GPS Based Self Protection System for Women

DR. SAIDAIAH BANDI[1], M. SAI NATH CHOWDARY[2], N. NAGA MANIKANTA[3], M. VINAY KUMAR[4], P. DINESH[5]

[1, 2, 3, 4, 5] *Department of Electronics and Communication Engineering, Vasireddy Venkatadri Institute of Technology, Nambur, Guntur, Andhra Pradesh, India*

Abstract- ***Women in the society are facing lot of problems and only thought that haunts in everyone mind is about their safety which means when they will walk on road even late nights without any fear. Daily we have seen more number of cases in which women is suffered even though we have acts to protect women. This incident is also increasing day by day in all over the world. To avoid this, the only thing is to take self care and precautions by using electric gadget with the help of concept of internet of things. It is very helpful for the women if those gadget works based on gesture control. Some gadget have already come into existence such as push button controlled women safety system, Mobile app controlled Women safety system. But these systems have some drawbacks as they cannot be used by the persons when cannot move their hands, and mobile phones thrown away from victim. Therefore, to overcome those, we propose GPS based self protection system for women. In this we can use raspberry pi, GPS module, Gesture control, buzzer. Here we are controlling smart gadget with the help of gesture control. It is a signed control in which we can detect exact location as well as we are storing langitude and latitude values in cloud with the help of GPS module and send this values through E-mail, Message to recipient and also alerts the people near the location by activating buzzer.***

Indexed Terms- ***Protection, Safety, Raspberry pi, Gesture Control, Location, Internet of things.***

I. INTRODUCTION

Women safety is a major problem in our life. It is a situation where a women can't move in odd hours. Some major incidents can also cause the people to get paralyzed. Several methods have come up to help the women to protect from this problem. Some devices operated with push button is not efficient why because when the women is enable to press push button totally it fails. In addition to this some devices based with mobile apps have been proposed already, but these systems are less accurate which may doesn't work if the phone is thrown away from victim. So, gps based self-protection system for women have come into existence. This system improves real time monitoring by using Internet of things. It can be used by women with their hands. Independently. The main motto of the proposed system is to avoid draw backs in existing system. Here we have used a concept of Internet of things by providing cloud access to the user and E-mail alert to the user. Both E-mail and message alert is given to nearer police station and parents of victim with exact latitude and longitude values. In this we uses raspberry pi, python software for easy understanding and gps module consisting of patch antenna, buzzer for alert.

II. LITERATURE SURVEY

There are many existing systems that are in existence to help the women for their safety. Some of those existing systems helped us to get an idea for gps based self-protection system for women. Some of the works that were carried out previously are:

A. Push button based self-protection system for women– The device is controlled based on push button it tracks exact location with the help of GPS receiver and send the values to police station. Here for sending SMS they uses GSM module. It has certain drawbacks such as push button, no access to cloud , real time monitoring is not possible and accuracy is less in these systems.[3]

B. Mobile app based system for women safety - Here mobile app is used to protect women. The limitation of this device is that it operates only with the help of mobile otherwise no use if it is thrown away from victim. There is lack of cloud access also.[4]

C. Micro controller based women safety system - In micro controller programming is very difficult and

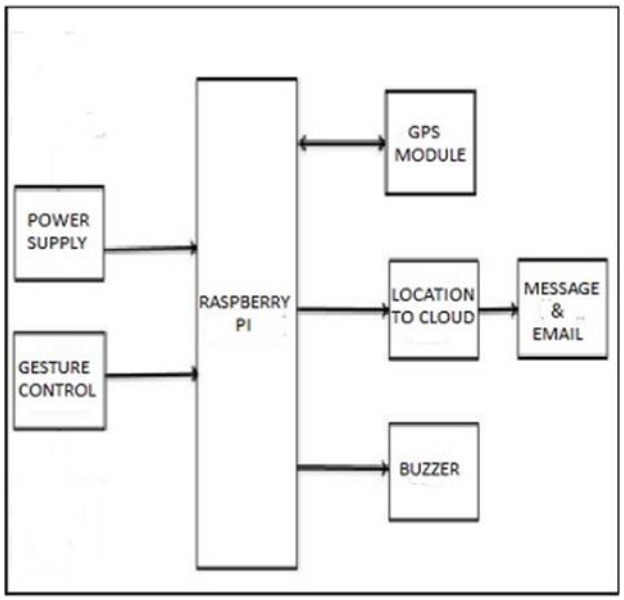
interfacing components is also hard. It is uncomfortable and it doesn't have email alert and cloud[2]

D. Smart device for women safety- These are proposed to locate exact position of women and sends alert to police station. [1]

All these works influenced us to work on gps based self-protection system for women with gesture control, gps module. Both latitude and longitude values are also stored in thing speak cloud. We can access it at any place with respect to time and date it can gives information and send email and message alerts.

