Women's Safety using Voice Recognition

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Abstract*—In spite of being one of the fastest developing nations, we are yet to ensure safety to women. The crimes against women are increasing rapidly and we need to find out some solution that will help us to overcome those. The atrocities against the women can be brought to an end with the help of our application. This application is a security system, specially designed for women in distress. We analysed that there are no security application for our total safety. This would help reduce crime against women. This framework also summarises other significant works in this field and henceforth discussed application in a greater detail. In the current global scenario, the prime question in every girl's mind, taking into account the ever rising increase in number of harassment cases in recent past, is only about her safety and security. The only thought haunting every girl is when they will be able to move freely on the streets even in odd hours without worrying about their security. Our project suggests a new perspective to use technology to protect women. The system is a new voice-based approach to solve this problem, which when activated, tracks the location of the victim using GPS (Global Positioning System) and sends emergency messages using GSM (Global System for Mobile communication), to three emergency contacts and the police.*

Keywords—*Safety, Security, Protection, Self Defence.*

I. INTRODUCTION

In today's world, safety of women has become a major problem as they can't step out of their residence at any given time due to fear of physical/sexual abuse and violence. Even in the 21st century where the technology is rapidly growing and new gadgets are being developed, women and girls are still facing problems. Women are adapting at mobilizing diverse groups for a common reason. They often work across ethnic, religious, political, and cultural divides to promote liberty. We are all aware of importance of women safety, but we must analyse that they should be properly protected. Women are not as physically fit as men. Therefore in an emergency situation a helping hand would be really necessary for them. We propose the best way to curtail your probability of becoming a victim of violent crime. This application is a security system specially designed for women. It is a simple and easy to use application with magnanimous functionality. The basic approach behind this application is to send instant location and message to the registered number, so that unfortunate incidents would be avoided. We are especially focusing on android devices in order to make it an easily available and easy to use application for masses. The voice recognition technology used in this application makes it automated and an instant assistant. This application can be linked with the local authorities like police in order to send help to the victim as early as possible.

II. RELATED WORK AND MOTIVATION

Many researches have contributed to the development of android application for the safety of women; some of the applications are summarized below: [1] In 2012, Easy Tracker: An Android Application for Capturing Mobility Behaviour.The main purpose of this application is to provide security to the children going to schools and also to see whether the child is happy or not and system also concentrates on giving the information whether child is present in the school or not to both the parent and to the school database. It tracks every movement of child and every other activity using mobile GPS.

[2] In 2013, Implementation of children tracking system on android mobile terminals. This application concentrates on giving the information whether child is present in the school or not .It is a Children tracking system for every child attending school.

[3] In 2013 Amrita Personal Safety System (APSS). An Feature rich Android application which functions as personal safety system. An ultra small wearable triggering device which can trigger emergency alerts through Smartphones or the

Safety device. Wearable and easy-to-operate electronic device that will help women in establishing communication with family and police.

[4] In 2015 Voice-based sadness and anger recognition with cross-corpora evaluation. In this they focus on the s aspect of the audio analysis. they believe that voice-based emotion detection can play an important role in complementing other vocal biomarkers for diagnosis and monitoring these medical conditions. And they also analysed performance improvements in sadness and anger detection by using voice.

III. SYSTEM OVERVIEW

This system consists of android phone, web server, GPS and microphone or Bluetooth device.

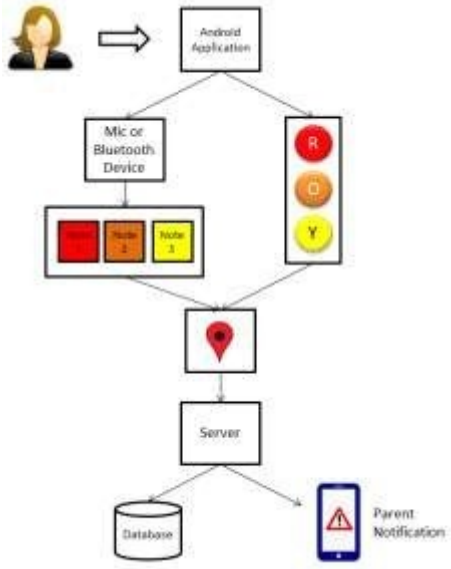

Fig 1.System diagram

A. Android Phone

Android phone will be used to provide abode to the application as it will be an android application. This android application comprises of a registration page where the user will register using name, address, contact number, list of emergency contacts, etc. The application also has mechanism to accept and process voice[5], various machine learning algorithms to train and match the voice notes[1]. Messages will also be sent out[5].

