additional vehicle thefts manifest themselves. By putting in our planned system in vehicle larceny may be prevented. Stealer typically steals the vehicle victimization spare keys. To avoid we propose a method in which if a second person takes our vehicle without our permission, we can remotely immobilize our vehicle. There is GPS embedded in the vehicle part, through which we can access the location of the vehicle. Whenever the location of the vehicle changes after the vehicle stop it sends a message to the respective owner's smartphone.

By using the mobile application in the owner's phone the user can send an "ignition off" command. The command sent from the smartphone goes to the server that is interfaced with the controller that closes up the ignition and immobilizes it. There's an associate accident detection system embedded within the vehicle. The system developed is reliable, low price, and user-friendly which might facilitate the recovery of the auto if it gets purloined.

In this paper section 2 deals with related works, section 3 deals with the proposed approach and section 4 discuss about the results and section5 is the conclusion.

II. RELATEDWORK

Much has been done in research on the safety system. Some of these activities are given below:

In [1] MAL Rousan and AR ALAK Darwish proposed a method in which prioritized A's system for monitoring and managing urban vehicles such as taxis and buses. . In [4] L. Jamjoom and A.Alshmarani- have put forward a method where the idea is to allow a group of authorized people to share multiple vehicles. In [2] "Automatic navigation and portable vehicle control using Wireless sensor network technology" suggested by Young, Kar- Keung D. This paper introduces a novel concept for automated navigation and control of a mobile platform. It utilizes an ad-hoc mobile wireless sensor network to provide navigational information to the mobile platform embedded control system. In [3] "Smart Smart Monitoring System Based on GPS, GSM and GIS" was proposed by Peng Chen, Shuang Liu. In this smart car monitoring system that uses GPS / GSM, this paper analyzes major system technologies such as GIS, wireless communication, and communication.

III. PROPOSEDAPPROACH

The planned method consists of an Arduino UNO microcontroller. The visual system incorporates an Arduino development board degree as a road unit and provides administrative functions throughout the system. It uses GPS Technology thus tracking the condition of vehicles. Whenever there is a need for this mandatory system it can act as a result of stealing a system of high-security interference. The system forced

to compile the vehicle the authorized person can send the command to the server on the net. If any vehicle is present then it means that the response is provided from a server within the type of digital code provided to the user and if the vehicle is not present it means that the unavailable vehicle request message is still being transmitted to the user. The digital code is still distributed in the setup of the microcontroller system installed in the car with the help of a BlueTooth module connected to the BlueTooth material among the movable objects. The

bespoke Android app is embedded in the middle of the smartphone and therefore in the digital code transfer to the microcontroller system designed to make the Eclipse coding system. Arduino UNO depends on the command you received to take the required action. closes the heating car. this method can manage the vehicle at the command of the car owner. If a car is stolen by someone it means that the bar is OPEN so the SMS is still distributed to the owner of the car. it, therefore, provides vehicle guidance. The precise location of the vehicle is achieved with the help of a MEMS sensor that acts as a result of a reduced compass. When the location of the vehicle changes without the permission of the owner. The owner receives a notification for the vehicle to cross the correct location. and an accident detection system installed inside the entire vehicle. Whenever our vehicle is tripped our system takes it as a risk level communication and sends a notification to the nearest station.

