IoT based Artificial Intelligence Women Protection Device

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***Abstract*— This project work describes about a smart intelligent security system for women. Women all over the world are facing much unethical physical harassment. This acquires a fast pace due to lack of suitable surveillance system. Our project is a venture to resolve this problem. We are using two objects neck chain band and spectacles that are used in day to day life. The system resembles a camera on the neck incorporated with a switch as an input which when activate shows the result screaming alarm and electrical shock mechanism are imposed for self – defensing purpose and camera footage and location details to the emergency contacts and nearest police station. Electric shock and live streaming video using webcam is incorporated in the spectacles that act as a weapon of the smart technology we really believe that this endeavor will make a difference in the women life .To implement this we are going to use Raspberry pi microcontroller and python language.**

Keywords—*IOT, Raspberry Pi , Camera Module, GPS.*

I.INTRODUCTION

Since last few decades the status of women in India has been going through lot of changes. To remain part of fast life women also works a lot to survive and supports their family. They work at different places like BPO"s, call centers, IT firms, and so many places like it. But even today's women are still facing many social challenges in India and are often victims to violent crimes Thomson Reuters had said that," according to global poll, India is the 4th most worst country in the world and the dangerous country for women among growing 20 countries." Day by day the attacks on women are increasing and in some cases women are not even able to take her mobile and dial up to police, this system will help women in such cases to inform about attacks and also in giving her exact location to nearby police station for necessary action.This project focuses on a security system that is designed solely to serve the purpose of providing security and safety to women so that they never feel helpless while facing such social challenges. The Delhi Nirbhaya Case that triggered the whole nation was the greatest motivation for this project. It was high time we women needed a change.At the present scenario Women are competing with men in every prospect of society. Women contribute fifty percent to the development of our nation. But the women have fear of getting these types of women harassment cases are increasing day by day. So it is very important to ensure the safety of women. In this paper proposed model of a band will provide a required safety to women so that they can do late night work. Proposed model contains various sensors which will measure different parameters continually. IOT (internet of things) is relatively new and fast-developing concept. By using IOT-based technology guardians, relatives and police can monitor and track different sensors value and position of a device.

A device is wearable and so it is easy to carry. There is many electronic devices and systems are used to provide security for WOMEN, PI camera is the most popular method for providing security which can be unreliable sometimes. In this proposed system when the women finds herself in danger, the device will send her location and an image of the attacker immediately to the server portal and also sends a message and a call alert to her contacts on the speed dial list.The numbers of smart phone users are turning into greater in amount all over the world. A smart phone has many applications which is useful to people. It is a personal safety product designed to keep you and your friends safe 24/7. It is packed with features for both everyday safety and real emergencies, making it an ultimate tool for all. Our intention is to provide you with fastest and simplest way to contact your nearest help. The basic approach (single click) is to intimidate the instant location and a distress message to the cops and the preset numbers, so that unfortunate incident can be averted and to provide real time evidence for the action against the perpetrators of crime against women1. This device can also be miniaturized in future and can be embedded in mobile phones etc. This can also help police department to reduce the crimes, which are against women and the evidence can be used to trace the crime, which aids people to take preventive measures as soon as possible during:

- Attempted physical or sexual assault.
- Being stalked while walking.
- Unsafe neighbours.
- Domestic violence.
- Hidden camera detector.

1.1 *Internet of Things*

The Internet of Things is creating a new world, a quantifiable and measureable world, where people and businesses can manage their assets in better informed ways, and can make more timely and better informed decisions about what they want or need to do. This new connected world brings with it fundamental changes to society and to consumers. By sensing our surrounding environment, the

IOT will create many practical improvements in our world, increasing our convenience, health and safety, while at the same time improving energy efficiency and comfort. The IOT will be a new source of wealth creation. IOT devices can be classified in three categories: (1) wearable, (2) smart home devices, and (3) M2M devices. The first two categories are the most important for consumers. 'Wearables' are the devices that people carry with them, which usually connect via Bluetooth to a smart phone, and from there to the Internet. This category includes devices such as smart watches, fitness bands and devices to help people to live more 'mindfully' – increasing the wearer's awareness of how well they sleep, how much they move around, monitoring their vital signs, etc.

Smart home devices are also part of the IOT and usually connect to the Internet via Zig Bee low power wireless communication and the home router. These include all domestic devices, from lights and light switches to motion sensors, thermostats, door locks and automated curtains. Via its Wi-Fi connection to the router, the smart phone also becomes an online dashboard and control device for Smart Home applications.

