

Smart Device to Protect Women from Dangerous Situations



Manikanta K B, Yathish D P, K N Bhanutheja, Brahmanand S. H

Abstract: India is a country which is having more youth man power. If we want our country to be a developed one we need to utilize both man and women resource also [2]. In order to achieve this both men and women should be treated equally without any gender discriminations. In order to achieve this we need to provide security for women who is working in late nights and travelling alone for home in order to prevent them from rapes and molestations. If any kind of molestations and rapes happen means it will going to be international news. Because of this entire government and whole country will put into shame. As women's are going out for work and there are coming to home lately security for them from rapes and molestation plays a vital role in this security. We have to design a device to prevent this for some amount of time so that she can at least escape from that critical life threatening situation because always no one can able to monitor or can stay with her [2]. In order to achieve this we are designing a device that will going to use stun gun to generate small amount of electric shock so that it can make any person to be unconscious for some amount of time as well with the help of this device when she press stun gun it will going to trigger the Arduino [7] so that with the help of GSM [9] and GPS module [8] present in the device we can share the current location of the women in danger an alert message to the predefined users so that we can help the women in no time.

Keywords: Arduino Uno, GSM module, GPS module, Stun gun

I. INTRODUCTION

India is one country where we will used to compare women to god but because of some misbehavior of some bad peoples women's are facing the safety issues. As women also working equivalent to men she also used to work till late night in some companies this is the reason why women need security. If some rapes and molestations happen means this will create huge shame for the whole country [2]. So in this paper we are developing a device which will going to give protection to women and it is portable too. In this paper we are proposing device which will help the women when she is in danger.

Revised Manuscript Received on April 30, 2020.

* Correspondence Author

Mr. Manikanta K B*, Assistant Professor, Department of Computer Science and Engineering, GITAM (Deemed to be University, Bangalore, India.

Mr. Yathish. D. P., Assistant Professor, Department of Computer Science and Engineering, School of Technology, GITAM (Deemed to be University), Bangalore, India.

Ms. KN Bhanutheja, Firmware Engineer, Department of Computer Science and Engineering, Folsom, California City, USA.

Dr. Brahmanand S. H., Professor and Head of Department, Department of Computer Science and Engineering, GITAM School of Technology, Bengaluru, Karnataka, India.

© The Authors. Published by Blue Eyes Intelligence Engineering and Sciences Publication (BEIESP). This is an [open access](http://creativecommons.org/licenses/by-nc-nd/4.0/) article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

If the women feel she is in danger then she will use the device. The device consists of two buttons one is for powering the device and the other one is to generate the trigger to Arduino [7]. If women is in danger means she will press these two buttons in the device, upon pressing these buttons three actions will going to takes place in that first action is generating mild current shock from electric stun gun which can make the person unconscious for few minutes and second action is to send the trigger to the Arduino Uno [7] which is having AT MEGA 328 as microcontroller, so that Arduino will going to activate the GPS module [8] and GSM module [9] present in the device with the help of GPS [8] and GSM module [9] we can able to send the alert message to predefined user and with exact location of the women in danger so that we can able to rescue her from life threatening cases and final action is to activate the buzzer which makes alert sound so that she can get some help from peoples situated near to her. If a woman does not want to inform this situation to predefined users means she will press only power button which will only generate mild current shock so that it will make that man unconscious and if she want to inform to predefined members means then she will press trigger button which in turn will trigger the Arduino [7] to activate GPS [8] and GSM module [9] in order to send the alert message as well as to send the location of women in danger.

II. LITERATURE SURVEY

In [1] the author is designing a device which will be fitted to the public transport vehicles like cars, busses and taxi. If the women are not inside the vehicle the system fails to give security to her. As the driver is aware of this device fitted to the vehicle he can drag her out and he can misbehave, in this case this system fails to give safety and if any misbehavior happens outside just we can able to track her but we cannot protect her from any attacks.

In [3] author is designing a wearable safety device which will track the temperature and pulse of the women. If any abnormal found in temperature and pulse it will automatically send the message and will generate alarm. The main drawback of this paper is that wearable device cannot be used by women daily and if the women is in outskirts or no man land means generation of alarm from the device will not create any effect and it won't help her in security.

In [6] author is proposing smart footwear to protect her from any molestation or rapes. The main disadvantage of this model is she cannot wear same footwear daily, in turn the footwear is not providing any self-defense mechanism inside the system.

