A

Project Report On

"Accident Alert And Notification System"

Submitted in Partial Fulfillment of the Requirement For the

Award of Diploma of Engineering

In Computer Engineering of

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Submitted By

Neel Patel	196420307024
Aman Prajapti	196420307026
Chirag Narang	196420307015

Under The Guidance of

Mrs. Dipixa Rana

RMS Polytechnic - 642
Department of Computer Engineering
Ajwa-Nimeta Road, Vadodara
Gujarat Technological University,
Ahmedabad2018-2019

RMS POLYTECHNIC

CERTIFICATE

This is to certify that the project work embodied in this project entitled "**Accident Alert And Notification**" has been carried out by **Aman Prajapati** Enrollment No.**196420307026,Chirag Narang** Enrollment No.**196420307015**,**Neel Patel** Enrollment No.**196420307024** at **Computer Engineering Department** of **RMS Polytechnic, Vadodara** in Partial Fulfillment of Diploma degree to be awarded by Gujarat Technological University. This Project work has been carried out under my supervision and is to my satisfaction.

Date:

Place: Vadodara

Mrs. Dipixa Rana
Lecturer
Computer Engineering
Department,
RMS Polytechnic, Vadodara

Mr. Darshana Nariyawala
H.O.D,
Computer Engineering
Department,
RMS Polytechnic, Vadodara

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Aman Prajapati (196420307026)
Chirag Narang (196420307015)
Neel Patel   (196420307024)

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Abstract

Most accidents do happen on the roads nowadays due to increased traffic and also due to the driver's reckless driving.

In many cases, family members or the ambulance and police are not kept informed on time.

This results in delaying the assist provided to the injured person by accident. Road accidents are the crux of the incident.

CHAPTER 1

INTRODUCTION OF PROJECT

1.1 Introduction of Project

Our project is totally hardware based. This project will help to decrease deaths happening due to accidents.
we use Arduino , GPS and GSM . Through this it will send live location of the victim

1.2 Project Definition

Accident alert notification system take minimize the accident response time when an accident occurs and at the time of emergency responders reach the accident scene and reduce human deaths due to road accident.

1.3 Object and Scope of Project

1.3.1 Object

The project aims at finding the vehicle where it is and locating the vehicle using a computer within the vehicle system to send a message.
Our Real Time Vehicle Tracking and Accident Detection project with GPS is designed to avoid these circumstances.

1.3.2 scope

The scope of our project is to reduce the death ratio. Through GPS the live location of the accident will be sent to the police and ambulance and to the relatives of the victim so that the medical help can reach on time.

CHAPTER 2
PROJECT DESCRIPTION

2.1 Study of Problem (problem of previous project)
2.1.1 Hardware, Software & Device Requirement

2.1.2 Backend Technology

2.2 System Analysis

2.3 System Diagram
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2.1 Study of Problem

2.1.1 Hardware, Software & Device Requirement

Hardware Requirements

- Arduino UNO

- GSM sim 900c

- GPS 6MV2

- 7.4v 1A battery

- Solderless Breadboard

Software Requirements

- Arduino Software(IDE)

2.1.2 Backend Technology

C++

C++ is an object-oriented computer language created by notable computer scientist Bjorne Stroustrop as part of the evolution of the C family of languages. C++ is pronounced "see-plus-plus." It was developed as a cross-platform improvement of C to provide developers with a higher degree of control over memory and system resources.

Some call C++ "C with classes" because it introduces object-oriented programming principles, including the use of defined classes, to the C programming language framework. Over time, C++ has remained a very useful language not only in computer programming itself, but in teaching new programmers about how object-oriented programming works. However, it does not support only object-oriented, but also procedural and functional. Thanks to its high flexibility and scalability, C++ can be used to develop a broad range of software, applications, browsers, Graphical User Interfaces (GUIs), operating systems, and games.