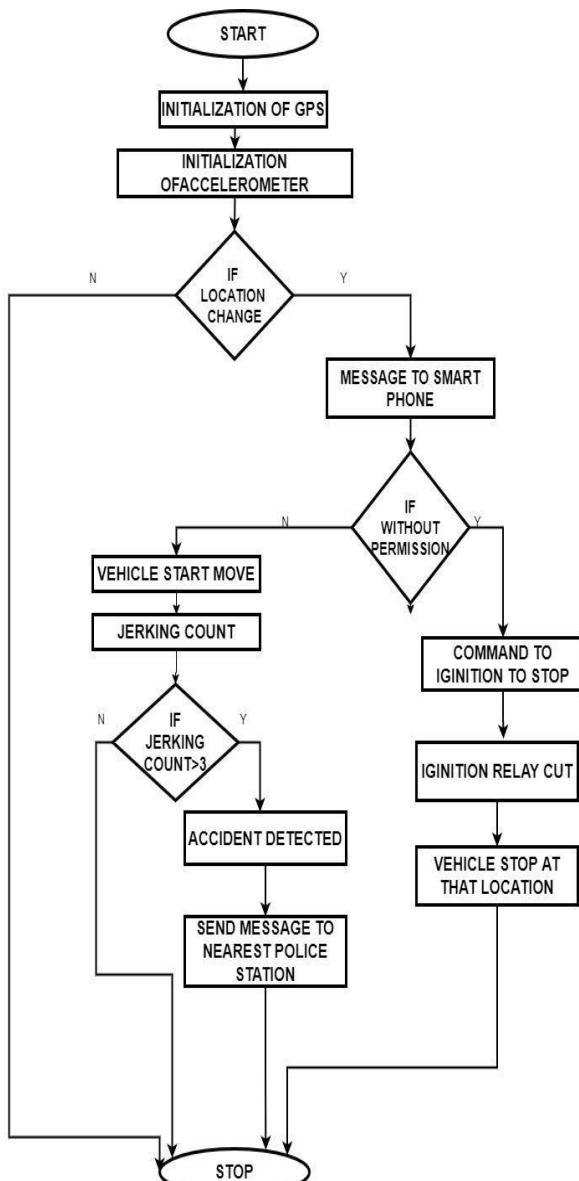


Figure 1: Data flow diagram of secured transport

The application has three modules-

A. Hardware Module

1. ArduinoUNO

The Arduino UNO ATmega328P is a microcontroller having fourteen pins that act as a result of the digital input/output pins among these fourteen pins, half a dozen will be used as PWM outputs. There are analog input pins (A0-A5) and a crystal oscillator of sixteen Mc of frequency vary square measure gift. Here the Arduino is programmed such relying upon a command received from the smartphone it controls the vehicle.

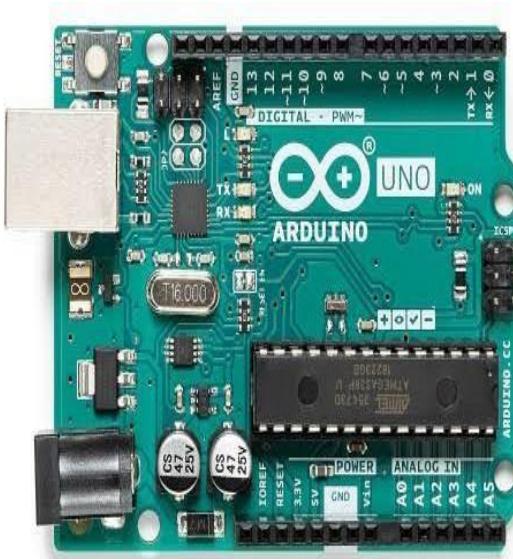


Figure 3: Arduino UNO

2. HC-05 Bluetoothv Module

HC-05 BlueTooth module is used to transmit the data from the smartphone of the user to the front-end embedded controller placed in the vehicle. which can communicate in two ways. This means It is full- duplex. It provides 3.3-5 V I/O operations. it's typical -80dbm sensitivity. It can auto-connect to the last device on power as default operation and it to boot permits pairing of devices association as default. The auto-pairing password for the HC05 is "1234" as a default one.

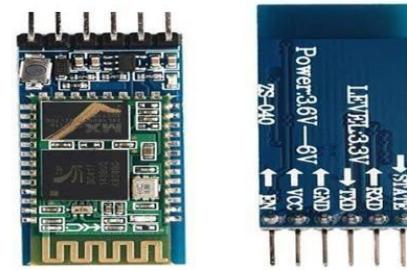


Figure 4: BlueTooth module

3. Global Positioning System

Location, navigation, tracking, mapping, and timing are the major use of the Gps module. If the GPS receiver's antenna is prepared to induce a signal from four satellites it will calculate the position accurately. The GPS module uses the info format of NMEA. The GPS module is interfaced with a UART port of Arduino therefore on realize the precise location of the vehicle. A voltage converter circuit is utilized to convert RS232 voltage toTTL.