The third category, M2M (Machine to Machine) devices, comprises devices that are directly connected to the cellular network, such as cars that can report their location (in case of an accident or theft), or vending machines that can call in when their stocks are running low.

Many households and businesses have thermostats, weather stations, smart lighting, security and electronic door locks, the majority of which are not currently interconnected. They are connected – but not to each other. The weather station does not provide information to the thermostat about the climate outside.

1.2 *Raspberry PI 3 Model B*

Raspberry Pi 3 Model B was released in February 2016 with a 64 bit quad coreprocessor, and has on-board WiFi, BluetoothandUSBbootcapabilities.[18] On PiDa y 2018model 3B+ appeared with a faster 1.4 GHz processor and a 3 times faster network based on gigabit ethernet (300 Mbit / s) or 2.4 / 5 GHz dual-band Wi-Fi (100 Mbit / s).[19] Other options are: PoweroverEthernet (PoE), USBboot and network boot (an SD card is no longer required). This allows the use of the Pi in hard-to-reach places (possibly without electricity).

1.3 Raspberry Pi Camera v2

- 8 megapixel camera capable of taking photographs of 3280 x 2464 pixels
- Capture video at 1080p30, 720p60 and 640x480p90 resolutions
- All software is supported within the latest version of Raspbian Operating System

1.4 *Python*

Python is a powerful high-level, object-oriented programming language created by Guido van Rossum It has simple easy-to-use syntax, making it the perfect language for someone trying to learn computer programming for the first time.Python features a dynamic type system and automatic memory management. It supports multiple programming paradigms, including object-oriented, imperative, functional and procedural, and has a large and comprehensive standard library

1.5 HTML

- HTML is the standard markup language for creating Web pages.
- HTML stands for Hyper Text Markup Language
- HTML describes the structure of Web pages using markup
- HTML elements are the building blocks of HTML page

II. RELATED WORK

"Self defence system for women with location tracking and sms alerting through GSM network". This system contains a shock mechanism to produce non lethal electric shock in emergency situations to deter the attacker as soon as the trigger key on the band is pressed.[4]

"Women Safety Device and Application-FEMME".In this paper, the ARM controller the device is designed in which the GSM, GPS, Bluetooth and RF detector is connected. The whole device just runs with total of 12v in which 5v is enough for the ARM to proceIn this system, an Android Application is used to find the location and send the location to the group of people stored in the phone, SOS Message, Track your phone and additionally we used a technique of clicking the volume button, if the button is pressed on time then message alert .We implement the same part in the hardware side if the person use in case of hardware he/she can user hardware or if he/she want to use software use software.[5]

"Safe: a women security system". This system consist of three main components namely an android application, main device and portable camera together this devices will work as an effective security system main device which consist of raspberry pi integrated GPS shield along with manually operate pepper spray .Android application can be used in two possible ways in which it will either use phone GPS system or it will use GPS system of main device to capture location[6]

"Design and development of an iot based wearable device for the safety and security of women and girl children". The aim of this work is to develop a wearable device for the safety and protection of women and girls. This objective is

achieved by the analysis of physiological signals in conjunction with body position. The physiological signals that are analyzed are galvanic skin resistance and body temperature... Real-time monitoring of data is achieved by wirelessly sending sensor data to an open source Cloud Platform.[7]

"Intelligent safety system for women security". In this paper they describe whenever we feel unsafe she will press the button of device, that event will be recognized by LPC2148 controller. Then controller will generate control signal for GPS system, it will send control signal through MAX 232 to GPS module .GPS will get activated, so it will track the exact location of the victim and send this information back ARM controller through MAX 232 interface.[8]

" A Mobile Based Women Safety Application" In proposed system with the push of one button, people can alert selected contacts that the person is in danger and share the location. The personal safety application requires the name and number of the person who is to be contacted in times of emergency. Users can add multiple people in the emergency contacts list. These are the people who will receive notifications or SMS in case of an emergency.[9]

"Self Salvation – the Women's Security Module"If any person wants to make an attempt on women then by pressing a button it will send alert message to the parents or friends phone numbers and also to the nearest police station. The method of security is through GPRS we can track the women/vehicle position. by sending SMS "TRACK" to the existing phone number we can get the pic.[10]

III. METHODOLOGY

The proposed system is to design a portable device which resembles a band on neck . It consists of switch, Raspberry pi, Screaming alarm, electric shock, and Live Steaming Video.