Today C++ is still very appreciated for its notable portability which allows developers to create programs that can run on different operating systems or platforms very easily. Despite being a high-level language, since C++ is still close to C it can be used for low-level manipulation due to its close

2.2 System Analysis
GSM sim 900c-

GSM (Global System for Mobile communication) is a digital mobile network that is widely used by mobile phone users in Europe and other parts of the world. GSM uses a variation of time division multiple access (TDMA) and is the most widely used of the three digital wireless telephony technologies: TDMA, GSM and code- division multiple access (CDMA). GSM digitizes and compresses data, then sends it down a channel with two other streams of user data, each in its own time slot. It operates at either the 900 megahertz (MHz) or 1,800 MHz frequency band.

GSM, together with other technologies, is part of the evolution of wireless mobile telecommunications that includes High-Speed Circuit-Switched Data (HSCSD), General Packet Radio Service (GPRS), Enhanced Data GSM Environment (EDGE) and Universal Mobile Telecommunications Service (UMTS).

Figure 2.1 diagram of GSM

GPS 6MV2-

The **Global Positioning System (GPS)** has been developed in order to allow accurate determination of geographical locations by military and civil users. It is based on the use of satellites in Earth orbit that transmit information which allow to measure the distance between the satellites and the user. If the signals from three or more satellites are received, simple triangulation will make it possible to determine unambiguously the location of the user.

This may seem quite simple and the physical principles behind GPS are not difficult to understand. However, as is often the case, there is a long way from theory to practice.

The present GPS is based on a development programme that began in the early 1970's at the US Department of Defence. It has several components, each of which represents impressive use of current, advanced technology and mathematics.

The three main components are the GPS satellites, the GPS receivers, and the complex computer software needed to decode the signals and compute the geographical position of the user.
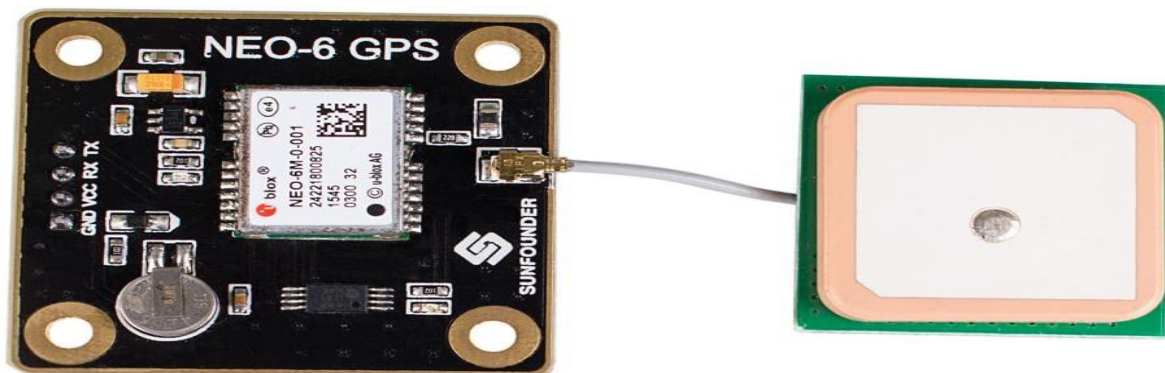

Figure 2.2 diagram of GPS

<u>7.4v 1A battery-</u>

<u>Batteries</u> are a collection of one or more cells whose chemical reactions create a flow of electrons in a circuit. All batteries are made up of three basic components: an anode (the '-' side), a cathode (the '+' side), and some kind of electrolyte (a substance that chemically reacts with the anode and cathode).

When the anode and cathode of a battery is connected to a circuit, a chemical reaction takes place between the anode and the electrolyte. This reaction causes electrons to flow through the circuit and back into the cathode where another chemical reaction takes place. When the material in the cathode or anode is consumed or no longer able to be used in the reaction, the battery is unable to produce electricity. At that point, your battery is "dead."

Batteries that must be thrown away after use are known as **primary batteries**. Batteries that can be recharged are called **secondary batteries**.

Figure 2.3 diagram of bat

Solderless Breadboard-

A breadboard is used to build and test circuits quickly before finalizing any circuit design. The breadboard has many holes into which circuit components like ICs and resistors can be inserted. The holes are most commonly spaced 0.1" apart to accommodate standard DIP components. A typical breadboard that includes top and bottom power distribution rails is shown below:

The breadboard has strips of metal sockets which run underneath the board, yellow rectangles in figure 2, and connect the groups of five holes on the board. The metal strips are arranged as shown below. Note that the top and bottom rows of holes are connected horizontally while the holes in the center sections are connected vertically.