Smart Device to Protect Women from Dangerous Situations

It only sends only, messages, but by the time someone reaches there some disaster might occur.

In [10] the author is designing a smart band which will track pulse as well as heart rate of the women, if he found variation in pulse/heart rate the device will send an alert message to nearby police station. The main draw back here is if women run also both temperature and pulse rate increases at that time also it will send alert message and buzzer which leads to misuse of the system.

In [4] the author is designing a smart band which tracks different reactions like anger, fear and anxiety, if variations are there it will send the alert message with location to nearby police station. The main disadvantage of this scheme is they are not specifying any emergency actions for self-defense of the women in danger. In [5] author is creating a smart wearable ring, if women feels she is in danger she can press the button in the ring to activate system, then system captures the image of culprit and sends message to police station. The main draw back in this paper is author is not specifying self-defense system in case of emergency or threat so she cannot prevent molestation in this model.

III. SYSTEM ARCHITECTURE

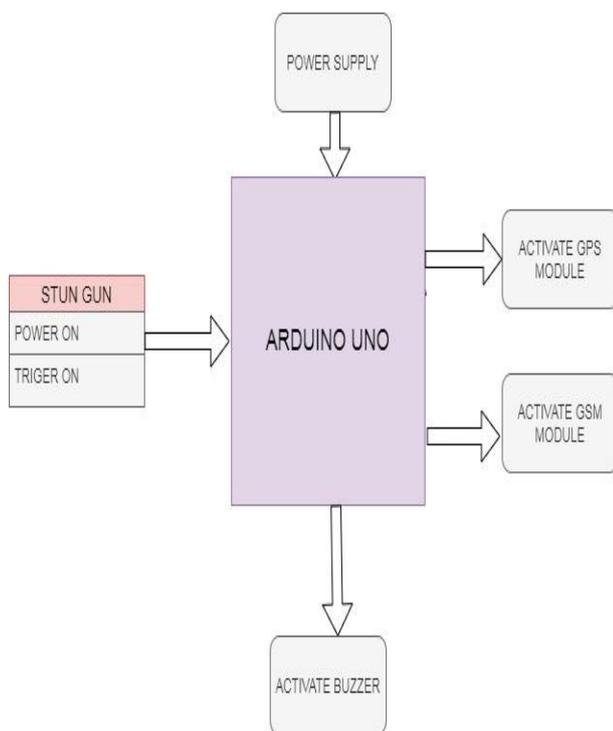


Figure 1: System Architecture

Figure 1 shows system architecture we are using Arduino UNO [7] as a development board which is having ATmega 328 as a microcontroller. Arduino UNO will be connected to GPS module [8] and GSM module [9] in order to get the exact location of women in danger and to send the alert messages to predefined users along with the location of the women who is in danger which has been generated by GPS module [8]. The working of this system or device will start from activation of electric stun gun. If women feel she is in danger then she will going to press the power and trigger

button in the electric stun gun which will going to trigger the Arduino and it will going to generate mild electric current which is sufficient enough to make a person unconscious for few minutes. In addition to this the trigger which has been generated by the stun gun makes the Arduino [7] to activate the GPS and GSM module which will going to send the exact location of the women in danger with an alert message for the predefined user so that she can be rescued from the life threatening situations with this it also activates the buzzer which will makes an alert sound so that the peoples situated near to her can rescue her from dangerous situations and in turn we can save our country from getting ashamed in front of other countries due to misbehavior of some different kind of peoples.

