

Women's Safety System Using Raspberry Pi

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Abstract: To develop a smart toolkit to intimate the family or the police department regarding the crimes. This toolkit will send emergency call and email with location and image on pressing the button in the wearable band using Raspberry Pi embedded with GPS, GSM and a USB Camera.

I. INTRODUCTION

A. RASPBERRY PI 3

The Raspberry pi 3, with a quad-core Cortex-A53 processor, is described as 10 times the performance of a Raspberry Pi 1. This was suggested to be highly dependent upon task threading and instruction set use. Benchmarks showed the Raspberry Pi 3 to be approximately 80% faster than the Raspberry Pi 2 in parallelized tasks. Raspberry Pi 3 have 1 GB of RAM. The Raspberry Pi 3 are equipped with 2.4 GHz WIFI 802.11n (150Mbit/s) and Bluetooth 4.1 (24 Mbit/s) based on Broadcom BCM43438 chip and the Pi 3 also has a 10/100 Ethernet port.

II. RELATED WORK

Raspbian with pixel (which stands for 'Pi Improved Xwindow Environment, Lightweight') is a huge software update to the desktop environment. It introduces a crisp new interface, and is brimming with new programs and features.

The biggest newcomer is Chromium Browser, which replaces Epiphany as the default web browser. Other new apps include RealVNC's Viewer and Server, which allow you to control Raspberry Pi devices over a network, plus the recently released Sense HAT Emulator.

Raspbian with pixel reveals further features. "In the past, if your Raspberry Pi was working particularly hard, you might

have noticed yellow and red squares appearing in the top-right corner of the screen," says Simon. "These have been replaced with new symbols that make it a bit more obvious: a lightning bolt for under voltage and a thermometer for over temperature." You can also disable Wi-Fi and Bluetooth from the menu bar, a frequently requested feature.

Pixel for PCs and Mac can be set to run in a "persistent mode" meaning any work you do on the operating system will be saved between sessions. You'll need a larger USB drive to allow for a partition to save data and files, but if you do that you'll have a mini-PC you can run separate from your machine's primary OS. To use it you'll need to set your PC's BIOS to boot from your chosen media before looking to the internal storage drive. Macs need to press down "C" at boot; however, Upton warns that some newer Macs may not be able to get Pixel to boot properly; it's a bug that the Foundation engineers are working to fix. The Pi's new pixel desktop can now be installed on Macs and PCs, following three months of work to develop a new version of the desktop, which runs on the Linux-based Debian OS.

The pixel desktop has been optimized to run on the Pi's relatively modest, smartphone-targeted hardware, with the latest release of the board packing a quad-core 1.2GHz ARM-based processor.

III. SYSTEM ARCHITECTURE

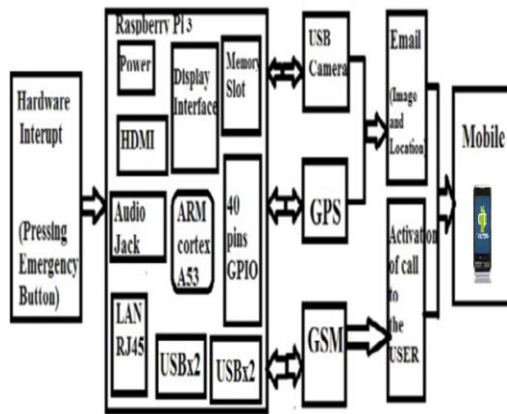


Figure 1: System Architecture

A. WORKING

This alert system is divided into two parts -the location tracking system with image capturing system and the emergency calling system. This safety device uses GPS tracker to get the position / location of the victim and attaches it with the captured image of the attacker in the Email service. GPS is used to track the current location of the victim. It is connected to the Raspberry Pi 3, which is used to control the operations of the GPS receiver. GPS location is tracked based on the latitude and longitude. When the Raspberry Pi 3 is being activated by the victim, the GPS and the USB Camera is activated at first and then, the device is controlled in order to track location of the victim and capture the image. The Raspberry Pi 3 then activates and connects the GSM to control Email service. After a relay GSM is directed to send emergency voice call through the device. In addition to the system an alert circuit is also activated simultaneously.