To use the bread board, the leads of components are inserted into the holes. Each set of holes connected by a metal strip underneath forms a node. A node is a point in a circuit where two or more components are connected.
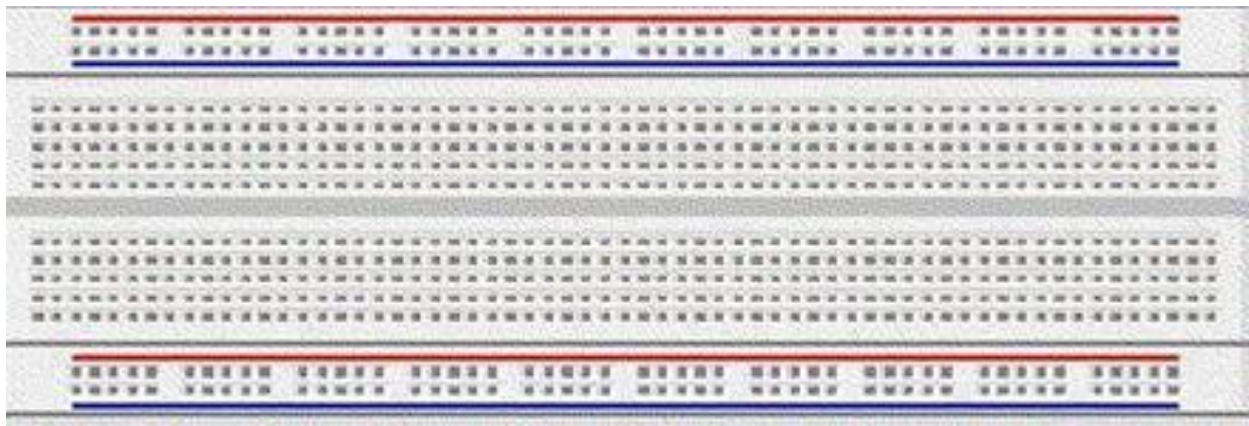

Figure 2.4 diagram of breadboard

MPU

Motion Processor (DMP) capable of processing complex 9-axis MotionFusion algorithms. To get more insights about specifications visit the MPU6050 datasheet.
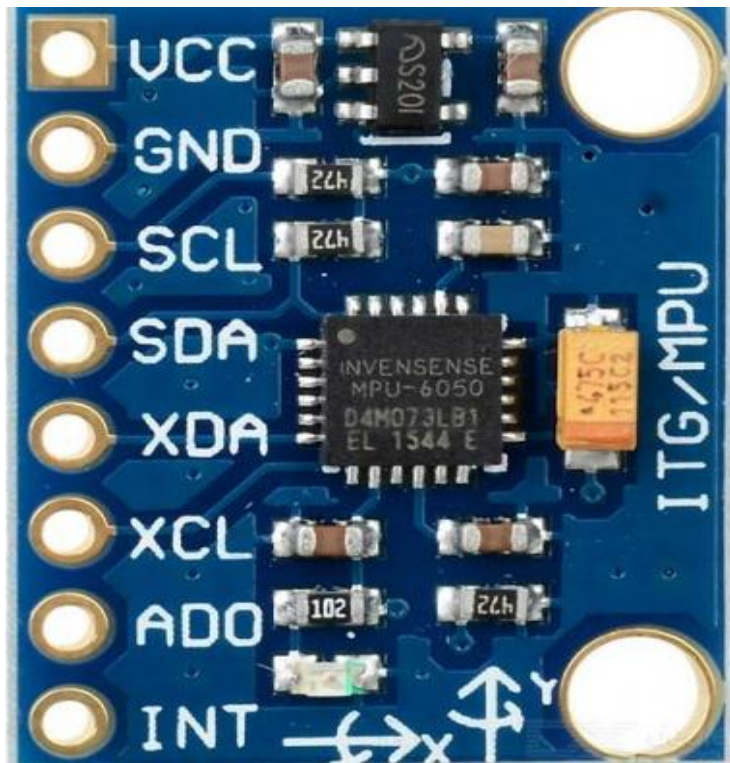
Figure 2.5 diagram of MPU

<u>Arduino UNO-</u>

Arduino is an open-source platform used for building electronics projects. Arduino 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.