Figure 6: GPSmodule

4. Micro Electro Mechanical System Sensor

The MEMS (Micro Electro Mechanical System) is utilized as a vital sweetening feature throughout this project at intervals that it's able to inform the direction of the vehicle. this may be achieved with the assistance of direction Sensors that consists of a 3-axis instrument and 3 axis meter which can act as the compass module to point the direction of the vehicle. That the owner will get the exact location of the vehicle through the direction indicated by the MEMS sensor.



Figure 6: MEMS Sensor

5. Relay Circuit

The relay circuit is interfaced with an Arduino microcontroller. By receiving the command the relay switches the controls of the ignition and at last switches off the ignition as per the commands from the owner. If the vehicle starts without the permission of the owner.

6. Accelerometer

An accelerometer is used to measure the acceleration. Proper acceleration is the acceleration of a body in its instantaneous rest frame; this is different from coordinate acceleration, which is acceleration in a fixed coordinate system. Here it is used to calculate the jerking count and detect an accident.

B. Server

This module consists of two parts; the 2 android devices and the database. It acts as an intermediate between the hardware module inside the vehicle and the mobile application.

C. Software Module

The android-based application is used to time-frame the digital code via smartphone to the microcontroller that is placed on the vehicle side.

This application is formed by Eclipse software. Enter the identification that enters the IP address and password distributed by the owner to use the application. The application platform home page has an ignition ON/OFF button and indicators and track location. so we can click the ON/OFF button to control the vehicle. Additionally, we can track the location of the vehicle.

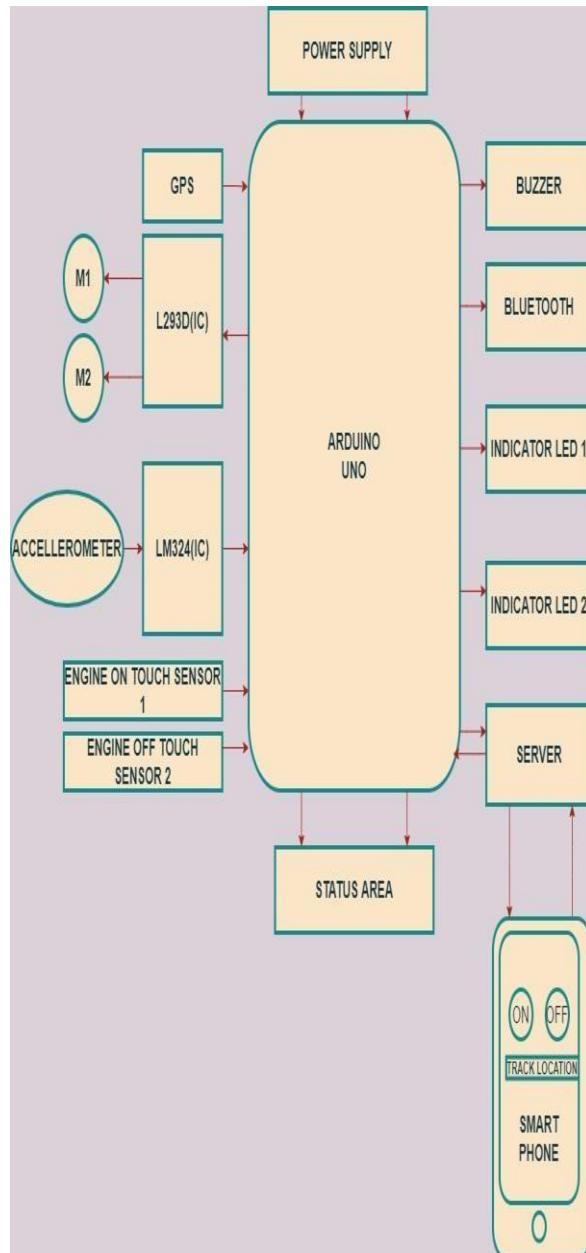


Figure7: Block Diagram of secured transport

IV. RESULT

In this paper, an IOT based secured transport system is formulated. The implementation of the system is successfully done. The different modules of the