IV. MODULE EXPLANATION

- ✓ Image capture
- ✓ GPS tracking
- ✓ Email functionalities
- ✓ Voice call function

A. IMAGE CAPTURE

Once the hardware interrupt is being pressed, the USB camera is being activated and captures the image automatically which is connected to the Raspberry Pi. After capturing the image, it will be sent through email to the predefined email id.

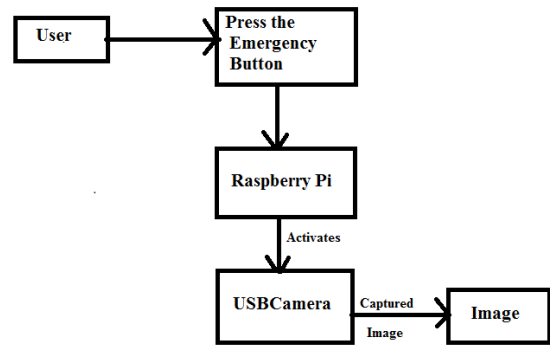


Figure 2: Image Capture

B. GPS TRACKING

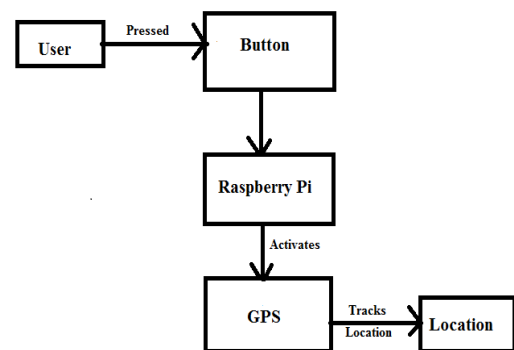


Figure 3: Gps Tracking

While the hardware interrupt is being pressed the GPS tracker will be activated by the Raspberry Pi. And it tracks the location of the victim. After that, the tracked location will be sent through the Email to the receiver to the predefined Email Id.

C. EMAIL FUNCTIONALITIES

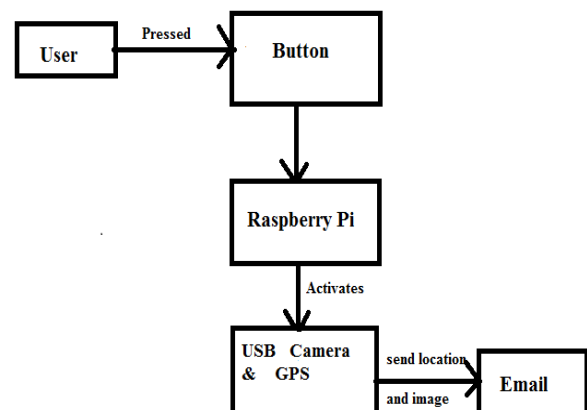


Figure 3: Email Functionalities

While the hardware interrupt is being pressed, the Email service will be activated. At the same time the image which has been captured by the USB camera and the location that has been tracked by the GPS tracker, both will be sent through the Email service.

D. VOICE CALL FUNCTION

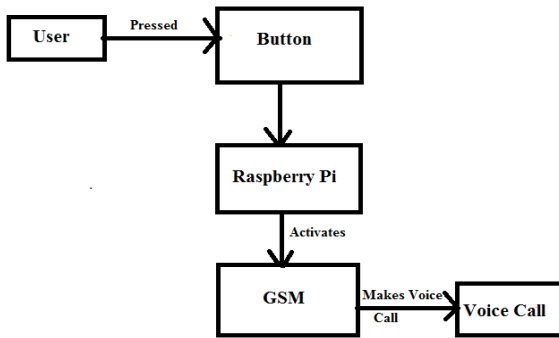


Figure 4: Voice Call Function

While the hardware interrupt is being pressed the GSM will be activated by the Raspberry Pi. After the activation of GSM it make the Emergency voice call to the predefined conduct number that has stored in it.

V. ADVANTAGES

- ✓ The police department easily investigate about the victim using this device.
- ✓ This device is system efficient.
- ✓ The user don't want to carry the mobile phone.
- ✓ There is no any mobile application is used.

- ✓ Raspberry pi 3 is more advanced and upgraded version of Raspberry pi 2.

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