

**VEHICLE TRACKING & MONITORING SYSTEM**

**BY**

**MD. SHAKIL MONDOL**

**ID: 172-15-9970**

**AND**

**MD. RASEL MAMUN**

**ID: 172-15-9947**

**AND**

**AVIJIT MANDAL**

**ID: 172-15-10163**

This Report Presented in Partial Fulfillment of the Requirements for the  
Degree of Bachelor of Science in Computer Science and Engineering

Supervised By

**MOST. HASNA HENA**

Assistant Professor

Department of CSE

Daffodil International University

Co-Supervised By

**RIAZUR RAHMAN**

Sr. Lecturer

Department of CSE

Daffodil International University



**DAFFODIL INTERNATIONAL UNIVERSITY**

**DHAKA, BANGLADESH**

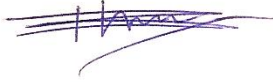
**MAY 2021**

## **APPROVAL**

This Project titled “**Vehicle Tracking & Monitoring System**”, submitted by MD Shakil Mondol , ID NO:172-15-9970 and MD.Rasel Mamun , ID NO:172-15-9947 and Avijit Mandal , ID NO:172-15-10163 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on June 2021.

## **BOARD OF EXAMINERS**

**Chairman**



---

**Dr. Touhid Bhuiyan**  
**Professor and Head**

Department of Computer Science and Engineering  
Faculty of Science & Information Technology  
Daffodil International University



---

**Nazmun Nessa Moon**  
**Assistant Professor**

Department of Computer Science and Engineering  
Faculty of Science & Information Technology  
Daffodil International University



---

**Aniruddha Rakshit**  
**Senior Lecturer**

Department of Computer Science and Engineering  
Faculty of Science & Information Technology  
Daffodil International University

**Internal Examiner**

**Internal Examiner**



---

**Dr. Mohammad Shorif Uddin**

**Professor**

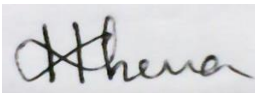
Department of Computer Science and Engineering  
Jahangirnagar University

**External Examiner**

## DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Most. Hasna Hena, Assistant Professor, Department of CSE** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

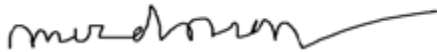
### Supervised by:



---

**Most. Hasna Hena**  
Assistant Professor  
Department of CSE  
Daffodil International University

### Co-Supervised by:



---

**Riazur Rahman**  
Sr. Lecturer  
Department of CSE  
Daffodil International University

### Submitted by:

শ্রী: শাকিল মন্ডল

---

**MD. Shakil Mondol**  
ID: 172-15-9970  
Department of CSE  
Daffodil International University

Rasel Mamun

---

**MD. Rasel Mamun**  
ID: 172-15-9947  
Department of CSE  
Daffodil International University

*Avijit*

---

**Avijit Mandal**  
ID: 172-15-10163  
Department of CSE  
Daffodil International University

## **ACKNOWLEDGEMENT**

First we express our heartiest thanks and gratefulness to almighty Allah for His divine blessing makes us possible to complete the final year project/internship successfully.

We really grateful and wish our profound our indebtedness to **Most. Hasna Hena, Assistant Professor**, Department of CSE Daffodil International University, Dhaka. Deep Knowledge & keen interest of our supervisor in the field of “*IOT*” to carry out this project. His endless patience ,scholarly guidance ,continual encouragement , constant and energetic supervision, constructive criticism , valuable advice ,reading many inferior draft and correcting them at all stage have made it possible to complete this project.

We would like to express our heartiest gratitude to **Professor Dr. Touhid Bhuiyan**, Professor and Head, Department of CSE, for his kind help to finish our project and also to other faculty member and the staff of CSE department of Daffodil International University.

We would like to thank our entire course mate in Daffodil International University, who took part in this discuss while completing the course work.

Finally, we must acknowledge with due respect the constant support and patients of our parents.

## **ABSTRACT**

Our project is all about vehicle security. We have implemented this project for vehicle tracking and security. Not every people drive their car by their own. Sometimes they keep drivers to drive their car. Again, some people use their car for business purposes. So they needs to keep monitoring their car. Also, a car may be stolen. So, we have built this project for all these purposes. Our project will track the car as well as monitor it's condition too. We have to set this device on a car. Now, if the car faces any kinds of accident, this device will send a message mentioning that, car met accident also with car location. If the driver consumes alcohol, this device will automatically detect that and send a message to car's owner without making the driver realize that, his activity has been tracked. Also, if the car owner asks for car location, he/she simply has to send a message to this device's number & the device will give a replay message with exact car location. That's how our project will work.