III. SYSTEM OVERVIEW

A. Block Diagram



B. Hardware Description

1. Raspberry Pi:

Raspberry pi is the key component tin the project. It is a mini computer which is operated based on Linux. The operating system used in raspberry is called Raspbian. Here instructions are written in python language. Raspberry pi consists of set of GPIO pins, vcc and ground pins. In this GPIO pins are used to send the signals to the GPS module based on gesture control with the help of hands and the gesture sign designed by the user.

2. Gesture Control:

In this we can use a jumper wires to make a gesture control. We have taken vcc pin and two Gpio pins if two GPIO gets contact with vcc it sends a signal to raspberry and gps module is activated and waiting to receive location from satellite with the help of patch antenna.

3. GPS Module:

The GPS receiver gets a signal from each GPS satellite with the help of receiver antenna. The satellites transmits the exact time and location the signals are send by them. By subtracting the time. The signals was transmitted from the time when they was received, the GPS tell us how far it is from other satellite. The GPS receiver also knows the exact position in the sky of the satellites, at the moment when they send their signals.

So given the travel time of the GPS signals from three satellites and their exact position in the sky, the GPS receiver can determine your position in three dimensions - east, north and altitude.

4. Buzzer:

Buzzer is an electric device, used to alert the user. Here we used a buzzer to indicate the people that women is in danger even in darkness.

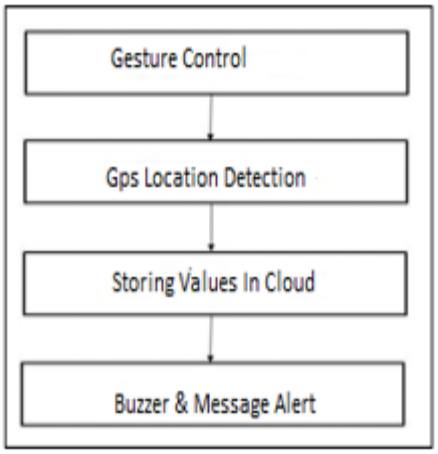
C. Software Description

1. Python Software:

Python is an high level programming language it is used for general purpose programming. It is mostly used for operating systems. The code written in python is easily understand by the programmer. It can be used to build various projects with the help of raspberry pi such as sending and receiving data, monitoring world, controlling devices.

IV. DESIGN METHODOLOGY

Design methodology consists of four steps such as gesture control, Gps location detection, storing values in cloud, buzzer & message alert.



A. Gesture control:
For using gesture control here we consider one VCC and two GPIO pins. These pins are attached to glove. Initially GPIO pins are low and VCC having 5v which is continuously flowing through it. We can consider one particular sign as gesture. When GPIO pins and VCC are get in contact GPIO pins gets high and 5v is continuously flowing in it. If all the pins are high then GPS receiver receives the location with the help of patch antenna

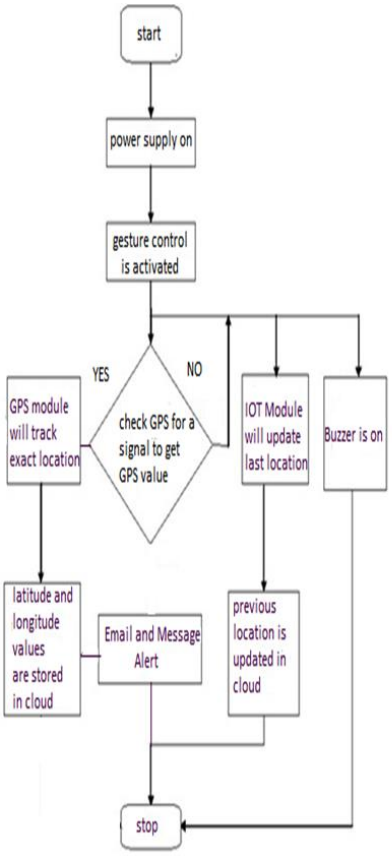
B. GPS location detection:
Global Positioning System device used for tracking. A GPS tracking system, might be placed in a moving car, on a mobile, or on any devices, which can either be a fixed at one place or movable. GPS provides information on exact location. It can also detect the movement of a car or a bus or a person. Here we can use this to get both latitude and longitude values of exact location of victim.

GPS gives satellite signals, which was processed by a receiver. These GPS receivers not only track the exact location but can also tracks velocity and time. The positions can even be compute in three-dimensional views with the help of four GPS satellite signals. The Space Segment of the Global Positioning System consists of 27 Earth-orbiting GPS satellites. There are 24 operational and 3 extra satellites that move round the Earth each 12 hours and send radio signals from space that are received by the GPS receiver.

