Smart Device based on GSM and GPS Technologies for Muliebrity Shielding

S. Kumaravel*, G. Nisha**, S. Malathi***, R. Malathy**** & K. Madhubalasree*****

*Assistant Professor, Department of Electronics and Communication Engineering, SKP Engineering College, Tamil Nadu, INDIA.
E-Mail: kumarshan.sk{at}gamil{dot}com
**UG Student, Department of Electronics and Communication Engineering, S.K.P Engineering College, Tamil Nadu, INDIA.
***UG Student, Department of Electronics and Communication Engineering, S.K.P Engineering College, Tamil Nadu, INDIA.
****UG Student, Department of Electronics and Communication Engineering, S.K.P Engineering College, Tamil Nadu, INDIA.
*****UG Student, Department of Electronics and Communication Engineering, S.K.P Engineering College, Tamil Nadu, INDIA.

***Abstract*—**In today's world, it is not safe for a person to travel alone at night especially for women; it will be high time to travel alone because a woman is not highly strong as men to protect herself from them. Social evils like molestation, sexual harassment and eve teasing security for women is still a major issue as the number of crimes over women is increasing day-by-day. In such situations, the aid of safety device that will inform the victim's family members may help women feel safer, confident and reduce the chances of harassment.

***Keywords*—**Arduino UNO; GPS; GSM; Force Sensor.

***Abbreviations*—**Global System for Mobile Communication (GSM); Global Positioning System (GPS); Universal Asynchronous Receiver / Transmitter (UART).

I. Introduction

In today's world, women come across many situations that make them feel unsafe. Women from various walks of life face situations that make them feel threatened in different environments. Sixty six percent of women have reported sexual harassment in the year 2010 in New Delhi [Jagori &UN Women, 5]. It has also been proven that in urban environments, women are more prone to experience harassment especially in developing countries. In such situations, the aid of a safety device that will inform the victim's family members or the authorities (in severe situations) may help women feel safer, confident and reduce the chances of harassment. Though there are a few Smart phone based solutions for the same, it might not be possible for the victim to reach for her phone in some situations without the knowledge of the perpetuator. Thus, there is a need to introduce a discrete safety device that can be triggered discursively without any explicit action [Akshata et al., 2].

II. Basic Concept

In the project suggests a new perspective to use technology to protect women. The system resembles a smart device which when activated, tracks the location of the victim using GPS and sends emergency messages using GSM, to three emergency contacts and the police control room [Jia Liu et al., 3]. The system also incorporates a screaming alarm to call out for help from the public [Premkumar et al., 1]. When the device is thrown with force, a force sensor used to activate the device. In emergency situation it will send the message including instant location to the police, via the transmitter module and registered numbers via a GSM module.

III. Block Diagram Implementation of the System

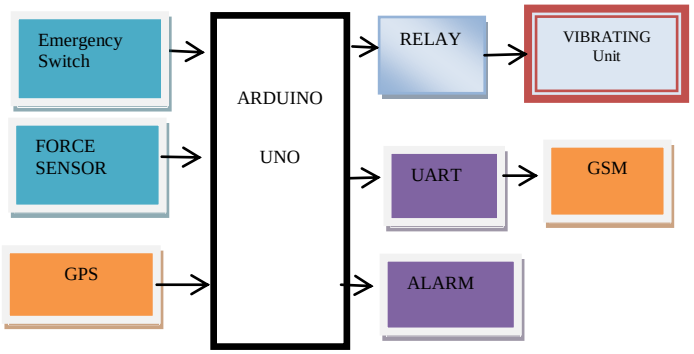

Figure 1: Block Diagram Implementation of the System

If the person is in Emergency means she can press the Emergency switch means the device will get activated automatically & immediately The location (Address) of the victim will be tracked with the help of GPS and emergency messages will be sent to contacts which we have stored

 © 2017 | Published by The Standard International Journals (The SIJ)

already and one to police control room every two minutes with updated location address through GSM Technology and the alarm unit will be activated. The vibrating unit provides current in the form of vibration so the attacker unable to function. Then the device is thrown with force, a force sensor used to activate the device. In emergency situation it will send the message including instant location to the police, via the transmitter module and registered numbers via a GSM module.