The Arduino platform has become quite popular with people just starting out with electronics, and for good reason. Unlike most previous programmable circuit boards, the Arduino does not need a separate piece of hardware (called a programmer) in order to load new code onto the board -- you can simply use a USB cable. Additionally, the Arduino IDE uses a simplified version of C++, making it easier to learn to program. Finally, Arduino provides a standard form factor that breaks out the functions of the micro-controller into a more accessible package.
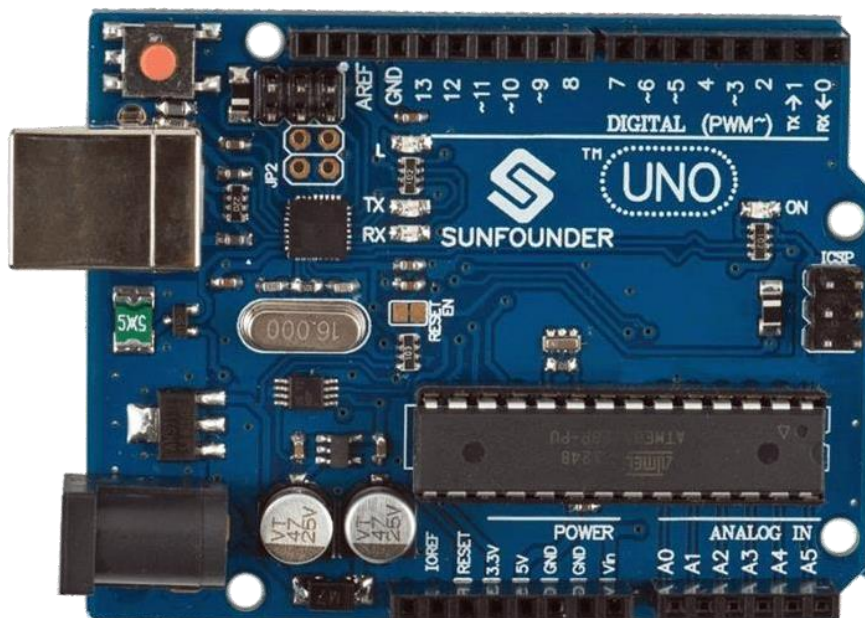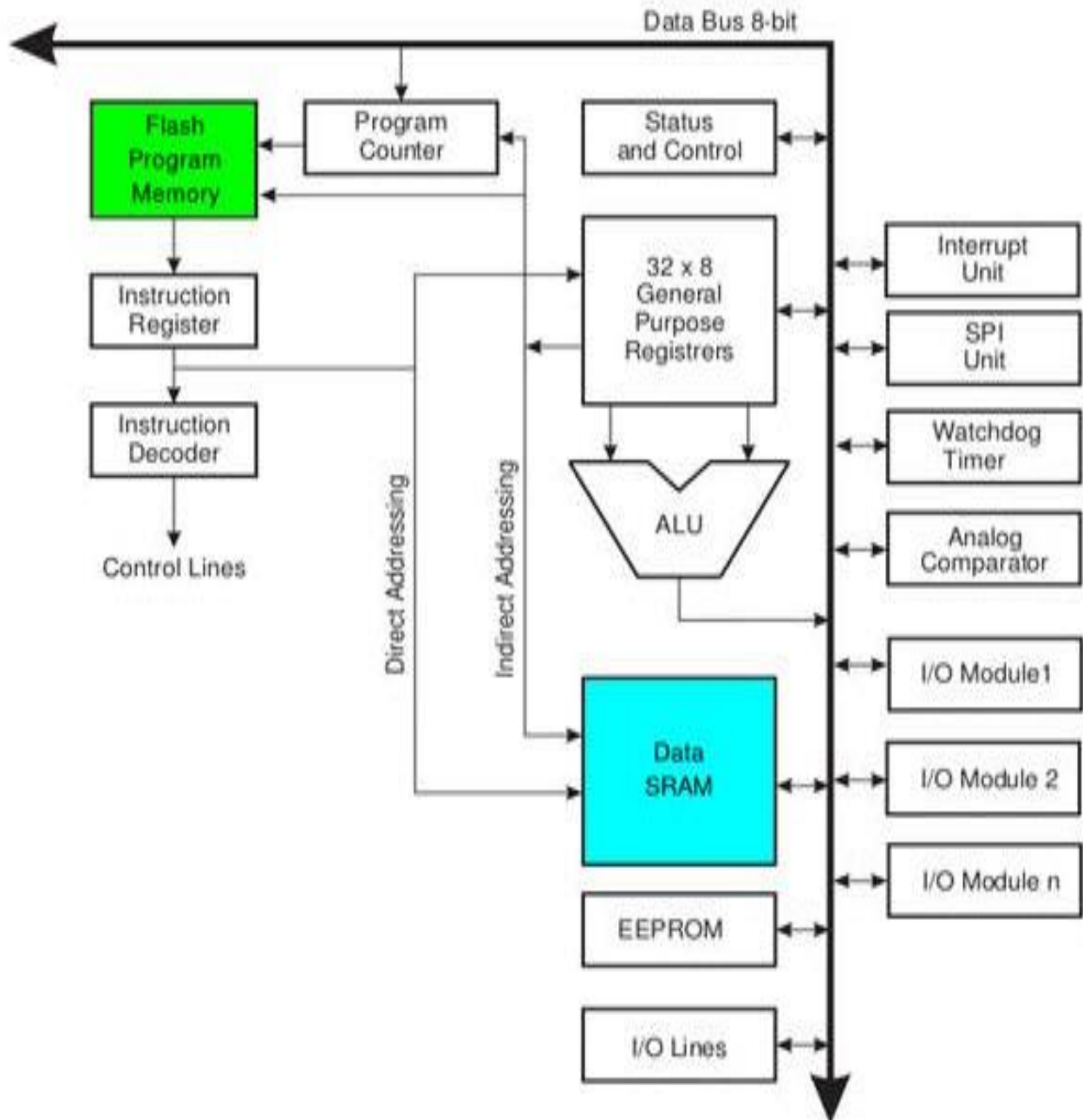
Figure 2.6 diagram of Arduino