IV. WORK FLOW

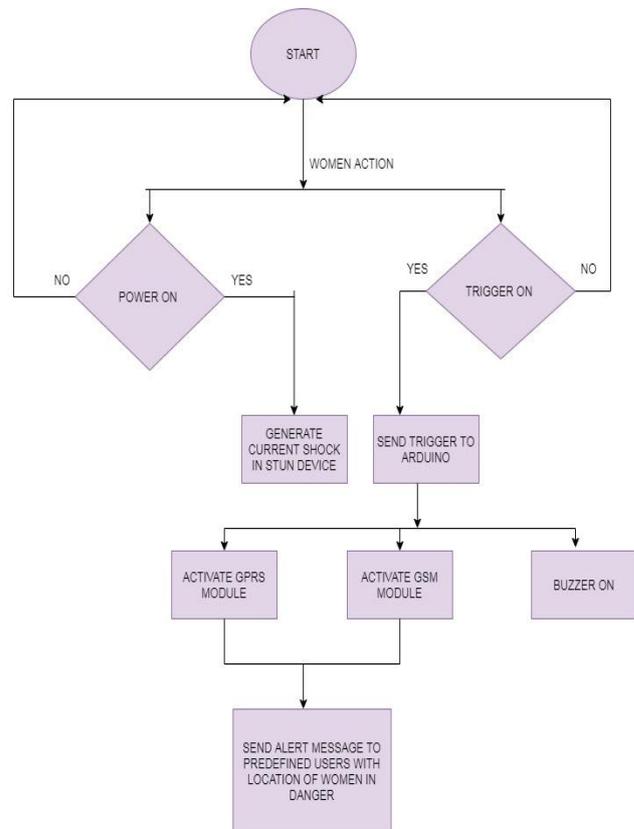


Figure 2: Work flow of the proposed system

Figure 2 shows the work flow of the proposed system. The system will be in the idle state till women presses the power and trigger button. Once women feel she is in danger she will press the power button and trigger button which in turn generates mild current shock from the electric stun gun and pressing trigger button will trigger the Arduino in turn it will activate the GPS module [8] which is used to track the location of the women in danger then it will activate GSM module [9] through which we will be sending the alert message with the location generated by the GPS module [8] to predefined members so that we can alert them in order to know that she is danger and finally with these two action

Arduino also activate the buzzer which will make loud alert sound so that the peoples near her can get to know about danger so that they may help her to come out from these dangerous situations like molestation and rapes.

A. METHODOLOGY

The electric stun gun which is used in this system has two buttons.

First button is to turn electric stun gun on so that it can generate current shock and the second button is to generate the trigger for the Arduino [7] so that it will activate buzzer, GPS and GSM modules.

i. Micro Controller.

In this system we are using ATMEGA 328 mounted on Arduino Uno. The main functions of this microcontroller are:

1. To receive the trigger generated from the electric stun gun.
2. To activate GPS module [8] in order to trace the location of the women in danger.
3. To activate the GSM module [9] which is used to send the alert message with location generated from GPS to predefined members.
4. To turn on the buzzer in order to make an alert sound to help the women in danger.

ii. Power Supply.

In this system we are using lithium Ion rechargeable batteries to give power supply for electric stun gun as well as for the Arduino [7] components which includes GSM module as well as GPS module and a Buzzer.

iii. Arduino IDE.

In order to develop this system we are using Arduino IDE as the platform. We are using Embedded C as the coding language. With the help of this Arduino IDE we are dumping the code into the microcontroller present in the Arduino UNO [7] board.

iv. GPS Module.

In this proposed system we are using SIM 28ML as GPS module [8] which will be activated by the Arduino on getting trigger from the electric stun gun, we are using GPS module [8] to get the current location of the women in danger.

v. GSM Module.

In this system we are making use of SIM 800A [9] as a GSM module which will be triggered by the Arduino for its functioning, in this paper we are using GSM module to send the alert message with location generated by GPS module [8] for predefined members in order to alert them about dangerous situation of the women.

V. RESULT

The result of the system shown in table I depends on whether women pressed power and trigger button or not .If she press power on and trigger button the device will generate current shock as a self-defense action and then it will trigger the Arduino [7] to send both location of women in danger with

an alert message to predefined members.

TABLE I: RESULT

STATE OF POWER & TRIGGER BUTTON	ACTION TAKEN
ON	ACTIVATE STUN GUN TO GENERATE LECTRIC SHOCK & SENDS RIGGERS TO ARDUINO TO SEND MESSAGE AND LOCATION
OFF	SYSTEM WILL BE IN IDEL STATE

VI. CONCLUSION

As women are also working equal to men in current era and they are also working both in day as well as night shifts in the office by the time they reach home it will be very late. As they are leaving office in odd time the main issue they are facing is security from molestation and rapes. In this paper we are proposing a device which is capable of providing both self-defenses to women in danger as well as to alert the members like family friends or police. In order to achieve this we are using an electric stun gun to generate electric shock to the attacker so that she can defend herself from life threatening attacks as well as the device is capable of sending an alert message with current location of women in danger to alert the family members or any predefined members so that they can rescue her. The system is capable of generating an alert buzzer also to alert the peoples near her in order to seek help from them.

