

Enhancement of Women Safety using RASPBERRY PI



B.Aarthy, M.Abirami, R.Sangeetha Shorubha, N.Sri Alamelu Mangai, L.Kalaivani, M.Gengaraj

Abstract: : In recent days, kids and women safe is primary issue of our country. Most of crime happen due to lack of information. We have to find the solution for this problem. So, we design a portable device to rescue the victim from the danger, which is the venture of the idea of our project [1]. It can be activated by user by pressing push button and camera will capture the image of attacker and it also fetch the current location through GPS. The collected information will send as message to predefined contact and police via phone [2]. The concept was awake against crimes for women in India.

Keywords : Raspberrypi, Global Positioning System(GPS) Women Safety, Location enhancement.

I. INTRODUCTION

In recent years, women’s are continuously facing various threats such as abusing and brutal problems and being treated as victims. We are in need to ensure the safety of women. The ideal system was a portable device [3]. This project is concentrating on the security system of the women’s by means of providing a secured environment to them. The objective of this project is to create a portable safety device for women's. We are mainly creating a ideal model for the device that can be easy to carry anywhere. Safety of women in world has become a major issue in the world [4]. Nowadays women’s are undergoing various immoral activities. The devices which is used for the safety of the women’s will be enhanced as mobile apps for their convenience. Our project gives solution to one such issue. Alerts family and friends by sending emergency message and captures the images/video of the attacker to maintain proof for legal actions [5]. It consists of Pushbutton, when it is pressed, the device will get activated automatically within a fraction of seconds. Immediately the location of the injured person will be tracked and messages will be sent to an emergency contact.

II. PROPOSED SYSTEM

The security device is in the form of a button. If they are in emergency situation, they have to press the button and it leads to alerting contacts such as the selected family member or friend as well as the police [6]. This device is embedded with a GPS system that is used to track the location of the victim by sending messages to their selected contacts. The device will empowered with the camera which will capture images based on the user’s provoke and these images will be sent to the emergency mail. Figures which are show below represents the block diagram of the system to be implemented [7]. The corresponding signal will be received when the button get pressed and which will activate the GSM module will be triggered to send the location which is tracked by GPS and the image will be send to emergency Mail.

III. BLOCK DIAGRAM

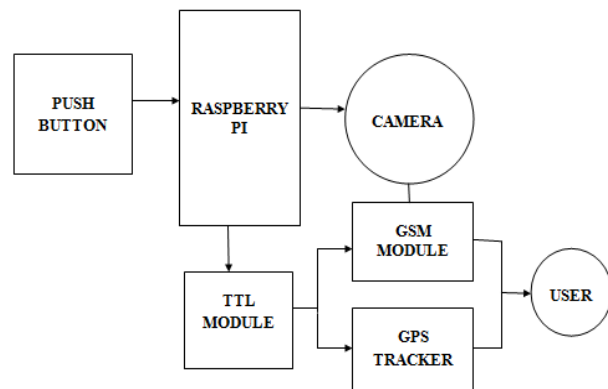


Fig. 1. Proposed model

Our initial step is to track the location which is the crucial part of this project and it helps to find the way of victim [8]. Tracked location will send us message to update the position of victim to the police and emergency contact.

The GPS (Position tracking system) starts function by pressing the pushbutton. GSM(global system for mobile) is used to transmit the information by SMS using AT command. Image is captured by button-spy camera through push button. After pressing the pushbutton, it sends the signal to raspberrypi to get activate. The camera image is also sent as message. At the first trigger we will fetch the location [9]. If the user is in critical situation (or) any emergency purpose it should help. It is prototype and easily carriable device to help the girls from social evils. In block diagram, TTL module should act bridge between GSM and GPS.

Revised Manuscript Received on May 30, 2020.

* Correspondence Author

B.Aarthy, *, Final year Departement, National Engineering College, Kovilpatti. Email: 1613075@nec.edu.in

Gengaraj.M, EEE Department, National Engineering College, Kovilpatti, India., Email: gengarajm@gmail.com

Dr.Kalaivani.L, EEE Department, National Engineering College, Kovilpatti, India. Email: anuprakad@gmail.com

M.Abirami, Departement, National Engineering College, Kovilpatti.

R.Sangeetha Shorubha, Departement, National Engineering College, Kovilpatti.

N.Sri alamelu mangai Departement, National Engineering College, Kovilpatti.