## TABLE OF CONTENTS

<b>CONTENTS</b>	<b>PAGE</b>
Board of examiners	i
Declaration	ii
Acknowledgements	iii
Abstract	iv
<b>CHAPTER</b>	
<b>CHAPTER 1: INTRODUCTION</b>	<b>1-3</b>
1.1 Introduction	1
1.2 Motivation	1
1.3 Objective	1
1.4 Expected Outcome	2
1.5 Report Layout	3
<b>CHAPTER 2: BACKGROUND ANALYSIS</b>	<b>4-6</b>
2.1 Introduction	4
2.2 Related Work	4
2.3 Comparative Studies	5
2.4 Scope	6
2.5 Challenges	6
<b>CHAPTER 3:REQUIRMENT SPECIFICATION</b>	<b>7-14</b>
3.1 Business Process Model	7



3.2 Use Case Modeling & Description	8
3.3 Requirement Collection and Analysis	8
3.3.1 Arduino UNO R3	10
3.3.2 GSM Module	10
3.3.3 SIM Card	11
3.3.4 GPS Module	11
3.3.5 ALCOHOL SENSOR	12
3.3.6 SHOCK SENSOR	12
3.3.7 DC Power Source	13
3.3.8 Voltage Stabilizer	13
<b>CHAPTER 4:SYSTEM DESIGN AND IMPLEMENTATION</b>	<b>15-20</b>
4.1 FRONT-END Design	15
4.1.1 Setting up the GSM module	15
4.1.2 Setting up the GPS module	16
4.1.3 Connecting all the components with ARDUINO UNO R3	16
4.2 BACK END Design	17
4.2.1 Set up GSM	17
4.2.2 Set up GPS	18
4.2.3 Getting GPS data	18
4.3 Implementation requirment	19
<b>CHAPTER 5: TESTING AND DISCUSSION</b>	<b>21-23</b>

5.1 Implementation of FRONT END design	21
5.2 Test result and report	22
5.3 Final output	23
<b>CHAPTER 6: CONCLUSION AND FUTURE SCOPE</b>	<b>24-25</b>
Discussion & Conclusion	24
6.1 Scope for future development	24
<b>REFERENCE</b>	<b>25</b>

## **LIST OF FIGURES**

<b>FIGURES</b>	<b>PAGE NO</b>
Figure 3.1: Business process model	7
Figure 3.2 :Use case model	8
Figure 3.3: Arduino UNO R3	10
Figure 3.4 : GSM module	11
Figure 3.5 : Sim card	11
Figure 3.6: GPS module	12
Figure 3.7 : Alcohol sensor	12
Figure 3.8 : Shock sensor	12
Figure 3.9 : Dc power source	13
Figure 3.10 :Voltage stabilizer	14
Figure 4.1: Setting up the gsm module	15
Figure 4.2: Setting up the gps module	15
Figure 4.3 : Connecting all the components with arduino	16
Figure 4.4:Setting up gsm	17
Figure 4.5 : Setting up gps	19
Figure 4.6 : Getting gps data	19
Figure 4.7 : Arduino IDE	16
Figure 5.1 : GSM connected	17
Figure 5.2 : Test result	21

## **LIST OF TABLES**

### **TABLES**

### **PAGE NO**

Table 5.1: Test results and report

23

# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

Modern technologies are developing day by day. New updates are being released. With modern technologies, we are being able to develop different types of ideas. Our idea was to develop a project which would track the vehicles. We have inserted extra features. Now we have developed a project through which a car owner can track his/her vehicle through mobile message. Also, if the car meets any kind of accident, it will instant text the owner of the car with location. Also, if the driver of the car consumes alcohol, it will also notify the car owner with message.

### 1.2 Motivation

Cars used to be own for personal usage. But now, it has become a source of earning through different ride sharing services. Now, people with business mind are investing on cars for earning. But they often feel difficulties, as they hire drivers for their car. Now, hired drivers may cause some illegal activities or share trips without notifying their owner. It would be a great loss for the car owner. Also, driver may consume alcohol. It would cause several reasons to tension. For these kinds of problems faced by car and vehicles owners, we have developed our project to create a solution. Our device would share the exact location of the vehicle through SMS, also it would notify if the car faces any accident with exact location. If the driver consumes alcohol, it would also notify the owner with location.

### 1.3 Objective

The main objectives of this project are:

- Device will SMS the car location if requested.

- If the car faces any kind of Accident, it will instantly generate a Text message with accident location and send the SMS to owner's number.
- If the driver consumes alcohol, it will instantly generate a Text message with exact location where driver has consumed alcohol and send the SMS to owner's number.

## **1.4 Expected Outcome**

The device will be installed in the car. A sim card will be installed in this device. If the owner of the car wants to know the location, he will have to send a text message to the inserted sim number, requesting car location. Once the device gets the request, it will instantly reply the car location to the owner's number with an SMS. If the car faces any kind of accident, it will instantly SMS to the owner of the car with accident location. Also, if the driver consumes any kind of alcohol, it will instantly SMS to the owner of the car that, Driver has consumed alcohol.

## **1.5 Report Layout**

In this chapter we will discuss about the introduction of our project, motivation, and the outcome of the project.

