Human Security System

Project

for

PHY 1999 Introduction to Innovative Projects

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To

Dr. Dhritiman Gupta

In

TB2 SLOT

SCHOOL OF ADVANCED SCIENCES
Project
Introduction to Innovative Projects (PHY 1999)

It is certified that the project entitled “Human Security System”
is the bonafide work for Project component of Introduction to Innovative Projects
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Of electronics communication and mechanical branch under my supervision

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INTRODUCTION:

We are in the 21st century but still bullying in schools and colleges, harassment of women remains one of the biggest problems in mankind. Students are often subjected to fall victim of bullying due to many reasons ranging from jealousy to misunderstandings, while women are often subjected to crime against them and due to this they fear going outside alone during the night. Some cities in India are so dangerous for women that every day at least one crime is reported against women.

To find a solution, within our limit we tried to make a project which will solve some of the problems for them. We tried to make a project that will be compact in size, portable in nature, easy to use and affordable for everyone. Even in this modern era women are feeling insecure to step out of their house because of increasing crimes in our country like harassment, abuse, violence etc., The corporate and IT sector are currently in boom. Many women are working in corporate even in night shifts. There is a feeling of insecurity among the working women and we through our product want to ensure their safety.

The proposed device is more like a safety system in case of emergency. This device can be fitted in a jacket or anywhere the person wants. It is an easy to carry device with more features and functions. The emergency push button is held to one of the buttons of the jacket (depends where the person fits this product). The main purpose of this device is to intimate the parents and police that the person is in danger and so that the police can track the location. A GSM modem is used to send the message to the pre-registered numbers. There are several applications that reduce the risk of sexual abuse by sending SMS.

The microcontroller acts as an embedded computing system and it controls the activities of all the subsystems. The microcontroller is interfaced with all the other modules of the device. The program for PIC microcontroller is done in Embedded C language and is dumped using a kit.

Safety nowadays is a major concern for everyone and therefore many companies are releasing products for this purpose and many may say that smartphone serves the same purpose and smartphone can be used, but we need to understand that smartphone is not affordable by everyone and our product is relatively cheaper than the cheapest smartphone available. In this case, our product has an edge over others.

We through our project model want to ensure safety anytime anywhere in a successful way. Introduction of electronic model to design our device stands to reason to ensure quickest safety possible and our aim is to make the model available to each and every one. This project model is to make sure that everyone is able to enjoy their independence and there is no stress of problem or anything.

OBJECTIVE:

- To provide reliable and affordable security system for human safety, especially women and children.

DEFINITION OF THE PROBLEM:

Nowadays bullying is a topic of great concern and our safety is always at risk. From schools to colleges, many boys and girls form their major groups and bully the once in minority. So here we come up with an idea of human security system, which will help the victim to seek immediate help. Our model will ensure their safety through passing a message to any registered number if victim is in problem, anytime, anywhere.

Methodology & Experiment

In our project, we have used an Arduino Board, a GSM board, a switch, a breadboard. Our project aims to help people in emergency situations by sending a distress message to a pre-set number in case of emergency.

Whenever the person presses the switch, a signal is generated which through the Arduino board is processed to the GSM Board which sends the message to the number which is set beforehand by that person. In such a way, the person can tell his/her relatives/friends that he/she is in danger.

Human security concept is a way to ensure a more balanced approach to security**.**This device will be of great help to all the people, considering their safety issue. The world is becoming unsafe for women in all aspects.

Now we will explain the work of each component:

1). Switch: Upon pressing this, a signal is generated which goes to the Arduino for processing.

2). Arduino UNO: It is an easy USB interface. This allows interface with USB as this is like a serial device. The chip on the board plugs straight into your USB port and supports on your computer as a virtual serial port. The benefit of this setup is that serial communication is an extremely easy protocol which is time-tested and USB makes connection with modern computers and makes it comfortable. Arduino board is basically used for communication between signal and GSM Board.

3). GSM Board: GSM BOARD is a class of wireless MODEM devices that are designed for communication of a computer with the GSM network. It requires a **SIM** card just like mobile

phones to activate communication with the network. Also they have **IMEI** (International Mobile Equipment Identity) number similar to mobile phones for their identification. A GSM MODEM is used to send, receive SMS , call. For our project, we use it for sending SMS.

4). Breadboard: This is used for making connections.

5). Sim Card: This will be installed in the GSM Board through which message will be sent.

Human Security System works on the methodology of receiving an electrical signal, processing it subsequently and sending the help message to the emergency number registered. As the switch is pressed an electrical signal is transmitted to Arduino Uno board and Arduino takes the signal, processes it and sends it further to the Global System for Mobile Communication (GSM) which is connected to Arduino through male end wires. Global System for Mobile Communication is a device which has sim slot attached in it and is used to send message electronically with the inserted sim. GSM consists of an antenna, as soon as the electrical signal is received through Arduino board, GSM sends the signal to the registered number in Arduino Uno code with help of the sim inserted in the slot.