REFERENCES

1. Smart Electronic System for Women Safety by S Shambhavi1, M Nagaraja1, M.Z Kurian1 Department of Electronics and Communication, Sri Siddhartha Institute of Technology, Tumakuru, India, *INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH IN ELECTRICAL, ELECTRONICS, INSTRUMENTATION AND CONTROL ENGINEERING* Vol. 4, Issue 3, March 2016.
2. <https://economictimes.indiatimes.com/blogs/et-editorials/womens-safety-as-task-of-democracy/>
3. **Smart Solution for Women Safety Using IOT** by M. Banumathi1, K. Devi1, S. Indumathi1, T. Ishwariya1, R. Saranya2, Dr. N. Suguna UG Scholar, 2Assistant Professor, 3Professor Department of Computer Science and Engineering, Akshaya College of Engineering and Technology, Coimbatore, Tamil Nadu, India.
4. Smart Security Solution for Women based on Internet Of Things(IOT) by G C Harikiran, Karthik Menasinkai, Suhas Shirol, International Conference on Electrical, Electronics, and Optimization Techniques (ICEEOT) – 2016.
5. SMARISA: A Raspberry Pi based Smart Ring for Women Safety Using IoT by Navya R Sogi, Priya Chatterjee, Nethra U, IEEE Xplore Compliant Part Number:CFP18N67-ART; ISBN:978-1-5386-2456-2.
6. Smart Foot Device for Women Safety by Nandita Viswanath, Naga Vaishnavi Pakyala, Dr. G. Muneeswari, 2016 IEEE Region 10 Symposium (TENSYP), Bali, Indonesia.
7. About Arduino Uno and its working: https://en.wikipedia.org/wiki/Arduino_Uno.
8. About GPS Module:<https://www.indiamart.com/proddetail/sim28m-gps-receiver-8311736491.html>
9. About GSM Module : <http://positrontech.in/eshop/product/sim-800a-gsm-gprs-power-supply/>
10. A personal stun- A smart device for women’s safety by Shivani Ahir, Smit Kapadia, Prof. Jigar Chauhan, Prof. Nidhi Sanghavi



AUTHORS PROFILE



Mr. Manikanta K B is currently working as an assistant professor in GITAM (Deemed to be University), Bengaluru. He is having 4.5 years of experience in teaching field and 2 years' experience in IT field . Previously he was working in BITIT. He did MTech at HKBKCE, Bengaluru in the year 2014 and BE at NCET, Bengaluru in the year 2011. He worked as a data analyst and system admin in Manastha solutions and dimension data respectively. He has published 5 research papers in UGC journal. He is very much interested to research in areas like cloud computing, IOT, machine learning and artificial intelligence.



Mr. Yathish. D. P is currently associated with GITAM (Deemed to be University) as Assistant professor in Computer Science and Engineering Department, School of Technology, Bangalore. He has B.Tech degree in Computer Science and Engineering from Channabasaweshwara Institute of Technology, Gubbi, Tumakuru and M.Tech in Computer Science and Engineering from Siddaganga Institute of Technology, Tumakuru. He has professional experience of Three years of teaching. His areas of interest are Compiler Design, Formal Language and Automata Theory, Software Engineering, Artificial Intelligence and applications, Machine Learning, Web Technology and its real time applications, Programing Language and Pragmatics, Operating Systems Robotics, Internet of Things and Sensor Guided Robotics.



Ms. KN Bhanutheja , currently working as a Firmware Engineer, Intel corporation, FOLSOM, CALIFORNIA CITY , USA. She did MS in University of Texas at Arlington ,USA in the year 2018 and BE in Sri Venkateswara College of engineering Bengaluru in the year 2018. She has 1.9 years of experience as a firmware engineer. She also worked as an intern in intel corporation, Folsom , USA for 6 months . Her areas of interest are Computer Networks, Software Engineering, Artificial Intelligence and applications, Data mining and Data Warehouse, Computer Organization and Architecture, Machine Learning, Real Time Systems, Programing Language and Pragmatics, Operating Systems Robotics, Internet of Things and Sensor Guided Robotics.



Dr. Brahmanand S. H., Professor and Head of Dept. CSE GITAM School of Technology, Bengaluru, Karnataka, India. I have also published article under reputed journals and some of them are lies under Scopus which have been identified by Elsevier Scopus among them "Review of Resource allocation in fog computing", "A Survey in IOT cyber-attacks and deep learning assistance that can be used to detect the attacks". And so on. The Research interest area is Cyber Security.