In chapter 1, we will discuss about the Introduction & main objective of our project.

In chapter 2, we will discuss about the Background analysis and road-map to development

In chapter 3, we will discuss about the Requirement Specification.

In chapter 4, we will discuss about the Designing and Implementing the system.

In chapter 5, we will discuss about the Testing & Discussion.

In chapter 6, we will discuss about the Conclusion & Future scope for this project.

And last we will discuss about the REFERENCES.

## **CHAPTER 2**

### **BACKGROUND ANALYSIS**

#### **2.1 Introduction**

Cars used to be own for personal usage. But now, it has become a source of earning through different ride sharing services. Now, people with business mind are investing on cars for earning. But they often feel difficulties, as they hire drivers for their car. Now, hired drivers may cause some illegal activities or share trips without notifying their owner. It would be a great loss for the car owner. Also, driver may consume alcohol. It would cause several reasons to tension.

For these kinds of problems faced by car and vehicles owners, we have developed our project to create a solution. Our device would share the exact location of the vehicle through SMS, also it would notify if the car faces any accident with exact location. If the driver consumes alcohol, it would also notify the owner with location.

#### **2.2 Related Work**

Lots of works has been done related to vehicle tracking system. Like, "Sinotrack GPS Tracker", it can only track the vehicle location, "Lekem", which sends the vehicle location details when requested. "Onelap" is an online tracker, which uses internet to track the vehicle 24/7, etc. But almost every of these devices are just only vehicle tracker and don't have extra features[1] [2]. But our device has extra features: accident notification and alcohol detection notification. None of the existing devices has these features.

#### **2.3 Comparative Studies**

Cars have crash sensors which detects crash data & releases the airbags. We had to study about this sensor & it's working principle. Again, a car's real life crash sensor is a costly one to do experiment with. We had to find something similar to make proto-type with that. We had to learn deeply about the micro-controllers. First we had to understand the basic



fundamentals and usage of Arduino UNO R3. Then we had to learn about SIM900A GSM module to work with the SMS[5]. Also we have to learn the arduino comparable GPS

## 2.4 Scope

There's a huge scope of this project. Currently our device works only in Car types vehicles. But in future, it may be developed for bigger vehicles like bus, truck etc. Also, there's a huge scope for adding extra features like, calling, driver's health notification etc.

## 2.5 Challenges

We will face a lot of challenges regarding this project. Because we will use different components to develop this project. Challenges we will face during this project are:

- We will not real life car crash sensor as it will too much costly.
- Detecting & measuring real life car crash data will not possible, because it would be extreme costly to crash a car & collect data, so we will to do alternative with other sensors for a proto-type project. .
- It will tough to manage alcohol to test our alcohol sensor.
- The GPS module can show the wrong location without seeing the correct location.
- Socker sensor may not work properly. In this case, the car owner will not get the correct information.
- Alcohol sensors may not work for a long time, because if the driver knows about it, the sensor will not send an SMS to the car owner if he drinks alcohol and cleans his face well

## CHAPTER 3 REQUIREMENT SPECIFICATION

### 3.1 Business Process Model

The device will be installed in user's car. User will request the location through SMS and will get an instant replay SMS with the location. Also if the car faces any kind of accident, user will get instant SMS alert. If the driver consumes any kind of alcohol[4], also an alert SMS will be sent to user's phone number.