© 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/>)

IV. CIRCUIT DIAGRAM AND ITS COMPONENTS

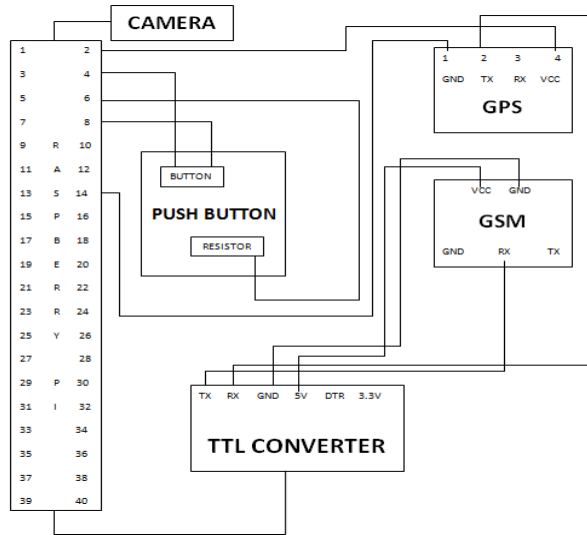


Fig. 2. Circuit Diagram of Proposed Method

Raspberry pi has 40 pins. Its 4th and 8th pin was connected to pushbutton and 6th pin is connected with resistor in it.

GPS has 4 pins namely GND, Tx, Rx, VCC. GND pin is connected with 14th pin of Raspberry pi. It gets its Vcc supply from 2nd pin. Tx(Transmitter pin) is connected with Rx(receiver pin) of TTL converter.

TTL converter has 6 pins. It gets supply from Vcc pin of GSM. GND of TTL converter is connected with GND of GSM. Tx pin connected with Rx of GSM.

A. RASPBERRY PI 3

The Raspberry pi is a similar to computer that run on Linux, python programming but it also provides a set of GPIO pins are the general purpose of input and output for wide range usages. The pin found on an integrated circuits that does not have an particular functions. The most of the pins have a dedicated idea, such as sending a signal to the particular component. In Raspberry pi 3 using microprocessor Broadcom 2837 64-bit Quad-core processor is there.

The pi 3 processor operating voltage is about 3.3 Volt. The raw Voltage input is a maximum of 5 Volt and the current source up to 2Amps. In Raspberry pi 3 pins consume the current totally 54 milli-amps. But in each pin employs the current up to 16 milli-amps. The pi 3 accommodates the SSD memory card its storage about 16 giga-byte [11]. The clock frequency is about 1.2 giga-hertz. The internal RAM of the processor is 1 giga-byte. It has 5 to 3.3 Volt power sources.

The Raspberry pi 3 consists of the UART interface, SPI interface, TWI interface. The UART (Universal Asynchronous Receiver Transmitter) as communication interface (RDX, TXD) All the input and output pins are often used as an external interrupt. The optimum temperature is -40°C to +85°C. The main application of Raspberry pi 3 is print server, security monitoring, web camera, gaming etc.,

B. GSM (Global System for Mobile)

GSM could be a mobile communication modem; it stands for a worldwide system for mobile communication (GSM). A GSM digitizes and reduces the information, then sends it down through a channel with two completely

different streams of client information, every in its own specific interval. The SIM900 could be a complete Quad-band GSM resolution in associate SMT module which will be embedded within the customer applications [12]. Featuring an industry-standard interface, the SIM900 delivers GSM 850/900/1800/1900MHz performance for voice, SMS, Data, and Fax in an exceedingly small form factor and with low power consumption. These module provide GSM powered by power supply and communication interface.

The interface likely RS-232, USB 2.0 and others. A GSM modem is a wireless device which can be either a mobile phone or a modem device which can be used to make a computer to communicate over a network. The modem needs a sim card to be working under a particular range accepted by the network receiver.

It can be connected to a computer through a serial, USB or Bluetooth connection. Global system for mobile communication uses a combination of Time Division Multiple Access(TDMA) and Frequency Division Multiple Access(FDMA).

The GSM-900 and GSM-1800 are the most widely used frequency bandwidth in different globes, Moreover, the function of the modem is to receive the data by the receiver at a certain signal based on the subscribers. It include several alternative custom application, machine automation, machine to machine communication.

C. GPS (Global Positioning System)

GPS signals are already very weak after they reach the Earth’s surface. By the time the GPS signals reach the receiver they are typically as weak as -130dBm (-160dBW). This is often well below the thermal amplitude. Standard GPS receivers (e. TIM-4A) integrate the received GPS signals for up to 20ms. This leads to the flexibility track signals right down to about -150dBm (-180dBW).