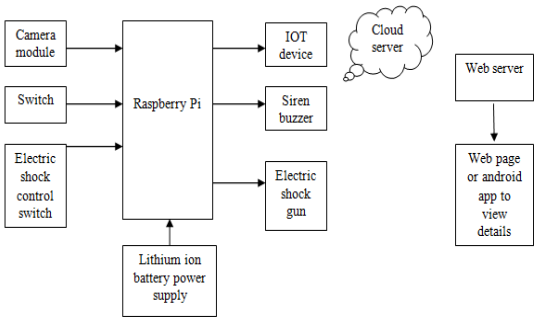

Figure 1: Block Diagram of IOT Based Artificial Intelligence Women Protection Device

When the switch is pressed, the device will get activated automatically with in a fraction of milliseconds. Immediately the location of the victim will be tracked and messages will be sent to emergency Smart Intelligent Security System for Women contacts. The screaming alarm unit will be activated and will produce siren sound to call out for help. electric shock is applied to harm the attacker which may help the victim to escape. Live Streaming Video will make to process the situation of the victim using a preferred IP address so that it help to detects the face of the attacker along with the surrounding environment that helps to figure out easily.

Live streaming video using webcam are incorporated in the system which act as a new weapon for smart technology.

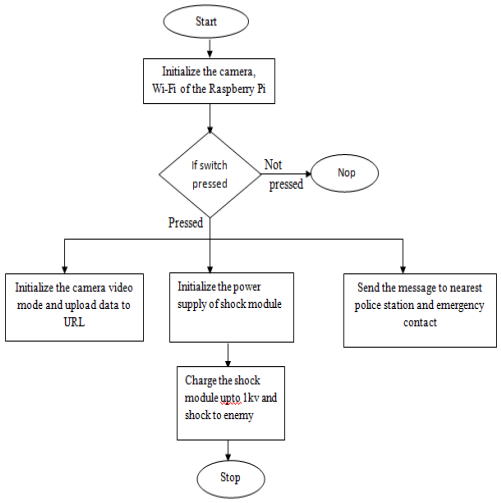

Figure 2: Flow chart

V.RESULT

Consider a scenario ,If a girl is attacked by someone at that time if she pressed the button in jacket, four simultaneous task will activated which is as shown by figure.

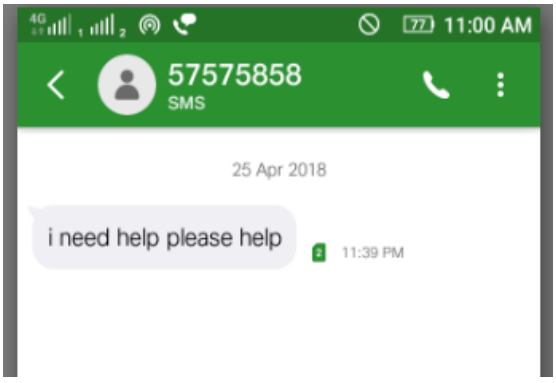

Figure 3:Message sent by Raspberry Pi

Figure 3 shows the image of the message sent by raspberry Pi to the emergency contact when the girl is in critical situation.

Figure 4:Ring which is used to produce electric shock

Electric shock will produced which affects attacker but not the victim because ring is covered by insulating material. Inside the electric shock circuit opto isolator is used to avoid the raspberry pi damage from high voltage shock wave.

Figure 5: picture of Siren

Siren will automatically activated which makes louder sound to call out the people for help.

Figure 6 :Picture captured by Pi Camera

Camera will be activated and start to capture the image with the delay two seconds or live streaming video with the delay of five seconds .Captured data is uploaded to Raspberry Pi memory then it is uploaded to cloud server using IOT .The captured data can access by the emergency contacts by using android app called Dropbox.

VI. CONCLUSION

This type of an idea being the first of its kind plays a crucial role towards ensuring Women Safety in the fastest way possible automatically. The proposed design will deal with critical issues faced by women in the recent past and will help solve them.The paper presents designing about the critical issues faced by women at present days and will help to solve them technologically with compact equipment and ideas. In the system it include mechanisms like tear shock release, screaming alarms, live streaming video and also alerting and sending the messages with the location. This system can overcome the fear that scares every woman in the country about her safety and security. With further research and innovation, this project can be implemented in different areas of security and surveillance. The system can perform the real time monitoring of desired area and detect the violence with a good accuracy.

VII. FUTURE SCOPE

- We can make the existing module in to a smart device like a hand watch or ring.
- We can also make an app for women security and safety applications.

VIII. ACKNOWLEDGMENT

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