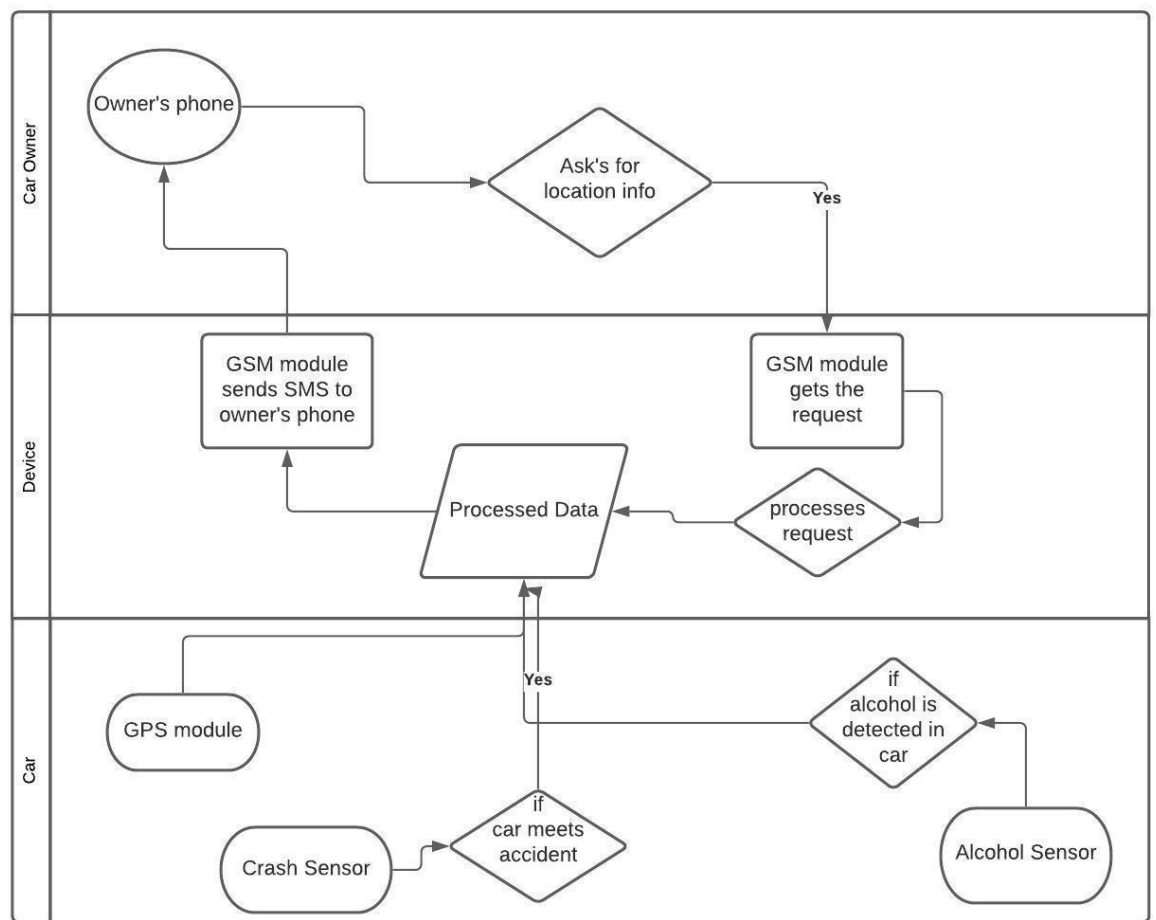


Figure 3.1: Business process model

### 3.2 Use-Case Modeling & Description

Here, the device will be working as a communication device. It will react with the environment, such as: Location request, crash alert, alcohol consumption alert.

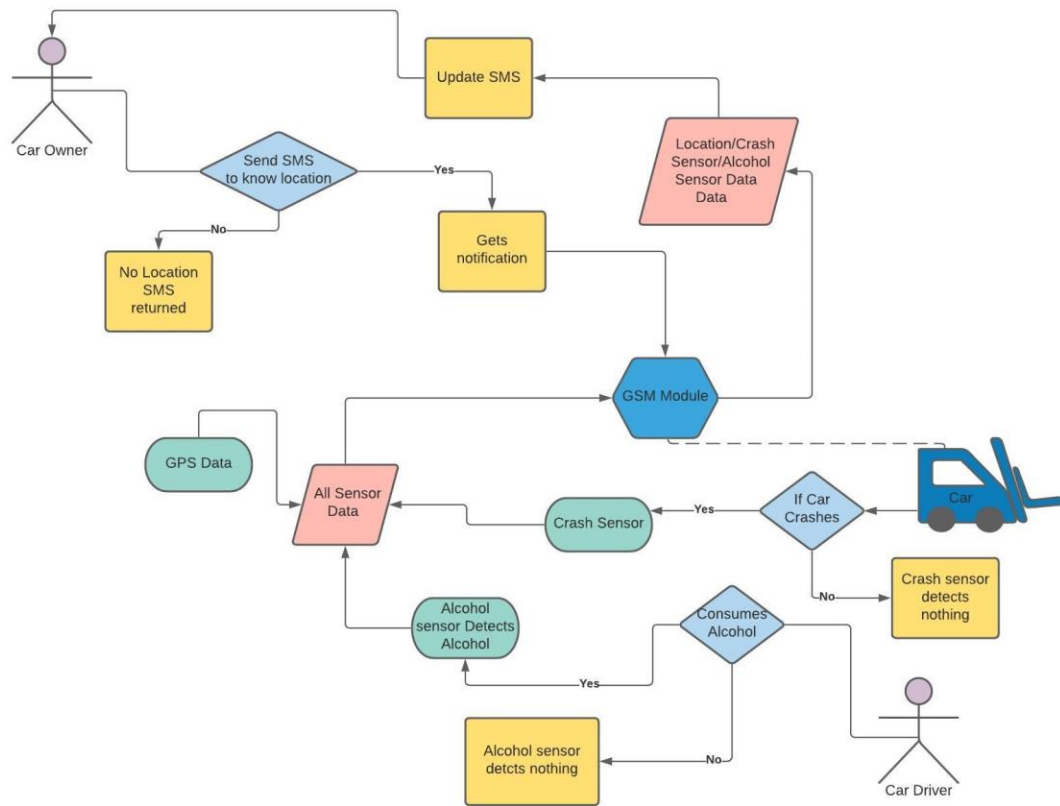


Figure 3.2 :use case model

### 3.3 Requirement Collection & Analysis

We have to use many micro-controller and embedded system related components to build this project. List of components are:

- Arduino UNO R3
- GSM module
- Sim card
- GPS module

- Alcohol Sensor

- Shock Sensor
- DC power source
- Voltage stabilizer

### 3.3.1 ARDUINO UNO R3

Arduino UNO R3 is the most common and most used board in DIY embedded based projects. UNO R3 is a micro-controller development board, where we can program and control different types of electronics components. It has six analog pins and 14 digital pins to program. It also has 5v, 3v and ground output pins and also 5v input pins.