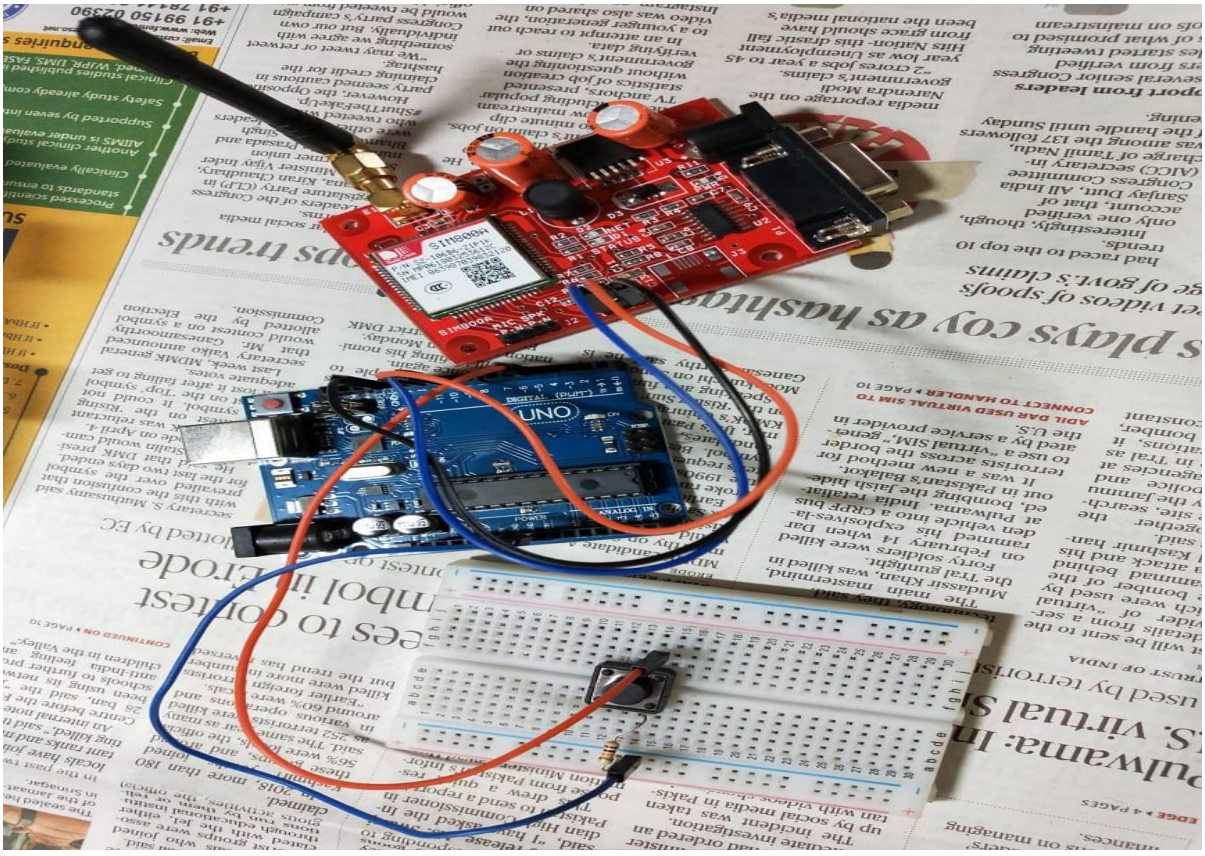
The message is sent on the principle that sim inserted in the GSM board works with the battery or adapter connected to GSM and signal is received through antenna present on the GSM board. Antenna plays a major role in detecting signal and sending message. As GSM board senses signal, the Led light present on the GSM board glows, which indicates that the board is working and is detecting signal and it is then just a matter of time as soon as switch is pressed, an emergency message is dropped to the number registered.

