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IOT Based Smart Bracelet for Women Security

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Abstract: Every day, every women, young girls, mothers and women from all walks of life are struggling to be safe and protect themselves. In our country even if India is growing day by day but still there are many crimes happening against women. The streets, public transport, public places in particular have become the dominion of the hunters. In this paper, a smart security wearable device for women based on Internet of Things is proposed. It is implemented in the form of a smart bracelet and comprises of Raspberry Pi Zero, buzzer and switch to activate the services.
In this, we just have to press button and system will send current location to friends, family and police. Our proposed system resulted in robust, flexible, low cost and user friendly system to solve the problem against women which help them to live independently or freely.
Keywords: Women Security, Internet of Things, Smart Security, Raspberry Pi

I. INTRODUCTION

In the recent years many incidents of women harassment, rapes, kidnapping and molestation are increasing. Most of times, culprits captures the victim in the remote or isolated area which leaves the victim no option for self defense [1]. It is quite clear that there is a determined need for women security in the country. It is now possible to intelligently apply the benefits of current technology to resolve societal issues. There is need of application of current trend in technology, i.e., Internet of Things (IOT) to eliminate fear filled lifestyle of female folks. The Internet of Things (IOT) is an ecosystem of connected physical objects that are accessible through the internet [2][3][4].

Various smart devices such as smart watches, mobile applications android applications has been presented for women empowerment [5][6][7][8].

In this paper, Raspberry-Pi based wearable device called the Smart bracelet for self security in the remote area or crowded area. The main objective of our system is to send an instant location and a help message through an GSM to a registered number and the police, so that improper incidents could be prevented and it helps to provide real time evidence for quick action against the perpetrators of the crime. However, it is a point worth to note that innovation in technology has covered its path in almost all walks of life. As such, it is now possible to intelligently apply the benefits of current technology to resolve social issues.

This paper is organized as follow: Section I gives the brief introduction of the women security and current scenario on it. Further, section II gives the widespread survey of women security methods and techniques used earlier. Later on section III briefly describes the proposed methodology. Next section elaborates the results and discussion. Final section concludes the proposed work and suggests the open area for future advancement in the system.

II. LITERATURE SURVEY

Many researchers have worked on the use of Internet of Things (IoT) that leads to the Smart Security technology for women empowerment and security. This section presents the related technological work carried out for the women security.

Sharifa Rania et.al [9] has presented Emergency Calling System (ECS) system for helping women in critical situation which will help her to inform her close one as well as the police with her location tracking. This application contains different health tips also. Further, Ravi Sekhar Yarrabothu et.al[10] has developed ABHAYA:An Android app for the safety of women In this they developed an app, by single click on this app, it identifies the location of place through the GPS and send the message to registered contact and call the first registered contact. Later on, Teena Khandelwal et.al [11] has presented Women Safety Device Designed using IOT & Machine Learning Automatic danger detection system that can call people and send message to emergency contact when women in danger and also works in case no internet. Further, Sunil K Punjabi et.al [12] has presented Smart Intelligent System For Women & Child Security Microcontroller which records the location using GPS module and other required parameters and provide it to the GSM Module to send the message to the registered numbers. Next, D.G.Monisha et.al [13] has designed FEMME application. This device gets activated and sends instant location with the distress message to the police preset numbers through a GSM module.

G.C.Harikiran et.al [14] has presented IoT based women smart Security. They used number of sensors to precisely detect the real time situation of a women in critical abusive situation. Nishant Bhardwaj et.al [15] has designed & developed a device for women safety named as "Surksha". The basic approach is to intimate instant location and distress message to the registered number so that unfortunate incident happen. Further, Jigar Chauhan et.al [16] has presented a smart wearable band for women security. The band remains always active and the victim needs to tab on the screen twice when she feels the need of it or she feels someone is abusing her.