Figure 3.3: Arduino UNO R3[6]

### 3.3.2 GSM Module

GSM module is an electrical component device which can be programmed with arduino, Raspberry pi and other development boards. GSM module has an antenna through which it gets GSM network. It also has a sim card slot to connect GSM network. We have used "SIM900A GSM" model to develop our project. GSM module only works with 2G network.

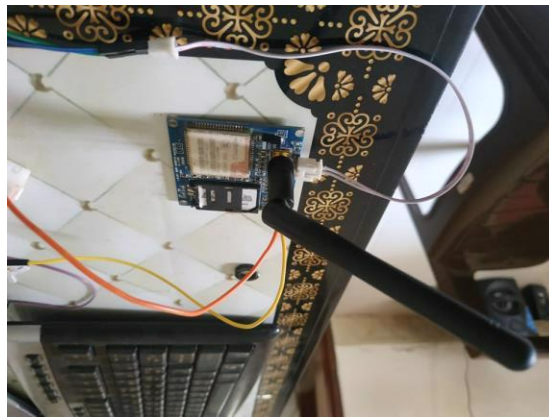


Figure 3.4 : GSM module

### 3.3.3 SIM Card

As our project is GSM based, we need a sim card to operate. As our GSM module only works with 2G network, we have used a 2G sim card.



Figure 3.5 : sim card

### 3.3.4 GPS Module

GPS means "Global Positioning System". GPS location means, the Global location. As our project is based on vehicle tracking, we need to use GPS system. We have used a GPS module to run our project to get location.





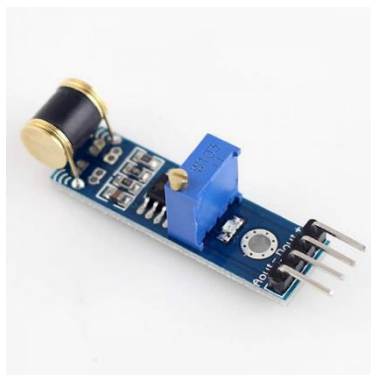


Figure 3.8 : Shock sensor

### 3.3.7 DC Power Source

As our device will be a mobile device, we need a DC power source to power up our device. As Arduino UNO R3 runs smoothly on 5-12V DC power supply, we have used a 12v DC power source to power up our project.



Figure 3.9 : Dc power source

### 3.3.8 Voltage Stabilizer

Our device will be connected with Car's main power system. In case of charging, it will take charge from car's main power supply. Now, car's power supply voltage varies with it's riding condition. Upper voltage may destroy our device. For avoiding this kind of situation, we have used a voltage stabilizer to stabilize the charging voltage.



Figure 3.10 : voltage stabilizer

## CHAPTER 4

### SYSTEM DESIGN AND IMPLEMENTAION

#### 4.1 Front-End design

Front-End Design Includes:

- Setting up the GSM module
- Setting up the GPS module
- Connecting all the components with Arduino UNO R3

##### 4.1.1 Setting up the GSM module

To set the GSM module, first we need to insert the sim card in sim card slot. Then, to power the GSM module, we need to connect the 5v pin of GSM module with the 5v pin of Arduino and ground pin of GSM module with ground pin of arduino. The LED on the GSM module will start blinking. If the LED in blinking too fast, it means that, GSM module hasn't got any network connection. If the LED of the GSM module blinks after 3 seconds, it means the GSM module has got network connection[7].



Figure 4.1: setting up the gsm module

##### 4.1.2 Setting up the GPS module

To setup the GPS module, we need to connect the TX pin of GPS with the pin 9 and the RX pin with the pin 10. And vcc ,GND pin with the 5v & G pin of Arduino. If the LED of GPS module starts blinking, it means the GPS module is set up.

