

Knowledge-based Secure Dynamic Cache Update For Domain Name System

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Abstract: - Crimes against women, as many as 2.24 million crimes were reported over the past decade. 26 crimes against women are reported every hour, reveals an IndiaSpend analysis based on the last decade's data. Personal safety is one of the most important concerns for women, as crimes against them have been increasing. Various safety mobile Apps are flooding the market, yet they are not being of any use. This paper highlights the flaws in the existing Apps and also describes a smart wearable device that is easily accessible in panic situations.

Keywords— Women Safety, Bluetooth, Microcontroller Wearable device, Mobile application, GPS

I. INTRODUCTION

Most of the women are afraid to stay/travel alone due to the fear of being harmed. This fear has been caused by repeated cases of violence towards them. Each and every day hundreds of abuse cases are reported against women. Sexual violence is a constant challenge for India's 600 million women. According to an ActionAid report, almost four out of five have experienced some form of sexual harassment or violence in public. Women lose autonomy over their own life, unable to venture out after dark alone, made to sit in women-only areas in public transport and many more restrictions are imposed. It is high time that we equip ourselves to deal with such situations. All they need is a device that can be carried around easily and worn. This paper introduces a wearable device that can be embedded in day to day accessories such as bracelet, hairclip or a bangle. This device when activated sends a distress message containing the real time location through a Bluetooth enabled App to the emergency contacts and also to the nearest patrolling vehicle.

II. LITERATURE REVIEW

India's Ministry of Women and Child Development announced plans to install mandatory panic buttons on all mobile phones. Under new regulations taking force in 2017, all new mobile phones will be pre-configured to send out a distress signal including geo-coordinates when activated. There are a few Mobile applications in the market that are capable of sending a distress message to

registered emergency contacts. A similar app has been launched by the Bangalore police. Limited number of users and lack of ease with which the app can be used were the main reasons for the failure of the concept. Some of the key drawbacks of the Apps are discussed below. When a woman found herself in a distress situation, she needed to press the panic button present on the app 3 times. This would trigger a distress message that would be sent to the emergency contacts and police. This was not as simple as it sounded. According to a survey, more than 60 percent of the people lock their smart phones with passwords. A person in panic situation cannot afford to waste time in unlocking the phone, searching for the panic app and then clicking on the panic button. There are high chances that the attacker might snatch the cell phone and damage it or it might provoke the attacker to cause more harm to her. This paper describes a small easy to access wearable device that would send out distress signals within a short span of time.

III. METHODOLOGY

Whenever a woman is stepping out of her house or entering a place which she feels unsafe, she needs to turn on the device and pair the device with the app via Bluetooth. Later if she finds herself in a distress situation she needs to press the panic button on the wearable device thrice. The device immediately sends a message to paired smart phone[2]. The app then picks up the exact location of the victim using the GPS of the smart phone and it is sent to the pre-set numbers[3] and also to the control room. Police can use this location to find the nearest patrolling vehicle[4] and transfer

the coordinates to that particular vehicle. Other version of the app can guide the police to the victim's location[5].



Figure 1. Shows the operation mode

IV. WORKING

I. Hardware

1. Microcontroller - ATTiny 85 was the microcontroller used to program the wearable device. It is a high-performance, low-power Microchip 8-bit AVR RISC-based microcontroller combines 8KB ISP flash memory, 6 general purpose I/O lines, 32 general purpose working registers, three software selectable power saving modes, and debugWIRE for on-chip debugging.

The Microcontroller was coded using Arduino IDE.

```
#include<SoftwareSerial.h>
SoftwareSerial abc(3,4);
void setup() {
abc.begin(9600);
pinMode(2,INPUT);
pinMode(1,OUTPUT);
pinMode(0,OUTPUT);
digitalWrite(1,LOW);
}
void loop() {

int x=analogRead(A1);
if(x<=100)
{
digitalWrite(0,HIGH);
abc.println("help");
digitalWrite(0,LOW);
delay(1000);
}
}
```

Figure 2. Code that is written into AtTiny85

2. Bluetooth - Bluetooth Classic (HC-05). HC-05 module is an easy to use Bluetooth SPP (Serial Port Protocol) module, designed for transparent wireless serial connection setup. The HC-05 Bluetooth Module can be used in a Master or Slave configuration, making it a great solution for wireless communication.

3. Battery – rechargeable Lithium Polymer battery.

II. APP DEVELOPMENT

An app[6] is developed which is supported on android, windows and IOS. This app enables the users to register and enter details of the emergency contacts.