system functionality are integrated and tested. The snapshot of the homepage of the customized android-based application is shown in figure 10. By pairing the Bluetooth in the smartphone to the Bluetooth module connected with the embedded controller the digital code is sent via smartphone to the microcontroller which is placed inside the vehicle. Then the verification on the typed passcode is achieved successfully. It is done by the commands which are sent from the user to the smartphone-based application platform.

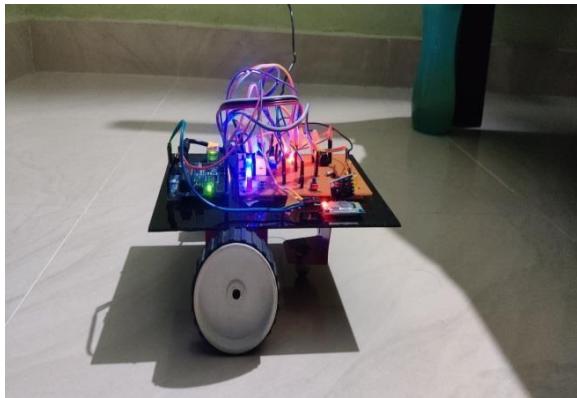


Figure 8: hardware

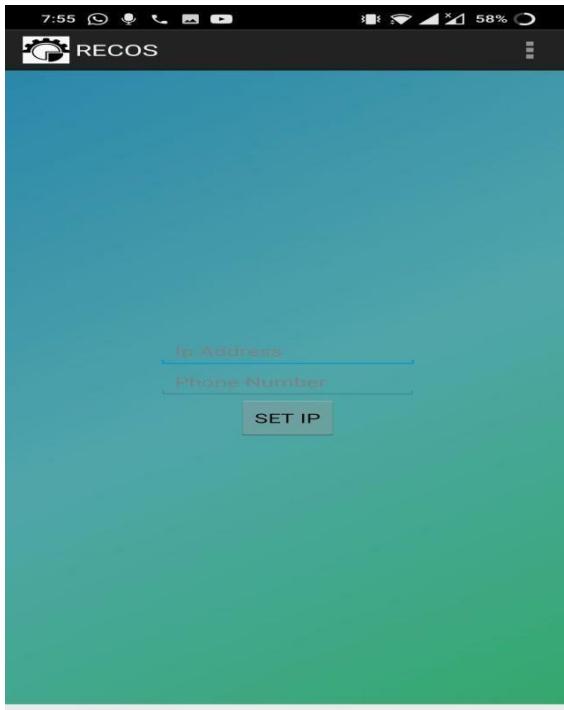


Figure 9: Login Page

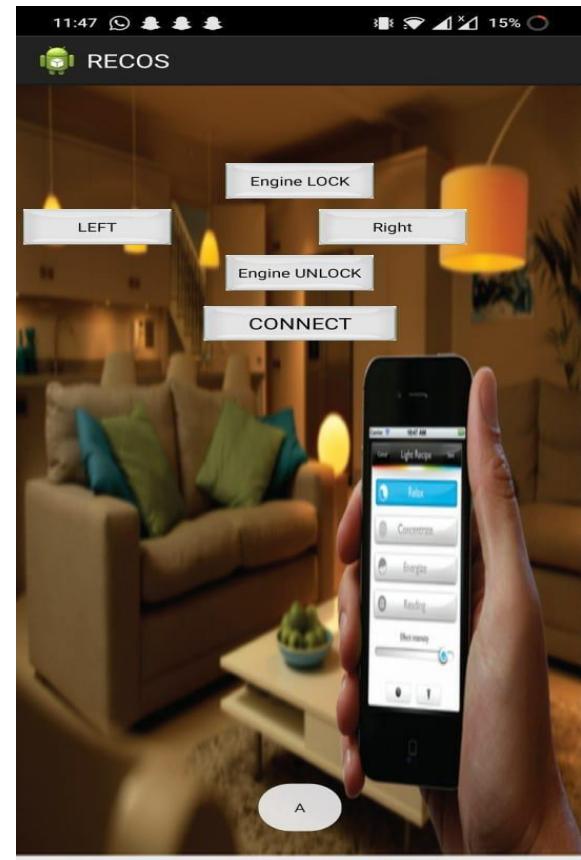


Figure10 : application interface

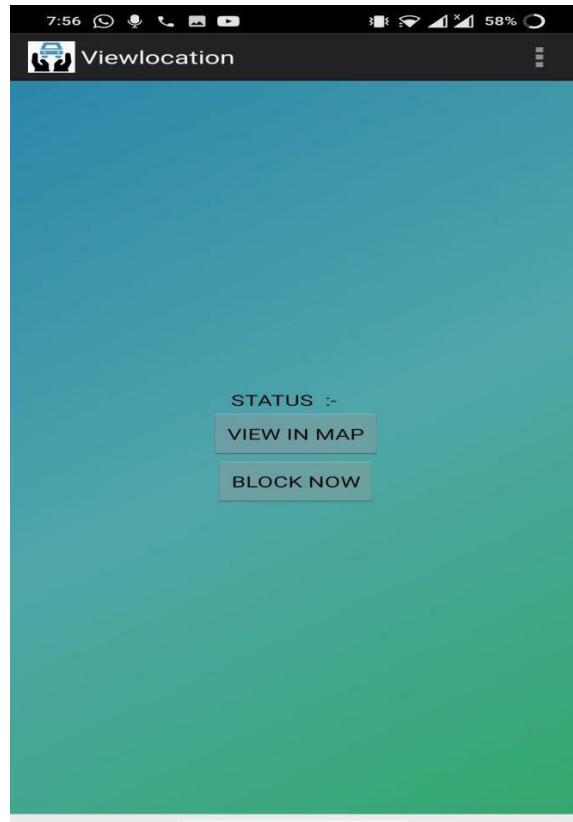


Figure 11: User side app

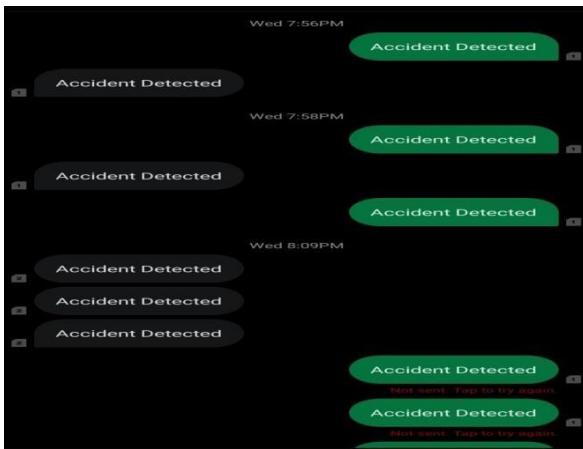


Figure 12: Accident detection message

V. CONCLUSION

The main purpose of the proposed system is the security and safety of the user. In this system vehicle locking immediately after theft happened and tracing the location of the vehicle by using GPS and also an accident detection victimization measuring instrument. The user will manage the vehicle by causation the code word to the front-end embedded controller victimization the server. It's an associate anti-theft system for vehicles, if any vehicle is larceny then we tend to can simply notice the position (longitude and latitude) as per the direction of that vehicle by the GPS and MEMS sensor. This implemented system is an integrated one therefore it's very simple to put in all stolen vehicles. It's a capability with accuracy, coverage space is high, less operation, economic one with higher expandability and quite simple to use, upgrading of this enforced system is additionally doable. When an accident is detected it immediately sends a notification. Therefore this methodology is secured and user-friendly.

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