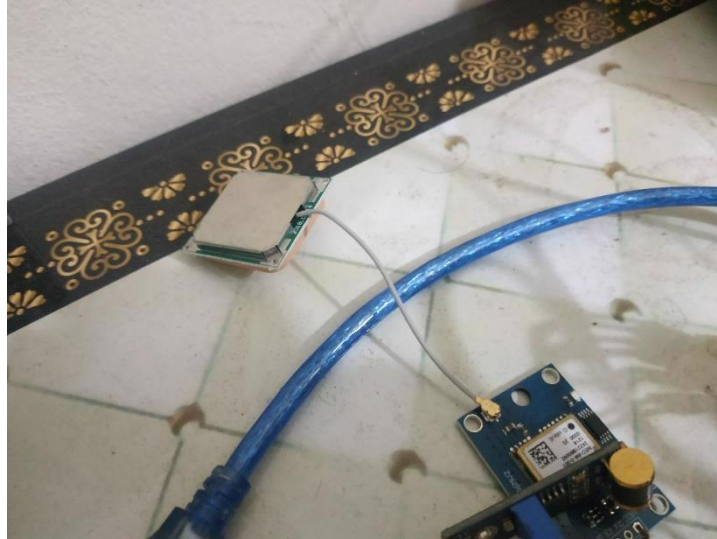


Figure 4.2: setting up the GPS module

#### 4.1.2 Connecting all the components with Arduino UNO R3

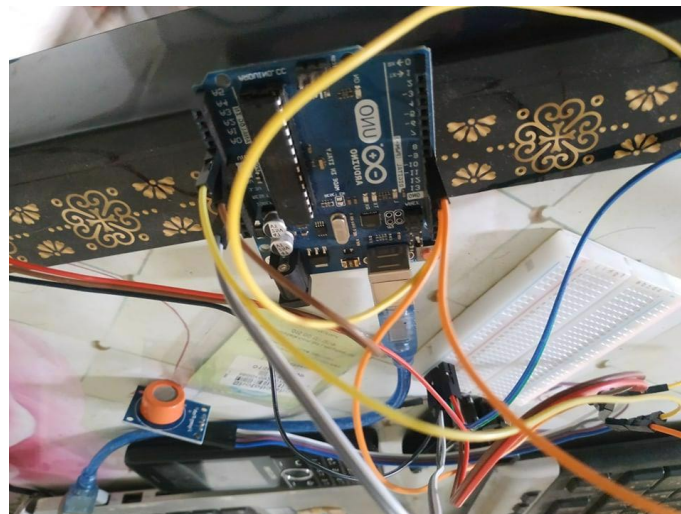


Figure 4.3 : Connecting all the components with arduino

We have to connect the "5vr" pin of GSM module with the "10" no pin of arduino and "5vt" pin of GSM module with the "9" no pin of Arduino to program the GSM module. To connect the GPS module, we have to connect the ground with arduino's ground, VCC with arduino's 3.5v pin[8]. GSM module's TX pin with arduino's D3 pin and GSM module's RX pin to arduino's D4 pin. To connect the alcohol sensor with arduino, we have to connect ground to ground, vcc to 5v, sensor's "AO" pin with arduino's "A1" pin and sensor's "DO" pin to arduino's "8" no pin[10]. Crash sensor gives analog output[9]. So we have connected the "OUT" pin of crash sensor with the "A0" pin of arduino. GPS has TX & RX pin, we have to connect the TX with arduino's pin 9 and RX with the arduino's pin 10.

## 4.2 Back-End Design

To design the back-end, we have to go through "Arduino IDE" to program all the components.

### 4.2.1 Set up GSM

Here, using the GSM module, the car owner will be able to see all the information of the car on his mobile.

```
mySerial.println("AT"); //Handshaking with SIM900
updateSerial();
mySerial.println("AT+CSQ"); //Signal quality test, value range is 0-31 , 31 is the
updateSerial();
mySerial.println("AT+CCID"); //Read SIM information to confirm whether the SIM is
updateSerial();
mySerial.println("AT+CREG?"); //Check whether it has registered in the network
updateSerial();
}
```

Figure 4.4 : setting up GSM

## 4.2.2 Set up GPS

Here we set up GPS to see the location

```
void loop()
{
  // Displays information when new sentence is available.
  while (gpsSerial.available() > 0)
    Serial.write(gpsSerial.read());
}
```

Figure 4.5 : Setting up GPS

## 4.2.3 Getting GPS Data

```
$GPGGA,044858.00,0849.53985,N,07655.78282,E,1,09,1.28,152.9,M,-95.0,M,,*74
$GPGSA,A,3,03,23,08,16,27,18,22,11,26,,,,,1.97,1.28,1.50*07
$GPGSV,4,1,16,01,13,194,,03,58,215,39,07,20,299,,08,43,142,26*7D
$GPGSV,4,2,16,09,20,331,,11,17,180,27,14,07,121,,16,36,026,28*74
$GPGSV,4,3,16,18,12,168,24,22,45,185,37,23,48,355,41,26,09,034,16*75
$GPGSV,4,4,16,27,39,096,35,28,01,218,,30,01,272,29,39,30,263,38*73
$GPGLL,0849.53985,N,07655.78282,E,044858.00,A,A*6D
$GPRMC,044859.00,A,0849.53988,N,07655.78280,E,0.044,,300319,,,A*72
$GPVTG,,T,,M,0.044,N,0.082,K,A*29
$GPGGA,044859.00,0849.53988,N,07655.78280,E,1,09,1.28,152.3,M,-95.0,M,,*70
$GPGSA,A,3,03,23,08,16,27,18,22,11,26,,,,,1.97,1.28,1.50*07
```

Figure 4.6 : Getting GPS Data

## 4.3 Implementation Requirement

- Arduino IDE



## Arduino IDE



Figure 4.7 : Arduino IDE

Arduino IDE is an free and open source paltform to program all the Arduino boards. To program an arduino based project, we have to write, compile codes on it and use this IDE to load the program on board.