IV. MODULES DESCRIPTION

4.1. ARDUINO

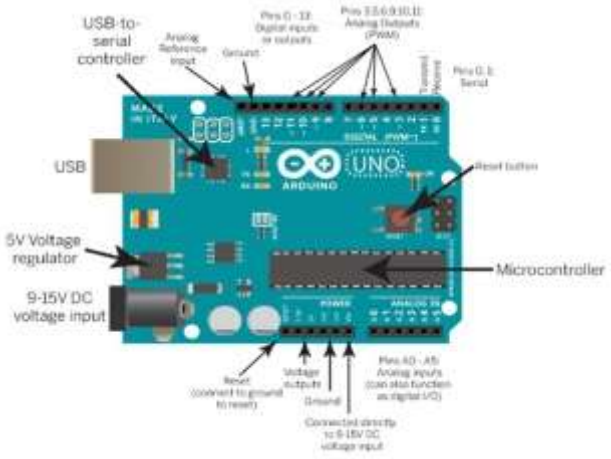

Figure 2: ARDUINO

4.2. GPS

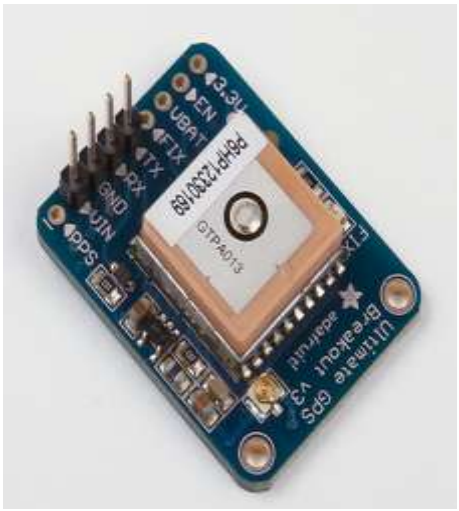

Figure 3: GPS Chip

GPS stands for Global Positioning System and was developed by the US Department of defence as a worldwide navigation and positioning facility for both military and civilian use. It is a space-based radio-navigation system consisting of 24 satellites and ground support. GPS provides users with accurate information about their position and velocity, as well as the time, anywhere in the world and in all weather conditions.

4.3. GSM

GSM is a mobile communication modem; it is stands for Global System for Mobile Communication (GSM). GSM is an open and digital cellular technology used for transmitting mobile voice and data services operates at the 850MHz, 900MHz, 1800MHz and 1900MHz frequency. The digital system has an ability to carry 64 kbps to 120 Mbps of data rates.

Figure 4: GSM Unit

4.4. Force Sensor

A force sensing resistor is a material whose resistance changes when a force or pressure is applied. They are also known as force sensitive resistor and are sometimes referred to by the initialize FSR. Force-sensing resistors consist of a conductive polymer, which changes resistance in a predictable manner following application of force to its surface. They are normally supplied as a polymer sheet or ink that can be applied by screen printing. The sensing film consists of both electrically conducting and non-conducting particles suspended in matrix.

Figure 5: Force Sensor

4.5. UART

Figure 6: UART

 © 2017 | Published by The Standard International Journals (The SIJ)

An UART, universal asynchronous receiver / transmitter is responsible for performing the main task in serial communications with computers. The device changes incoming parallel information to serial data which can be sent on a communication line. A second UART can be used to receive the information [Daniele Miorandi et al., 4]. The UART performs all the tasks, timing, parity checking, etc. needed for the communication. The only extra devices attached are line driver chips capable of transforming the TTL level signals to line voltages and vice versa. Basically UART contributes of two components viz

- Max232 Ic.
- Rs232 serial cable

V. IMPLEMENTATION

Figure 7: Implementation

If the person is in Emergency means she can press the Emergency switch means the device will get activated automatically & immediately. The location (Address) of the victim will be tracked with the help of GPS and emergency messages will be sent to contacts which we have stored already and one to police control room every two minutes with updated location address through GSM Technology.

VI. HARDWARE IMPLEMENTATION

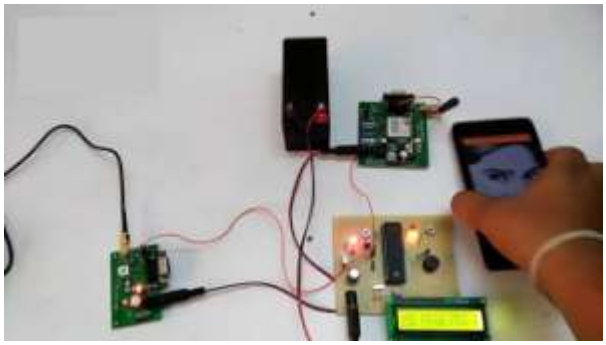

Figure 7: Hardware Implementation

VII. CONCLUSION

Our primary goal of this project is to ensure every woman in our society to feel safe and secure. Implementing real time application and a device, we can solve the problems to an extent. With further research and innovation, this project is used as a small wearable device like watch. It is use for women and children for safety purpose. Currently work is embedded like jewelleries, mobile or other carrier like belt.

REFERENCES

[1] P. Premkumar, R. CibiChakkaravarthy, M. Keerthana, R. Ravivarma & T. Sharmila (2015), "One Touch Alarm System for Women's Safety using GSM", *International Journal of Science, Technology and Management*, Vol. 7, Special Issue No. 1.

[2] V.S. Akshata, Rumana Pathan, Poornima Patil & Farjana Nadaf (2014), "B'Safe & B'Secure", *International Journal Of Core Engineering & Management (IJCEM)*, Vol. 1, No. 7.

[3] Jia Liu, Canfeng Chen, Yan Ma & Ying Xu (2013), "Energy Analysis of Device Discovery for Bluetooth Low Energy", *IEEE Vehicular Technology Conference*, Pp. 1–5.

[4] Daniele Miorandi, Sabrina Sicari, Francesco De Pellegrini & Imrich Chlamtac (2012), "Internet of Things: Vision, Applications and Research Challenges", *International Journal of Ad Hoc Networks*, Vol. 10, No. 7, Pp. 1497–1516.

[5] Jagori & UN Women (2011), "Report of the Baseline Survey Delhi 2010", *Safe Cities Free of Violence Against Women and Girls Initiative*.