Thus, from the extensive literature survey we found that previously implemented systems are not robust, portable, and flexible and fails to give to nearby people.
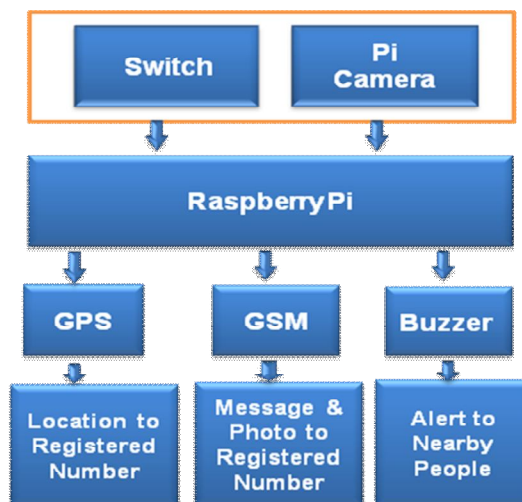
III. PROPOSED SYSTEM


Fig 1 . Flow diagram of proposed system

Fig 1 shows the flow diagram of bracelet comprises of The Raspberry Pi Zero is a low cost single board computer used for interfacing Raspberry Pi camera and buzzer module emits a high frequency alarm to draw the attention of the public towards the victim, a camera module that captures the image of the criminal when the victim is being assaulted thus helping in criminal apprehension on pressing of a button, a Message Sending module that is used to send the current location of the victim tracked via GPS of the user's smart phone and the link of the image captured via Raspberry Pi camera to the emergency contact numbers using SMS, and an Android application that provides the user interface and selects emergency contact numbers.

This device is better than the existing systems and can be really helpful to individuals in danger because of the following reasons:

A.   Criminal Identification
B.   Increased accessibility and portability
C.   A boon to senior citizens and people suffering from medical issues
D.   Can also employed for children safety thus preventing crimes like child abuse and child trafficking
E.   Need for a movement towards safer environments

IV. RESULT AND DISCUSSION

Fig. 2 shows the instance of the IoT based smart bracelet which sends the location information to the registered mobile number.
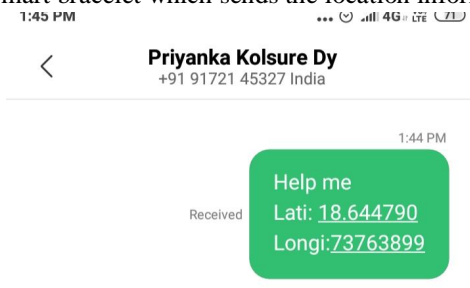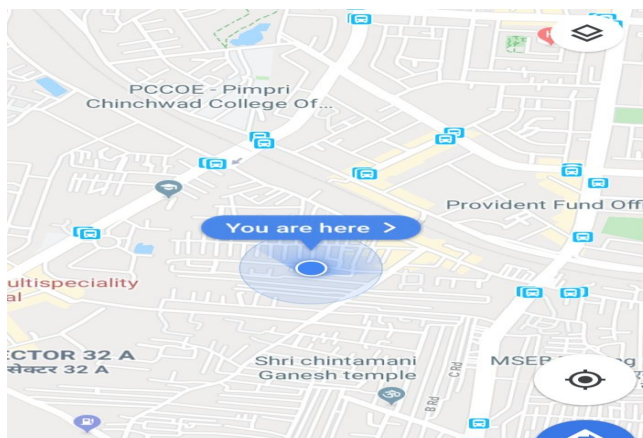
Fig 2. Actual location of person

For the implementation of proposed system we have considered the hardware and software modules as shown in table I.

Table I System specification for proposed system

Parameter	Specification
Raspberry Pi (zero)	Operating frequency- 1GHz
	RAM- 512 MB
Pi Camera	Resolution-2592 ×1944 pixel
	Image area -3.76× 2.74mm
	Pixel size-1.45microm × 1.4microm
GSM Module	Operating voltage- 5V/3.3V
	Dimension-56.21mm × 65.15mm
GPS Module	Dimension- 120mm × 80mm × 23mm
	Weight- G.W 26g
Buzzer	Min sound o/p at 10cm- 85db
	Diameter- 11.78mm
	Weight- 1.86 gm
Programming Language	Python Programming

V. CONCLUSION

The existing systems are not powerful enough to prevent crimes against Woman. Main purpose of the system is fast process, low cost of development, acceptable quality, accurate tracking. This project put forth a technique where a woman, when in danger, can instantaneously intimate to the concerned authorities. The proposed technique uses GPS tracking of the smart phone to get the device's co-ordinates. This technique further uses URL of the image and alert message to inform the family and police personnel

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