## CHAPTER 5

### TESTING AND DISCUSSION

#### 5.1 Implementation of Front-End Design

Our GSM module has got network. GPS module is working. Alcohol sensor is working and also the shock sensor.



Figure 5.1 : GSM connected

#### Test result and reports

- If the car has an accident, the socker sensor will notify the car owner via SMS
- If the driver of the car drinks alcohol, the alcohol sensor will notify the car owner via SMS.
- If the car owner wants to see the location of the vehicle, then just type loc and send an SMS, the location of the vehicle can be seen through the return SMS

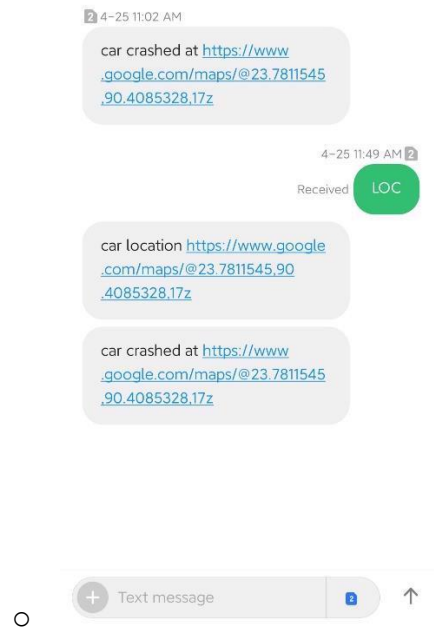


Figure 5.2 : Test results

Test Case	Result	Comment
Powering GSM module	LED blinking too fast	No network connected
Powering GSM module	LED blinks after 3 second	GSM is connected to a network
Setting the Alcohol & Shock sensor	No LED	Power supply is not connected
Setting the Alcohol & Shock sensor	LED lights up	Sensors are getting power.
Setting the GPS module	LED lights up but no data shown	GPS didn't got the location
Setting the GPS module	LED lights up and data shown	GPS got the location

Table 5.1: Test results and report

### 5.3 Final output

GPS is working perfectly and GSM module is sending SMS with location. If our demo car crashes, the device sends notification through SMS. Also the Alcohol sensor is detecting Alcohol and notifying through SMS. So we can say that, our device is working perfectly.

## **CHAPTER 6**

### **CONCLUSION AND FUTURE SCOPE**

#### **6.1 Discussion and conclusion**

GPS is working perfectly and GSM module is sending SMS with location. If our demo car crashes, the device sends notification through SMS. Also the Alcohol sensor is detecting Alcohol and notifying through SMS. So, we can say that, our device is working perfectly.

This is a proto-type project. So, this can't be implemented on real life car. What can be implemented is that, the idea. This idea can be implemented and start a production and as a product, we believe that, this will help the car owners to protect as well as monitor their cars. This would be a great relief for the car owners.

#### **6.2 Scope for Further Developments**

There's a huge scope of this project. Once if it could be implemented on real life with the real-life car-suitable sensors, it would leave a huge impact on the car as well as vehicle security industry. Currently our device works only in Car types vehicles. But in future, it may be developed for bigger vehicles like bus, truck etc. Also, there's a huge scope for adding extra features like, calling, driver's health notification etc.