C. Storing values in cloud:
Cloud is a storage platform. We can access cloud at anywhere in the world. We can able to store large amount of data in cloud. Different service providers are there for cloud in that amazon, oracle are popular. But here we use things speak cloud for storing latitude and longitude values. We can store exact location of victim. We can analyse the values at anywhere with respect to time and date. We can also monitor previous values at any time with the help of cloud. It helps a lot for police to monitor the present location and situation of victim and protect women easily. Things speak provide free access to students we can create more number of channels for monitoring. Here we create two channels one for latitude and another for longitude values. Cloud has API keys in that there are both read key and write key. Read key is used to read values from cloud and write key is used to post the values in to cloud. But here we use Write key and urlib library for posting values in thing speak cloud with respect to time and date.

D. E-mail and Message Alert:
Both latitude and longitude values are send to parents and police station. Here we can use both Email and Message alert. For sending Email we use STMP library in python programming it continuously updating the values and sends it to recipients through mail. For getting text message here we use Twilio app which is online platform with the help of library and API key we can send both latitude and longitude values as text message by using Twilio without using GSM module.

V. FLOW CHART



VI. RESULTS

The GPS based self-protection system for women, in this we can get exact location of victim. With the help of this we can post latitude and longitude values in a cloud as well as we can send both message and email alert to police station.

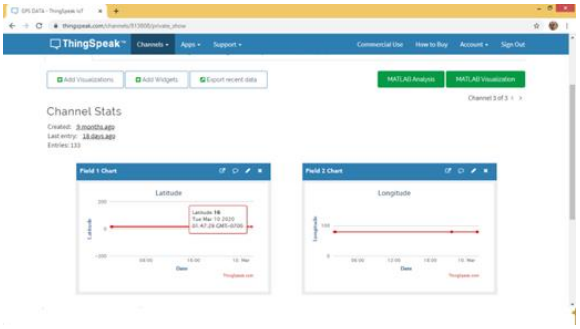


Figure 1. Latitude and longitude values in cloud.

Figure 2. Email alert

VII. FUTURE WORK

1. Replacing jumper cables with flex sensors makes the device more accurate and reduces circuit complexity.
2. Producing electric shock with minimum voltage can make the women to defense herself from culprit in dangerous situation.

CONCLUSION

GPS based self-protection system for women is made for women and police department. This device saves the life of women when they are in danger. Raspberry pi technology is used to improve the efficiency of device compared to other systems. Location detection using GPS module gives the exact position of victim. Buzzer used in this is for alerting the public near that location with the help of sound. The system is cost efficient compared to other systems. The idea of this system is better to provide protection to women with the help of new technology across the world.

ACKNOWLEDGMENT

We would like to show our gratitude and thanks to our guide Dr. Saidaiah Bandi. Professor, Department of Electronics and Communication Engineering for the guidance and valuable suggestions which helped us to make this project.

REFERENCES

[1] G C Harikiran, Karthik Menasinkai, Suhas Shirol Smart Security Solution for Women based on

Internet of Things (IOT) International Conference on Electrical, Electronics, and Optimization Techniques (ICEEOT) – 2016

[2] B.Chougula, "Smart girls security system," International Journal of Application or Innovation in Engineering & Management, Volume 3, Issue 4, April 2014.

[3] Vamil B. Sangoi, "Smart security solutions," International Journal of Current Engineering and Technology, Vol.4, No.5, Oct-2014.

[4] Suraksha. A device to help women in distress: An initiative by a student of ITM University Gurgaon. efytimes. com. 2013. Available from: http://efytimes.com/e1/118387/ SURAKSHA-A-Device-To-Help-Women-In-Distress-AnInitiative-By-A-Student-Of-ITM-University-Gurgaon.pdf

[5] Gowri S, Anandha Mala GS. Efficacious IR system for investigation in textual data. Indian Journal of Science and Technology. 2015 Jun; 8(12):1–7.

[6] Chand D, Nayak S, Bhat KS, Parikh S. A mobile application for Women's Safety: WoS App. 2015 IEEE Region 10 Conference TENCON; Macao. 2015 Nov 1-4. p. 1–5.

[7] George R, Anjaly Cherian V, Antony A, et al. An intelligent security system for violence against women in public places. IJEAT; 2014 Apr; 3(4):64–8.

[8] Plantelopoulous and Nikolaos.G.Bourbakis, "A Survey on Wearable sensor based system for health monitoring and prognosis," IEEE Transaction on system, Man and Cybernetics, Vol.40, No.1, January 2010.

[9] Toney G, Jaban F, Puneeth S. et al. Design and implementation of safety arm band for women and children using ARM7. 2015 International Conference on Power and Advanced Control Engineering (ICPACE); Bangalore. 2015 Aug 12-14. p. 300–3.