High Sensitivity GPS receivers are ready to integrate the incoming signals for much longer than this and might, therefore run down to levels approaching -160dBm. High Sensitivity GPS can provide positioning in many but not all indoor locations. Signals are either heavily attenuated by the building materials or reflected in as multipath. High Sensitivity GPS Receivers can even compensate for the performance deficits of smaller antennas [13].

For Standard GPS Receivers, signal reflections and multipath effects are undesirable phenomena. Indoor GPS reception, however, must - besides the direct line-of-sight signal depend upon reflected GPS signals so as to receive a sufficient number of satellites to calculate positions. Since reflections increase the propagation delays, the positioning accuracy will obviously decrease [14].

Good High Sensitivity GPS Receivers like Super Sense will tune their multipath suppression in such the way that multipath is suppressed on channels with strong signals so as to realize excellent accuracy whereas it accepts all signals just in case of poor reception so as to produce an optimal GPS receiver.

D.Enhancement Working

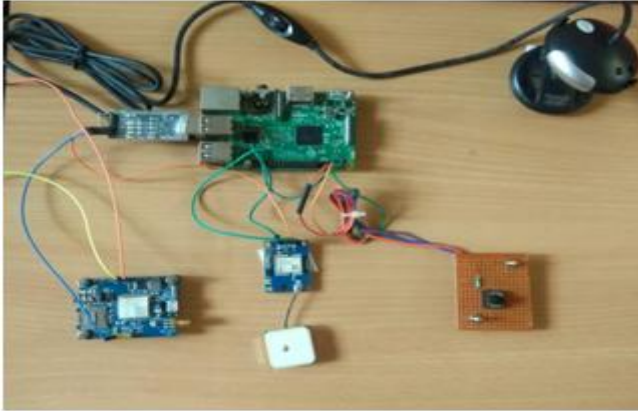


Fig. 3.Hardware Setup

The device is turned ON manually by the woman, when switch is pressed in particular abuse.

The Raspberry pi will get activated when it receives signal from pushbutton.

It triggers the camera to capture the image and GPS tracks the location and GSM module will sent the image and location will be sent as message to the respective person.

Here, TTL module will be operated as a bridge for GSM module and GPS. It also shares the data between the GSM and GPS.

The captured image and location will be sent to emergency contact and emergency mail in your phone and police, via the smart phone.

V. RESULT AND DISCUSSION

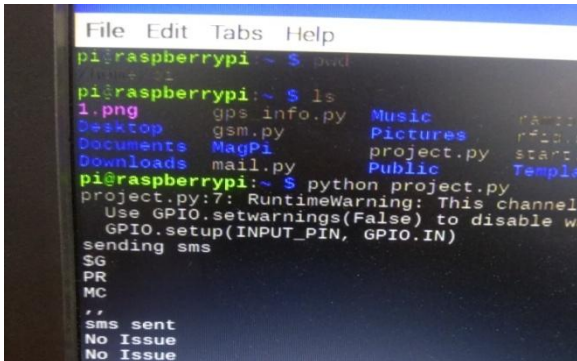


Fig. 4.Intimation of setup

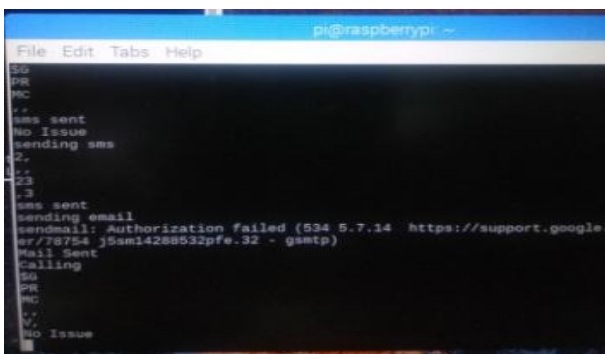


Fig. 5.Intimation of E-Mail

A. Location Send mode:

Location Mode, it is triggered by the push button, it takes a fraction of seconds to send message to the emergency

contacts [15]. The message hold a link, when we click the link that describes the location of the person directly from the google maps which will send to the predefined contacts.

B. Calling mode:

When calling mode is triggered by pressing the push button, call will sent to the predefined contact within 4 seconds. Thus, the success of this mode depends on the availability of the predefined contact.

VI. CONCLUSION

Our work to give a compact device provide the advantage of security purpose for the emergency situation which is helpful for women a critical time. It is economical benefit able and it can send the information of the user to predefined emergency contacts. By pressing a button the above process was held and it helps to improve the women safety.