## REFERENCE

- [1] Somchoke Ruengittinun, Juladis Paisalwongcharoen, Chaiwat Watcharajindasakul, "IoT solution for bad habit of car security" 2017 10th International Conference on Ubi-media Computing and Workshops (Ubi-Media) , Pattaya, 1-4 Aug. 2017
- [2] Wakana, H., Yamada, M., & Sakairi, M., "Portable Alcohol Detection System with Breath-Recognition Function". New Delhi, India, 28-31 Oct. 2018
- [3] Hironori Wakana, Masuyoshi Yamada, "Portable Alcohol Detection System for Driver Monitoring" Montreal, QC, Canada 27-30 Oct. 2019
- [4] Dhruvesh H. Patel, Parth Sadatiya, Dhruvbhai K. Patel, Prasann Barot, "IoT based Obligatory usage of Safety Equipment for Alcohol and Accident Detection", 2019 3rd International conference on Electronics, Communication and Aerospace Technology (ICECA), Coimbatore, India, 12-14 June 2019
- [5] Xin Ge , Runan Gu , Yifan Lang , Yinyue Ding, "Design of Handheld Positioning Tracker Based on GPS/GSM", 2017 IEEE 3rd Information Technology and Mechatronics Engineering Conference (ITOEC, Chongqing), 3-5 Oct. 2017
- [6] Learnt about Arduino, available at <<[https://en.wikipedia.org/wiki/Arduino\\_Uno](https://en.wikipedia.org/wiki/Arduino_Uno)>> last accessed on 09/03/2021 at 5:00 PM
- [7] Learnt about GSM module, available at <<[arduino.stackexchange.com/questions/44599/sim900a-mini-modem-imei-0-help-with-tx-rx-pins](https://arduino.stackexchange.com/questions/44599/sim900a-mini-modem-imei-0-help-with-tx-rx-pins)>> last accessed on 09/03/2021 at 6:00 PM
- [8] Learnt about GPS module, available at <<[http://wiki.sunfounder.cc/index.php?title=Ublox\\_NEO-6M\\_GPS\\_Module](http://wiki.sunfounder.cc/index.php?title=Ublox_NEO-6M_GPS_Module)>> last accessed on 15/02/2021 at 3:00 PM
- [9] Learnt about shock sensor, available at <<<https://osoyoo.com/2018/11/14/arduino-lesson-vibration-sensor-module/>>> last accessed on 07/03/2021 at 7:00 PM
- [10] Learnt about Alcohol sensor, available at <<<https://www.homemade-circuits.com/simple-alcohol-detector-meter-circuit-using-mq-3-sensor-module/>>> last accessed on 25/12/2020 at 8:30 AM

## Turnitin Originality Report

Processed on: 02-May-2021 10:46 +06  
ID: 1575616077  
Word Count: 2665  
Submitted: 1

IOT\_proj By Hasna Hena

Similarity Index		Similarity by Source	
8%		Internet Sources:	5%
		Publications:	3%
		Student Papers:	5%

2% match (student papers from 03-Nov-2019)

[Submitted to Daffodil International University on 2019-11-03](#)

1% match (Internet from 02-Apr-2021)

[http://dspace.daffodilvarsity.edu.bd:8080/bitstream/handle/123456789/5193/161-15-7166%20%2818\\_%29.pdf?isAllowed=y&sequence=1](http://dspace.daffodilvarsity.edu.bd:8080/bitstream/handle/123456789/5193/161-15-7166%20%2818_%29.pdf?isAllowed=y&sequence=1)

1% match (student papers from 02-Jul-2015)

[Submitted to IIT Delhi on 2015-07-02](#)

1% match (student papers from 14-Apr-2021)

[Submitted to Midlands State University on 2021-04-14](#)

1% match (publications)

["2020 7th International Conference on Smart Structures and Systems \(ICSSS\) - Full Conference Proceedings", 2020 7th International Conference on Smart Structures and Systems \(ICSSS\), 2020](#)

1% match (student papers from 06-Jul-2019)

[Submitted to University of Wolverhampton on 2019-07-06](#)

< 1% match (Internet from 02-Apr-2021)

<http://dspace.daffodilvarsity.edu.bd:8080/bitstream/handle/123456789/5347/172-15-9865%20%2810%25%29.pdf?isAllowed=y&sequence=1>

< 1% match (Internet from 04-May-2020)

[http://dspace.daffodilvarsity.edu.bd:8080/bitstream/handle/123456789/3791/P15056%20%2827\\_%29.pdf?isAllowed=y&sequence=1](http://dspace.daffodilvarsity.edu.bd:8080/bitstream/handle/123456789/3791/P15056%20%2827_%29.pdf?isAllowed=y&sequence=1)

< 1% match (Internet from 22-Sep-2020)

[http://dspace.daffodilvarsity.edu.bd:8080/bitstream/handle/123456789/4113/P15422%20%2826\\_%29.pdf?isAllowed=y&sequence=1](http://dspace.daffodilvarsity.edu.bd:8080/bitstream/handle/123456789/4113/P15422%20%2826_%29.pdf?isAllowed=y&sequence=1)

< 1% match (Internet from 02-Apr-2021)

<http://dspace.daffodilvarsity.edu.bd:8080/bitstream/handle/123456789/5381/172-15-9986%20%2818%25%29.pdf?isAllowed=y&sequence=1>

< 1% match (Internet from 31-Jan-2020)

<https://repositorij.unios.hr/islandora/object/etfos:886/datastream/PDF>

< 1% match (publications)

[H. S. Ayoub, Wessam M. Hussein, Y. H. Elbasha, "Investigation of automotive digital mirrors ergonomics through laser shadowgraphy and driver's real-road test questionnaire", Journal of Optics, 2021](#)

< 1% match (publications)

[Frahim Wadud Taj, Abdul Kadar Muhammad Masum, S.M Taslim Reza, Md. Kalim Amzad Chy. Iftekar Mahbub, "Automatic Accident Detection and Human Rescue System: Assistance Through Communication Technologies", 2018 International Conference on Innovations in Science, Engineering and Technology \(ICISET\), 2018](#)