INTERNATIONAL JOURNAL OF ADVANCE RESEARCH, IDEAS AND INNOVATIONS IN TECHNOLOGY

ISSN: 2454-132X
Impact factor: 4.295
(Volume3, Issue2)
Available online at www.ijariit.com

Fall Detection and Reporting Using Smartphone

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Abstract: Every family on this planet is working hard for a comfortable living and wants to safeguard his investment that he has made in his day to day work. Ultimately, at the end of the day, we all seek for the security of life and our belongings. The major question to ask yourself is we really secure? The world is not perfect and we are susceptible to the dangers that exist in the society hence the urge to feel protected and safe is fulfilled by the use of hidden cameras. A hidden spy video camera can be available anywhere. We should be conscious about this aspect because we might be in a particular place, where our actions will be recorded without us being aware of it.

Keyword: Fall Detection, Safety, Mobile Shaking, GPS location, SOS Message, Smartphone

I. INTRODUCTION

People all over the world are facing much fall down not only because of faint. A person can experience and fear various types of fall down violence in public spaces, from fall downfall down. It happens on streets, public transport, and parks, in and around schools and workplaces, in public sanitation facilities and water and food distribution sites, or in their own neighborhoods. In India, every day more than 30 people were murdered and many are suffering austere mental and physical trauma. A person is among the most under-reported crimes worldwide because of the social stigma attached to the nature of the crime. These Android apps put those resources at your fingertips quickly, and several of them have both free and premium versions. Whether you're in immediate trouble or get separated from friends during a night out and don't know how to get home, having these apps on your phone can reduce your risk and bring assistance when you need it. Youngsters are adept at mobilizing diverse groups for a frequent cause. They often work across racial, sacred, opinionated, and intellectual divides to encourage serenity. We are all aware of the importance of person's security, but we must recognize that they should be well secluded. Women's are not physically powerful as compared to men, in a crisis situation a helping hand would be a relief for them. The best way to minimize your chances of becoming a victim of violent crime (robbery, fall down assault, rape, domestic violence) is to identify and call on resources to help you out of unsafe situations.

II.SYSTEM ANALYSES

A. Existing System

Many security applications were developed. Some of the applications are Guardly, Fight back, On Watch, Street Safe, etc. Many mobile applications are developed so far. These applications do have arrangements for sending messages to family members. Free mobile application 'Help me on mobile' to ensure the safety of user was launched to assist those who need emergency support. The one which is using now is a mobile application namely "with u app, which needs the pressing of power button 2 times. These applications need a single click to do this task. But when a girl is in trouble, there can be times that the elders are not capable of taking the phone and pressing button. Manually asking others help is not that much complex nowadays, but the response is that much that complex.

Disadvantages

- Time consuming
- Mental stress.
- Location may loss
- Waste of health loss.

B. Proposed System

This paper focuses on a security system that is designed solely to serve the purpose of providing security to the user, so that they never feel helpless while facing such social challenges. But we are using the Global Positioning system concept. In the proposed system, if the user of this app feels insecure and helpless at any time then by shaking mobile, these applications are very helpful for the user, who will have some emergency contact selected and it will also retrieve GPS information. In the case of emergency, a panic button provided in this app will send SOS message to all the trusted contacts immediately and also inform the correct GPS location of the person facing trouble. An easy-to-operate electronic device exists that will help and users to trigger communication with family and police when in distress. The main advantage of this system is that the user does not require a Smartphone, unlike other applications that have been developed earlier. The use of sophisticated components ensures accuracy and makes it reliable.

Advantages

- If the user is in danger or they feels insecure in any situation, they used to shake their mobile. This is a signal to others saying we are in danger.
- The attackers don't know why they are shaking their mobile. So, it is very safe and secure to the user for indicating their dangerous situation.
- This system is very helpful for the users who are in the dangerous or critical situation.