REFERENCES

1. Sriranjini R1, "GPS and GSM Based Self Defense System for Women Safety", Journal of Electrical & Electronic Systems, 2017, 6:2 DOI: 10.4172/2332-0796.1000233.
2. C Harikiran, G & Menasinkai, Karthik & Shirol, Suhas. (2016)." Smart security solution for women based on Internet Of Things(IOT)". 3551-3554. 10.1109/ICEEOT.2016.7755365.
3. M. Pramod, Ch V. Uday Bhaskar and K. Shikha."Iot wearable device for the safety and security of women and girl child". Volume 9, Issue 1, January 2018, pp. 83–88, Article ID:IJMET_09_01_010.
4. B.Chougula, "Smart girls security system," International Journal of Application or Innovation in Engineering & Management, Volume 3, Issue 4, April 2014.
5. A.H.Ansari, BalsarfPratiksha P, MaghadeTejal R, YelmameSnehal M, "Women Security System using GSM & GPS", International Journal of Innovative Research in Science, Engineering and Technology", Vol.6, Issue 3, March 2017.
6. TruptiRajendraShimpi, "Tracking and Security System for Women's using GPS & GSM, International Research Journal of Engineering and Technology (IRJET), Volume: 04 Issue:07 | July-2017.
7. GeethaPratyushaMiriyaala, P.V.V.N.D.P Sunil, RamyaSreeYadlapalli, Vasantha Rama Lakshmi Pasam, TejawiKondapalli, AnushaMiriyaala, "Smart Intelligent Security System for Women", International Journal of Electronics and Communication Engineering & Technology (IJECET), Volume 7, Issue 2, March-April 2016.
8. A.Helen,M.FathimaFathila,R.Rijwana,Kalaiselvi V.K.G,"A Smart Watch for Women Security based on IoT Concept",2nd International Conference on Computing and Communications Technologies(ICCT),23-24 Feb 2017,Chennai,India.
9. NishantBhardwaj,NitishAggarwal,"Design and Development of "Suraksha"-A Women Safety Device,International Journal of Information & Computation Technology,Volume: 4,pp. 787-792. AkashMoodbidri,HamidShahnasser,"Child Safety Wearable Device",International Conference on Information Networking (ICOIN),11-13 Jan,2017,Da Nang,Vietnam.
10. RaviSekharYarrabothu,BramarambikaThota,"Abhaya: An Android App for the Safety of Women", India Conference (INDICON), 17-20 Dec 2015, New Delhi, India.
11. Akash Moodbidri and Hamid Shahnasser, Child Safety Wearable Device, IEEE paper, 2017.
12. D. G. Monisha1, M. Monisha, G. Pavithra and R. Subhashini, Women Safety Device and Application- FEMME, a paper in Indian Journal of Science and Technology, Vol 9(10), March 2016.
13. Ms.Shubhangi.P.Mankar, Ms.MonaliPawar, and Ms.Manisha Shinde, Child Tracking System based on GPS System, a paper in International Journal on Recent and Innovation Trends in Computing and Communication, vol. 4.
14. Geetha Pratyusha Miriyala, Smart Intelligent Security System For Women, International Journal of Electronics and Communication Engineering & Technology (IJECET), Volume 7, Issue 2, March-April 2016.



AUTHORS PROFILE



M.Abirami, is doing her UG in Electrical and Electronics Engineering in National Engineering College, Kovilpatti. Her area of interest was women safety



B.Aarthy, is doing her UG in Electrical and Electronics Engineering in National Engineering College, Kovilpatti. Her area of interest was Child safety



R.Sangeetha Shorubha, is doing her UG in Electrical and Electronics Engineering in National Engineering College, Kovilpatti. Her area of interest was Raspberry Bi



N.Srialamelu Mangai, is doing her UG in Electrical and Electronics Engineering in National Engineering College, Kovilpatti. Her area of interest IOT



M.Gengaraj, Pursuing his doctorate degree in Electrical Engineering from Anna University, Chennai. Presently, he working as an Assistant Professor in EEE department, National Engineering College, kovilpatti, Tamilnadu.. He has five international conferences publications and one international journal publications. His research exposure in the field of Raspberry and IOT



Dr.L.Kalaivani, obtained her Ph.D. degree in Information and Communication Engineering from Anna University, Chennai, Tamilnadu, India. Presently, she working as a Professor in EEE department, National Engineering College, kovilpatti, Tamilnadu, India. She is an active member of various professional bodies and arranged varied funded workshops and seminars. She played as

Co-Investigator and completed one DRDO funded project. She has wide publications in SCI, Scopus indexed Journals & Conferences. She is an expert member in NBA and enhances the TLP. Her research interests include industrial drives and intelligent techniques.