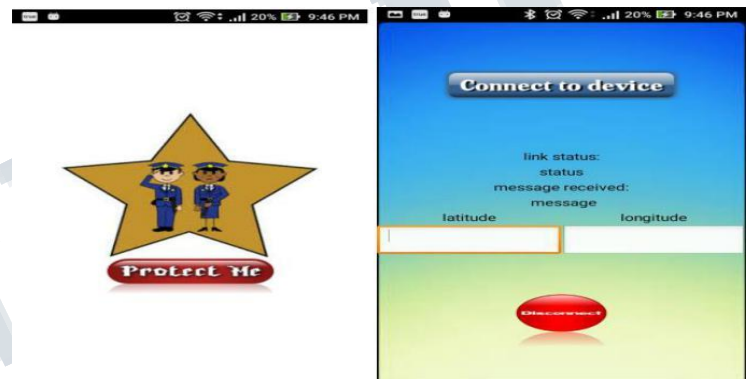


Figure 3. Screenshots of the app

III. Website

Similar to the app, the users are authenticated and allowed to register through the website. The programming languages used to build the website are PHP, JS, Bootstrap, JQuery and HTML.

IV. Server

A server receives the victim's coordinates and stores I the database. This server can be placed in the control room. When the location is selected, the details of the victim are displayed along with the exact location on the google maps.

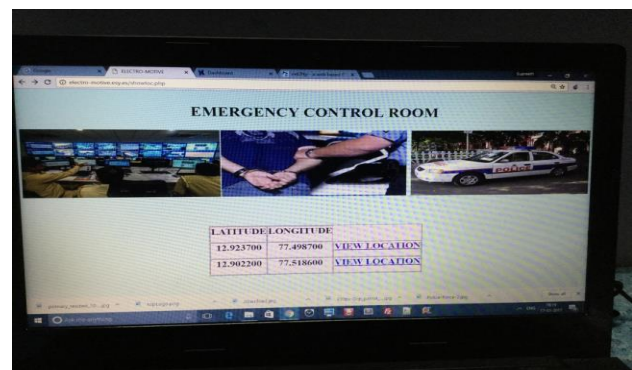


Figure 4. Website showing the distress coordinates

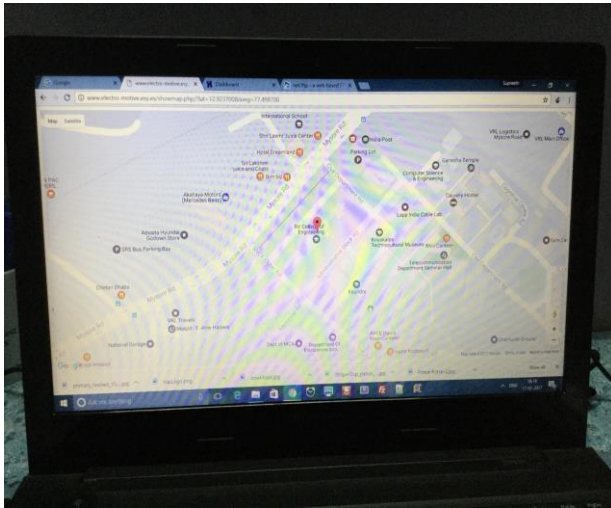


Figure 5. Website showing the distress location

V. HARDWARE PROTOTYPES

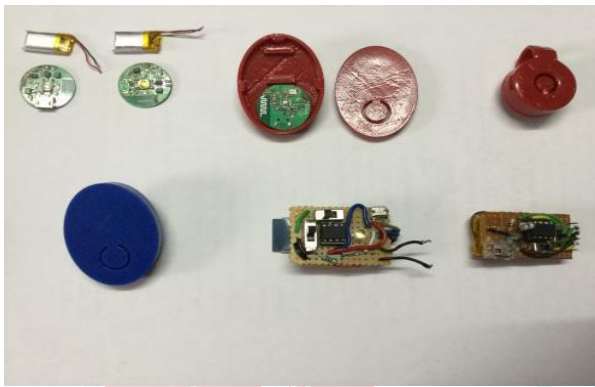


Figure 6. Basic prototypes with 3D printed case.

V. DISCUSSIONS

- The user needs to register with a government issued Identification like Aadhar card.
- The user needs to press the panic button three times in a row to activate a distress signal. This minimizes false alarms.
- In case the panic button has been pressed by mistake, the distress message can be cancelled in

the app within 10 seconds. If not cancelled, the message will reach the control room.

VI. LIMITATIONS

- Every user has to be registered in order to use the device.
- The device has to be paired with the mobile before using it.
- Without internet connectivity this system will not work
- The device and mobile must be in close proximity(appx 10m)
- The device has to be charged.

VII. BENEFITS

- Women can move around freely without worrying much and also allows the police to catch criminals within no time.
- The device can also be customized and used by
 - Elderly people in distress
 - People needing urgent medical attention
 - Specially abled people

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