C. System Requirements

Hardware Requirements

- Android Phone

Software Requirements

- Operating System: Android OS
- Front-End: Android and Eclipse
- Tool kit: Android SDK Manager , Android 2.3.3
- IDE: Eclipse Indigo
- Back-End: MYSQL Server

D. List of Modules

USER INTERFACE DESIGN AND MOBILE SHAKING

- Register
- Login
- Add Contact Details
- Set Threshold Limit
- Mobile Shaking

IDENTIFY THE LOCATION

- Switch On GPS
- Track Location
- Find Location

SENDING MESSAGE

SOS Message

AUTOMATIC PICTURE CAPTURING AND SENDING

E. Module Description

- ***USER INTERFACE DESIGN AND MOBILE SHAKING***
  The user interface design is to be designed for providing the user-friendly interface. In the user Interface module, for the first time, the user has to give the details such as name, Email ID and mobile number of their friends. In the settings of the app, the user has to specify the threshold values. If they are alone they might set their threshold value to the lowest level. When the user is in danger, they should shake their mobile. Because of the lowest threshold level, the shaking capacity of the mobile also be lesser and the app starts to work automatically. If the user is in the very safe situation, then the threshold value might set to highest level.

- **IDENTIFY THE LOCATION**

The **Global Positioning System** (**GPS**) is a space-based satellite navigation system that provides location and time information in all weather conditions, anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites. The GPS in our smartphones always in ON position only. When the mobile shakes, the app is switched ON and it prompts the GPS to track the user's location. The location of the user should be automatically identified by the GPS. The Latitude and Longitude values are calculated and it calculates the exact position of the user. The identified location is saved on the server. The app also finds the user's friends location through GPS.

- **SENDING MESSAGE**

In this module, based on the user's location the GPS calculates their latitude and longitude values. This app finds the user's friends contact and through GPS calculates the friend's location. All the values are stored in the server. The app compares the friends and the user's Latitude and Longitude values. If the values reached nearer or same or less equal, the GPS finds the location of the user's friends. In this app finds their friends location, which is nearer to the user using GPS. Then it sends the user's location as message alert to their friends who are nearer to the user.

- **AUTOMATIC PICTURE CAPTURING AND SENDING**

In this module, the camera device in the user's mobile gets automatically switched on and captures the location as images. The captured image is then sent to the contacts who are nearer to the user as Email. Through this email, we can identify the victim.

III. DIAGRAMS

A.UML Diagrams

The **Unified Modeling Language** (**UML**) is a general-purpose, developmental, modeling language in the field of software engineering that is intended to provide a standard way to visualize the design of a system.

UML was originally motivated by the desire to standardize the disparate notational systems and approaches to software design developed by Grady Booch, Ivar Jacobson, and James Rumbaugh at Rational Software in 1994–1995, with further development led by them through 1996.

In 1997 UML was adopted as a standard by the Object Management Group (OMG), and has been managed by this organization ever since. In 2005 UML was also published by the International Organization for Standardization (ISO) as an approved ISO standard.[2] Since then it has been periodically revised to cover the latest revision of UML.