Architecture of Arduino

Difference between Arduino and Raspberry pi

	Arduino Uno	Raspberry Pi Model B
Price	$30	$35
Size	7.6 x 1.9 x 6.4 cm	8.6cm x 5.4cm x 1.7cm
Memory	0.002MB	512MB
Clock Speed	16 MHz	700 MHz
On Board Network	None	10/100 wired Ethernet RJ45
Multitasking	No	Yes
Input voltage	7 to 12 V	5 V
Flash	32KB	SD Card (2 to 16G)
USB	One, input only	Two, peripherals OK
Operating System	None	Linux distributions
Integrated Development Environment	Arduino	Scratch, IDLE, anything with Linux support

2.3 System Diagram
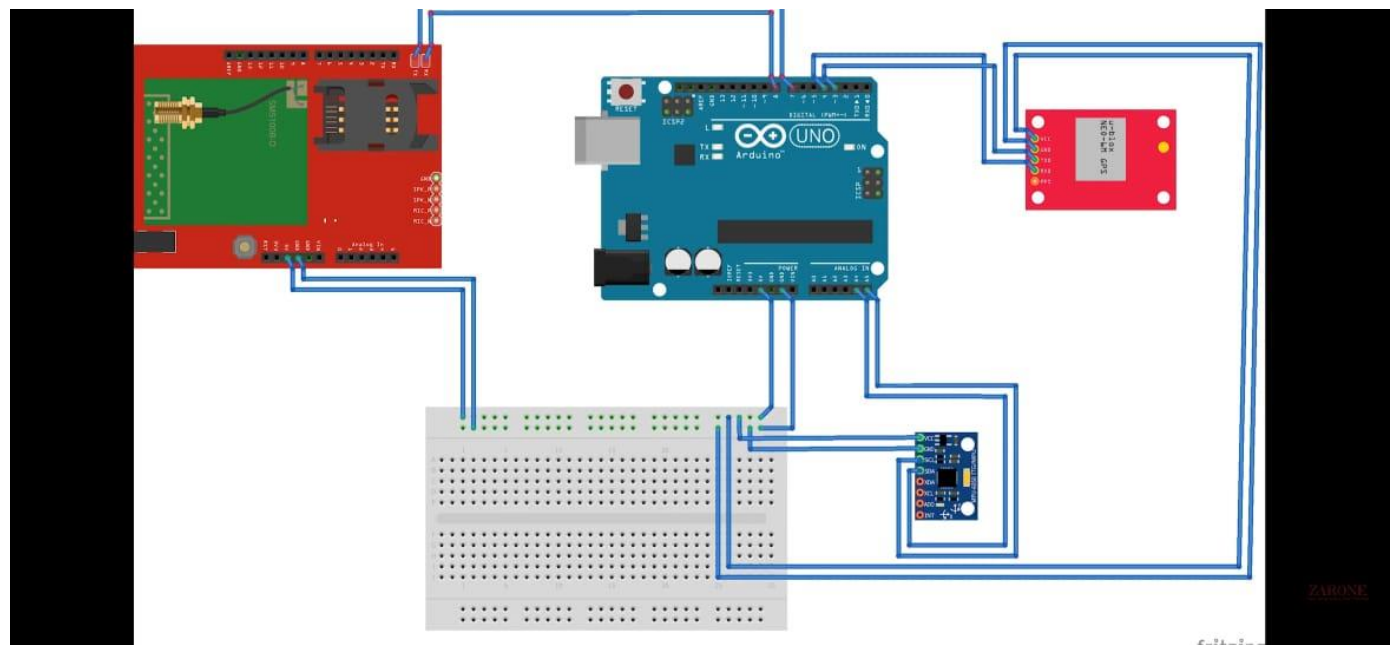2.3.1 Diagrams
2.3.2.1Circuit diagram