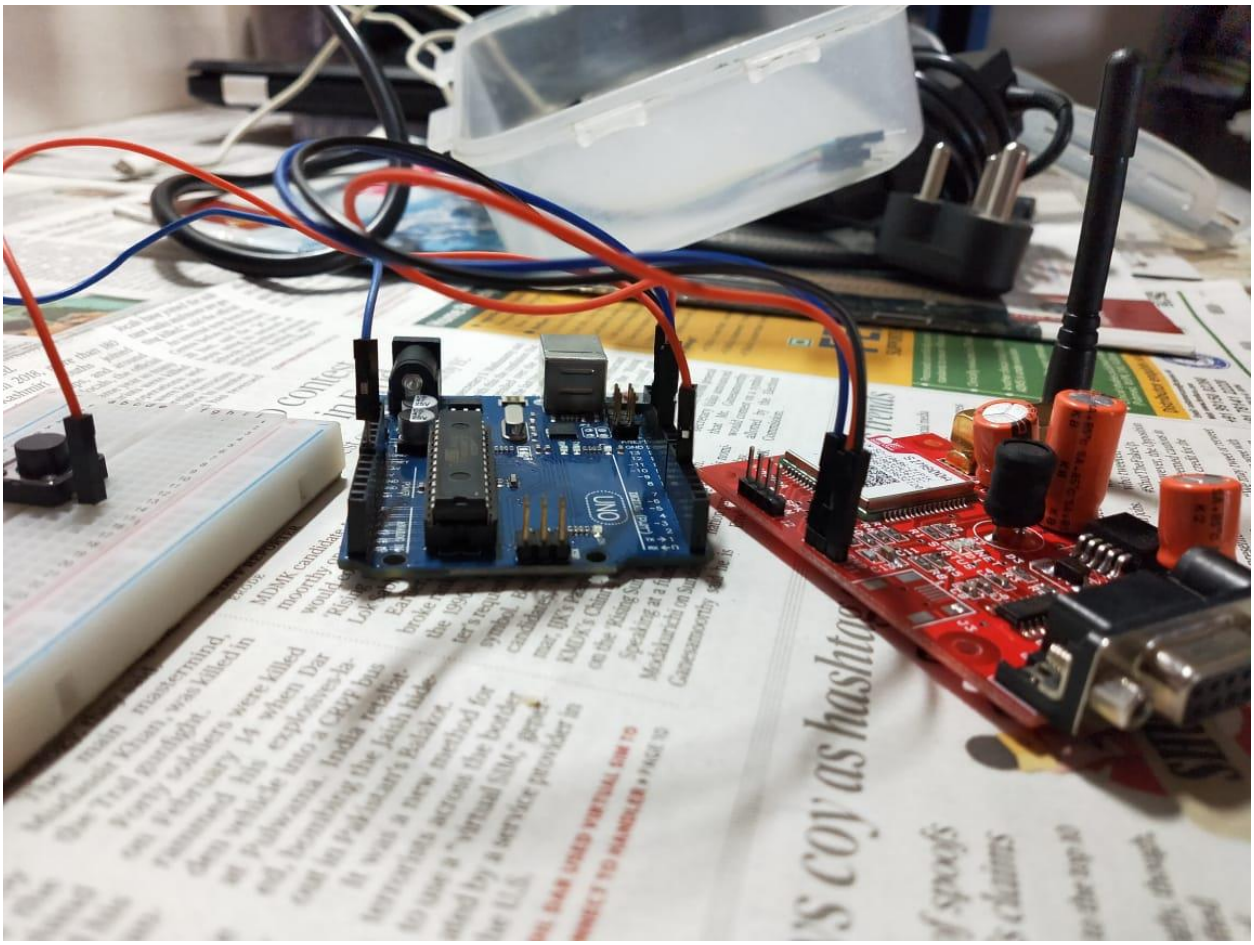
Apart from connections and sending of message, Arduino Uno coding plays another major role in the process. While experimenting the project to send message Laptop can be connected to Arduino Uno board in order to detect whether Arduino Uno board is sensing the signal or not. We can also update coding and numbers or message registered in the Arduino Uno board through coding and saving the same in the file libraries present with the initial code. Arduino Uno board is connected to Laptop through Arduino cable and then everything is connected in a complex form to receive the output message.

As soon as the switch is pressed a message is sent to the pre-registered number through sim present in GSM. Now the message will play a role to ensure safety as person receiving message can take immediate actions to help the person in problem.

Components-

Model-





SUMMARY OF THE RESULT:

Upon doing all the connections and the coding in Arduino IDE, we tested our project and it worked successfully. One of our group member sent a distress message and other group member successfully received it on his mobile.

The project used an Arduino, a switch and a GSM Board which successfully sent an emergency message as soon as the switch is pressed. With the growing market of electronic devices, our project is little contribution to ensure human safety. This also underlines the Importance of IOT(Internet Of Things) in our daily life and majorly in the security and safety of human life.

The Project is a low cost portable model; we have designed it using such components so that the cost doesn't go too high and is easily affordable by everyone.

So, we have successfully made a miniature prototype of a Human Security System, which will be of great help to all especially women, children and elderly who could use it for their safety.

PROJECT CONCLUSION:

ADVANTAGES:

1). Budget Friendly

2). Compact in Size

3). Light Weight

4). Easy to Carry

5). User Friendly

6). Portable

7). Durable

8). Multiple Numbers can be Stored

9). Requires Minimum Maintenance

10). Eco Friendly

DISADVANTAGES:

1). Occasional Sim Card Signal Strength Problem.

2). Can be damaged by Water.

3). The GSM board does not support 4G sim card as of now, due to the older technology GSM board used.

INNOVATIONS:

1). A Mic can be used as an additional security feature, so that the person can send voice recording also.

2). A GPS Modem can also be used to send the exact location of the person in emergency.

3). A Sound Buzzer can also be installed to make sound when the switch is pressed so that it alerts nearby people that someone is in danger.

4). The Device can be made waterproof to prevent it from damage against liquid.

5). A Camera can also be installed to send the live pictures.

6). A heart beat sensor can also be used to send the heartbeat of the person.

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