- ***Use- Case Diagram***

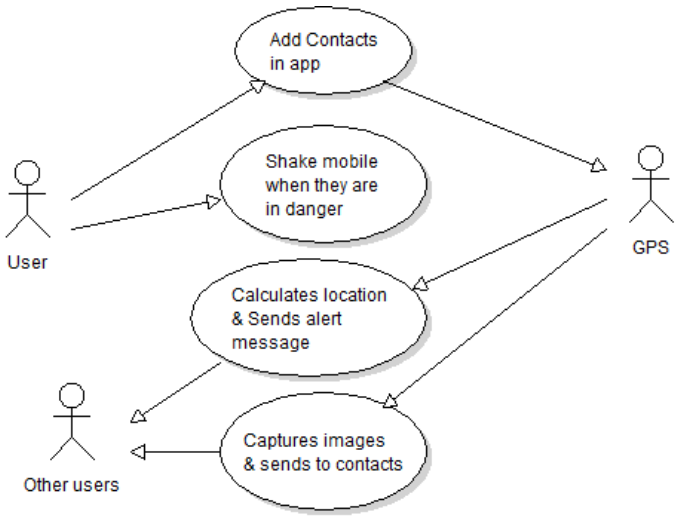

Fig. 1 Use case diagram for in this application

- ***Sequence Diagram***

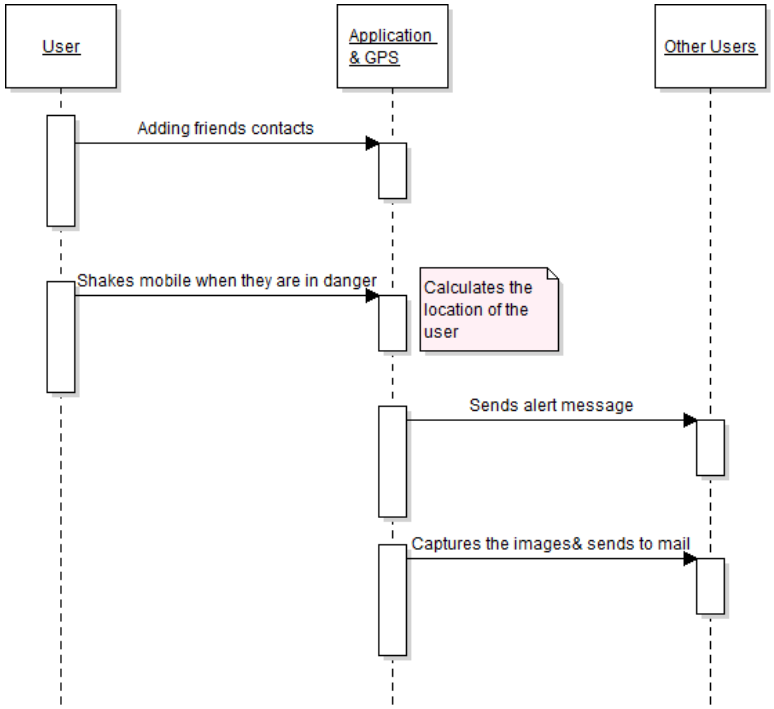

Fig. 2 Sequence diagram

- ***Activity diagram:***

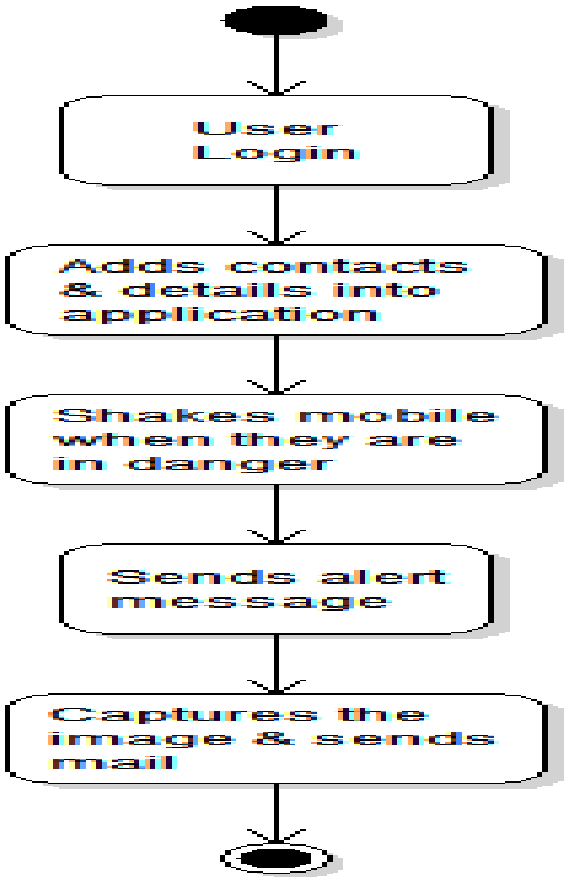