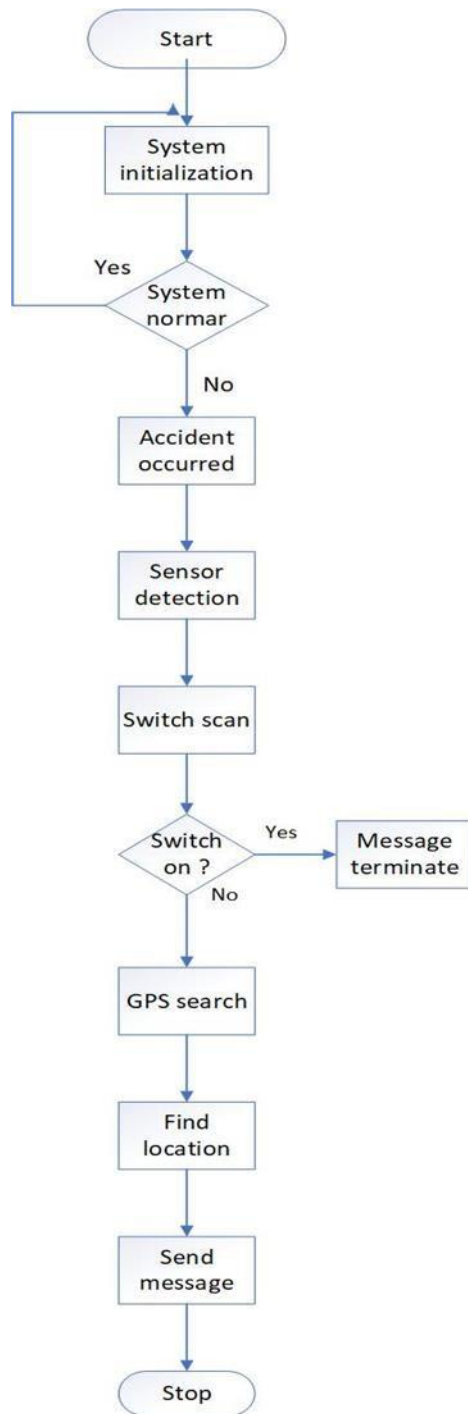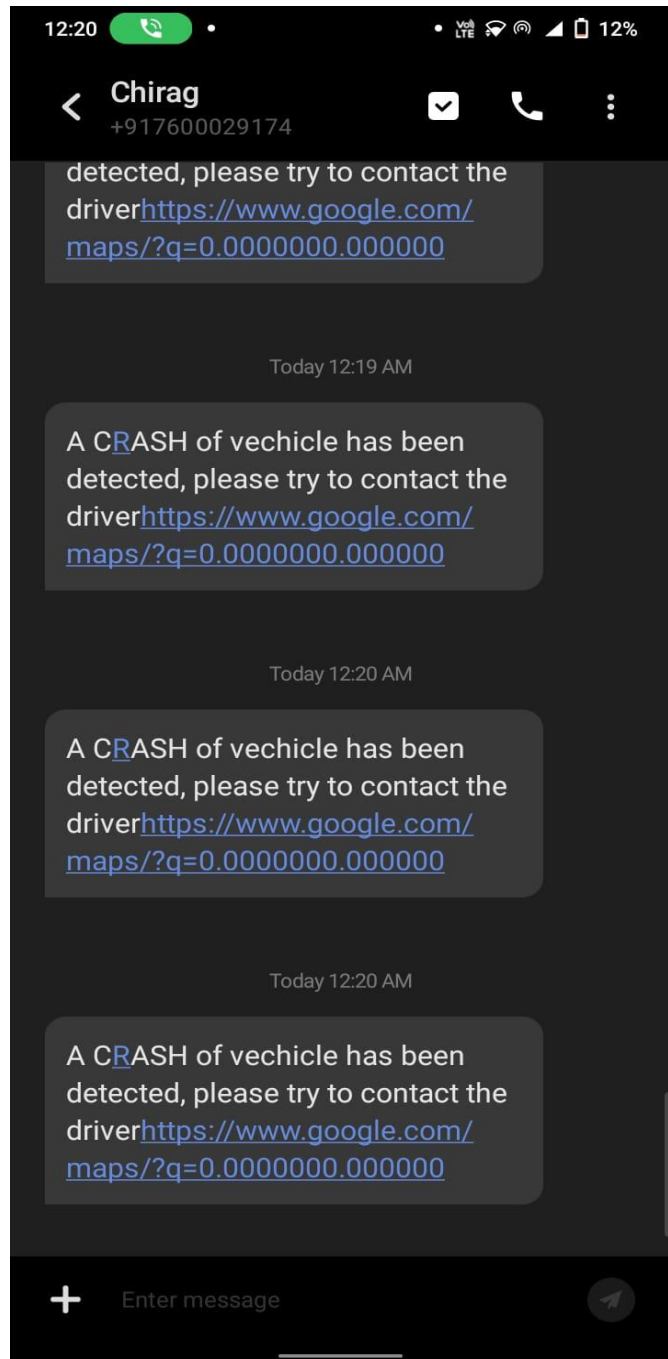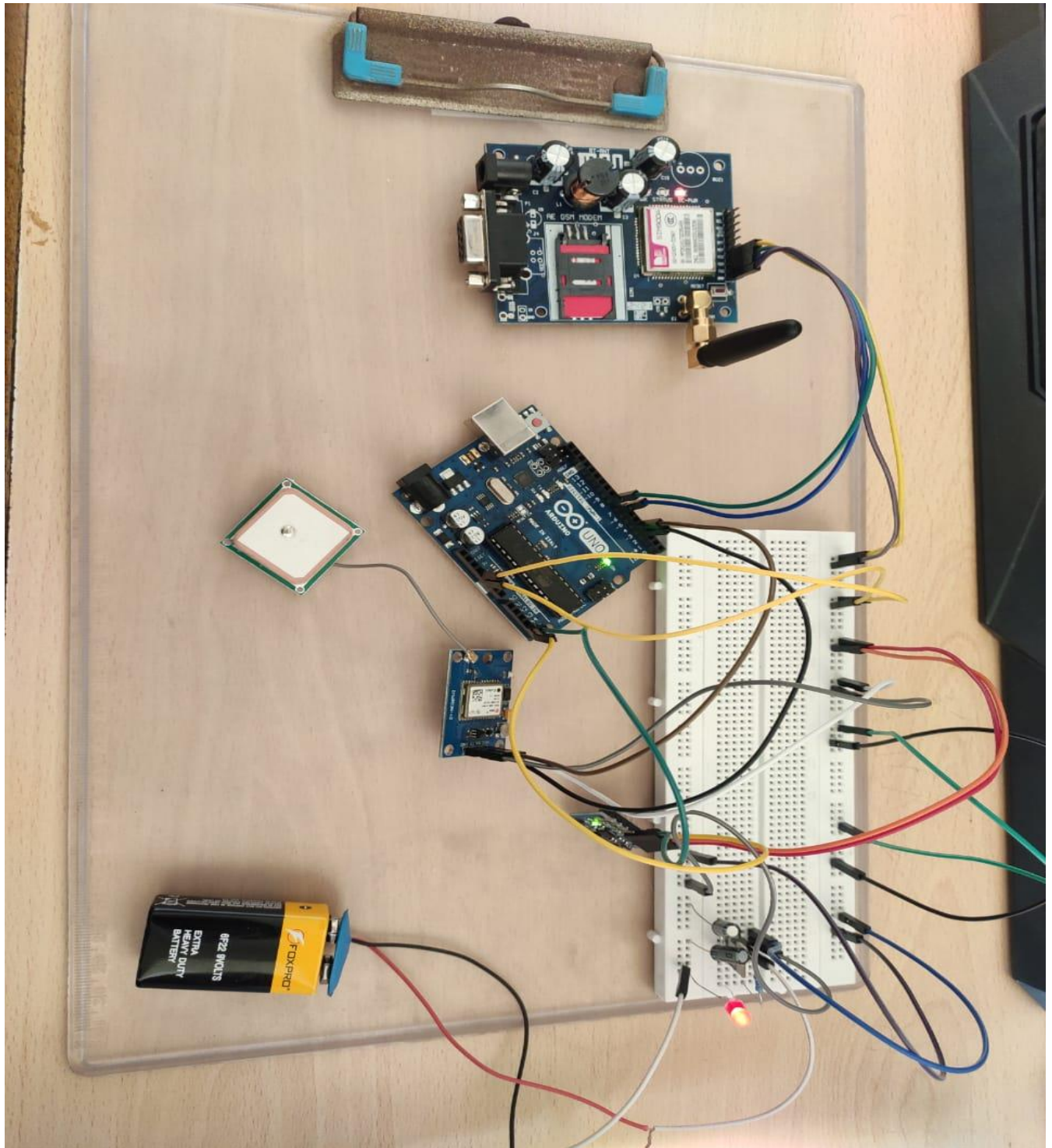Fig. 2.3.1: Circuit diagram

2.3.2.1 Flowchart

Fig. 2.3.2: Flowchart

2.4 Implementation

CHAPTER 3

3.1 ADVANTAGES & DISAVANTAGES OF PROJECT
3.2 Future work
3.3 CONCLUSION

Bibliography

3.1 ADVANTAGES & DISAVANTAGES OF PROJECT

Advantages

- Alert messages are sent to the nearby hospital and ambulance.
- It is an affordable system.
- Can be used in any kind of vehicle.
- The alert message regarding the accident is automatically sent.
- It does not need any operation manually.

Disadvantages

- No GPS signal at the time of the crash

Future work

- Alarm
- Create website

3.2 CONCLUSION

The full device configuration is installed on the target vehicle. There is one handheld GSM phone connected to the port at the other end (main vehicle station). The GPS system will transmit longitudinal and latitude values corresponding to the position of a vehicle to GSM modem when a discrepancy in the sensor occurs. Whenever the sensor shifts, the system detects vehicle accidents and sends a message via the GSM module. This message is transmitted through another module of GSM.

Google map shows the static location of the incident and its details. It receives specific SMS from where the accident happened.

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