B.Web Server and Database

All the existing voice notes will be stored and used for matching with the new incoming voice notes. Web server will be used to host the database.

C.Microphone and Bluetooth Device Most important input device in our system is a microphone or Bluetooth device. Since the system is voice based, this device plays an essential role in this system. It will accept the voice note and the same will be forwarded to android device for further operation[5].

D.GPS

GPS is used to trace location of the user, which can be sent to assigned contacts when in danger[1] [3][4].

E.Wireless Network

A wireless network is used for establishing communication between various devices in our system.

IV. SYSTEM IMPLEMENTATION

A.Data Flow Diagram

i. DFD Level 0

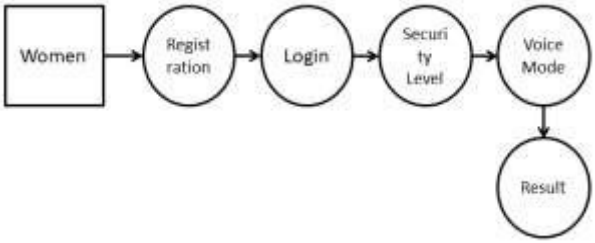

Fig 2.DFD Diagram

In this figure, the user sends data to the proposed system and voice will be recognized then the data is received by messaging architecture.

ii. DFD Level 1

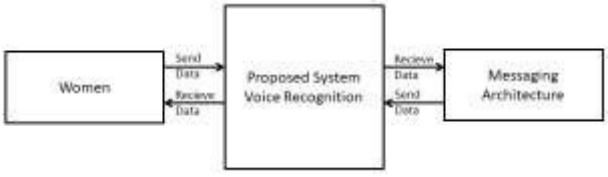

Fig 3.DFD Diagram

In this figure, the user sends data to the proposed system and voice will be recognized then the data is received by messaging architecture.

V. ALGORITHMS

A. System Working Algorithm:

1: Give voice samples of user as per Emergency Level. 2: Give Voice, Location, Contacts permission to application.
3: Give Voice input to device (Bluetooth or mic)(in emergency).
4: Internal processing as per input. 5: Contact Police and Relatives as per Emergency Level.

B. Voice Matching and Processing Algorithm :

```
while(true)
{
getVoiceInput();
loadSampleVoiceFromDatabase();
int x = getEmergencyLevel(); //return Emergency Level
(1,2,3 or 0)
switch(x)
```

```
{ case 1 : //Emergency Level
1
        messagePolice();
        messageEmergencyContacts();
        sendLocation();
        berak;
case 2 : //Emergency Level 2
        messagePolice();
        messageEmergencyContacts();
        sendLocation();
        berak;
case 3 : //Emergency Level 3
        messageEmergencyContacts();

sendLocation();   berak;
case 0 :
        //Ignore Noise
}
}
```

VI. SEQUENCE DIAGRAM

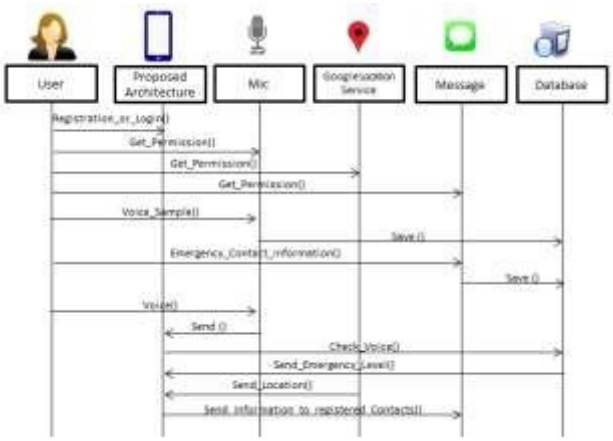

Fig 4. Sequence Diagram

The figure shows sequence diagram. In sequence diagram there are there are six objects women proposed architecture, microphone, message result. First women will do registration to the system and then system will validate the women. System will send acknowledge the women and finally women will login. Then system will fetch the voice of women will be detected by microphone. Microphone will forward the voice note to database. As per the level of note message will be generated and server will forward the location and message to respective contacts.

VII. CONCLUSION

This novel framework is designed in android platform for safety of women with the aid of recent improvements in mobile technology. This application helps the tracking of the root device through GPS which will help the law enforcement authorities to rescue the person in danger as quickly as possible from the anti-social elements. For future development, this application can be integrated with the law enforcement database (ex. city police control room database) instead of experimental database used here in the project. Also, some further upgrade can be done when the mobile network is not available for the root device and also if the root device is switched off. Thus, this app can help in a big way to rescue the women or men from unsafe conditions.

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