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Development of Wearable Device for the Safety and Security of Women and Children

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ABSTRACT

As we know in present era everything is based on digital technology. Nowadays every person is connected with each other by many ways, where most popular communication is internet so it is internet, which connects people. The Paper proposes an SMS and E-mail based solution to aid parents to track their children in real-time. Different devices are connected with a single device through channels of internet-concerned parents to track their children in real time or for women safety can use the device. It allows the parents to get their child's location on real time by an E-mail and SMS. Here prototype model (device) is created which is simulation based. The work comprises Raspberry Pi as a microprocessor along with GPS, E-mail and SMS gateway. Python 2.7 Idle compile is used for the purpose of compilation. A server is created which will collect all the data generated by our prototype system and send the same to server using GPRS. A Raspberry Pi camera is been used to capture the surrounding area's images when the child is in trouble.

Keywords: GPS sensor, SMS gateway, microprocessor, Raspberry Pi Board, alarm buzzer, Capacitive touch sensor.

I. INTRODUCTION

Internet of Things (IOT) is the new technology that connects entire world. IOT establish connectivity (through internet) among the various devices or services or systems in order to little by little make automation development in all areas.

The Internet of Things System (loT) refers to the set of devices and systems that stay interconnected with real-world sensors and actuators to the Internet. loT has many systems such as smart cars, wearable devices and human implanted devices, home automation systems and lighting controls also smart phones which are increasingly being used to measure the world around them. Wireless sensor networks that measure weather, flood defences etc.. The motivation for wearable comes from the increasing need for safety for little children in current times as there could be scenarios of the child getting lost in the major crowded areas. The paper focus on aspect of lost child can be helped by the people around the child and can play a significant role in the child's safety. Most of the wearables available today are focused on providing the
location, activity of the child to the parents via Wi-Fi and Bluetooth. But Wi- Fi and Bluetooth are very unreliable source to transfer information. Therefore it is intended to use SMS as the mode of communication between the parent and child's wearable device. The purpose of this device is to help parents locate their children with ease way.

II. OBJECTIVES

The main objective of our system is useful for women and children security purpose. The Proposed device is for women consist of a wearable safety device which is having emergency button for sending notification and Camera for capturing the image of attacker. When women is in problem she has to press the button of that device immediately then the location of the victim track with the help of GPS and the respective images get captured then the emergency message with image link will be send to all contacts.

The objectives of our child monitoring system are:

1. To get geo coordinates of child using GPS
2. To get temperature details of area of child using Google Whether
3. To Adding authorized person who is related to child for security
4. To achieve Secure SMS module.

III. METHODS AND MATERIAL

This emergency message consist of our current location tracked by Global Positioning System (UBLOX) and sent to GSM module in which our location and our default emergency message is sent to our pre-stored contacts for every two minutes to seek help.

We are using a capacitive sensor, on long pressing it, it will capture the surrounding image around the victim and send that captured image to the particular authorized person.

IV. HARDWARE REQUIREMENTS:

- Raspberry pi 3
- 16 GB SD card
- 5 volts,2.1 A power supply
- Capacitive touch sensor
- Raspberry pi Camera
- Buzzer
- GPS Protocol

V. SOFTWARE REQUIREMENTS:

- Python 2.7 idle
- Win32 disk imager
- SD Card formatters
- Raspberry pi pixel OS

VI. SYSTEM DESIGN

The aim of our project is to develop safety wearable devices for women and child using IoT. The figure 3.1 shows architecture of our proposed system. The system has been designed using Raspberry Pi3, capacitive touch sensors, Raspberry pi camera, Buzzer.

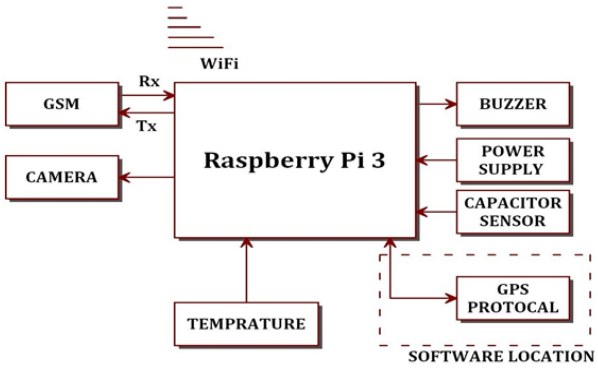


Figure 1. Block Diagram

Design of this device consists of Raspberry pi board to which camera, buzzer and capacitor sensor are connected and we are supplying 5V power. Capacitor sensor is used for taping, based on the input provided by the user, authorized person gets the notification via SMS or email. By using this parents can track the children location and ensure safety in real time. The above diagram shows the Circuit connections of the device.

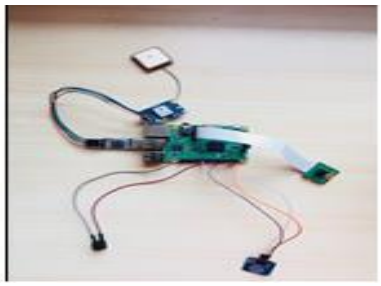
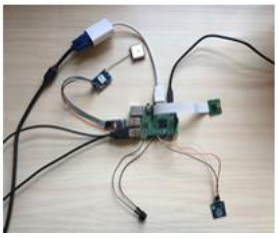


Figure 2. Circuit

VII. RESULTS



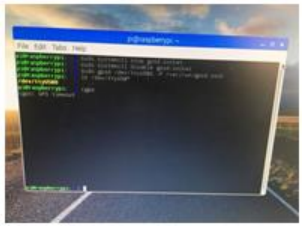


Figure 3. Circuit Connections **Figure 4.** Terminal Commands

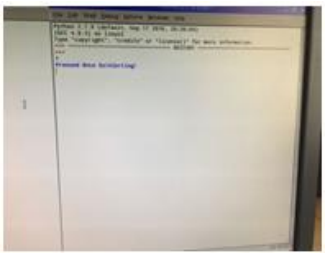


Figure 4. Single Tap **Figure 5.** Double Tap

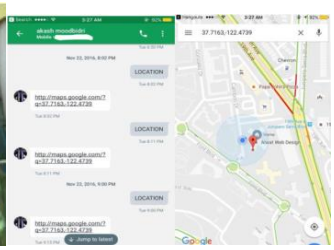


Figure 6. Rescue Image **Figure 7.** GPS location via SMS

VIII. CONCLUSION

According to the survey in India 53% of working women are not feeling safe – Women is working in night shift (Bangalore-56%, Chennai-28%, Hyderabad-35%, Mumbai-26%). In Overall, 86% women are working in India; women facing hurdles are high in Delhi, Mumbai, Hyderabad, Kolkata. A survey conducted by humanitarian aid organisation World Vision India participated in by more than 45,000 children in the 12- 18 age group, across 26 states in the country, revealed that one in every two children is a victim of child sexual abuse. The survey also revealed that one in every five do not feel safe because of the fear of being sexually abused.

Our primary goal of this paper is to ensure every woman and child in our society to feel safe and secured. Our work attempts to tackle a societal concern that has been destroying the lives of uncountable individuals and their families. The wearable device can play a major role by providing women and children a safe environment in all situations. A device like this improves the level of safety of women and girls this is achieved by our wearable device, where a message alert is sent to the parents from the device when triggered and provides viewing the location of the victim in terms of latitude and longitude, which can further be tracked using Google maps.

The wearable device can capture images in case of emergency, which can be used for further investigation. This system helps to decrease the crime rate against women and children. Women's security is a critical issue in current situation

IX. REFERENCES

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