Fig. 3 Activity Diagram

- ***Class Diagram :***

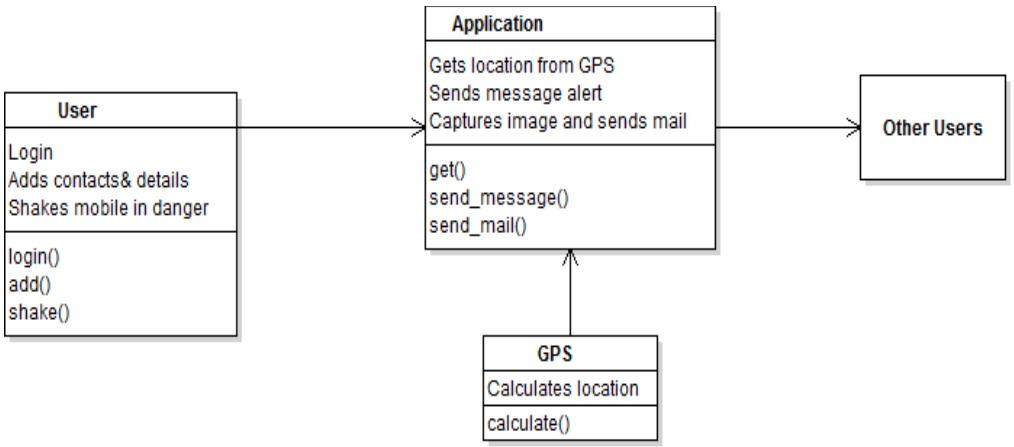

Fig. 4 Class Diagram

A. ***DFD(Data flow Diagrams)***

Level 0: Shakes Mob Details

Fig. 5 User add details

Level 1:

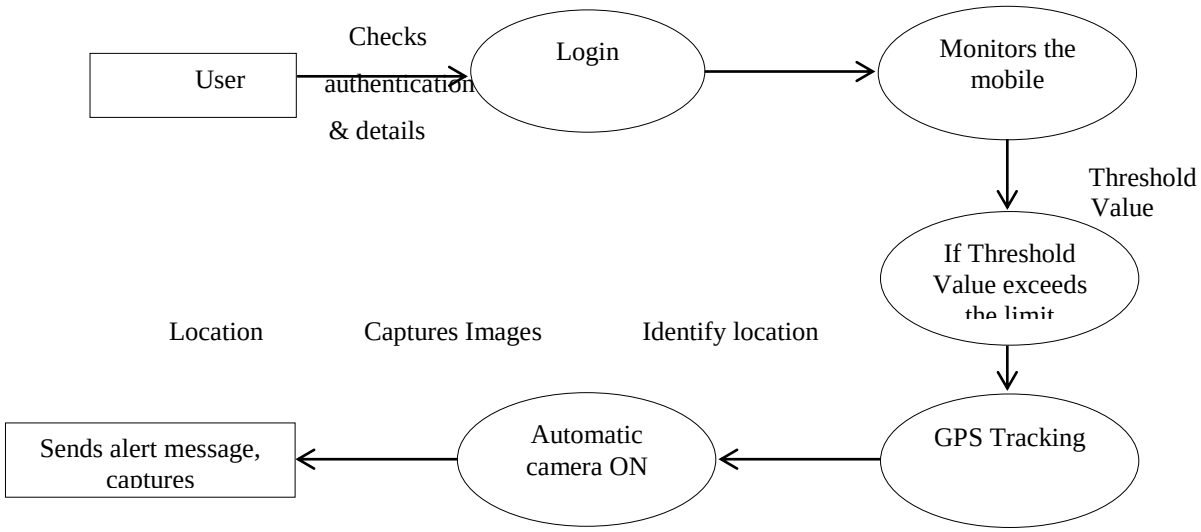

Fig. 6 User with GPS

B.SYSTEM ARCHITECTURE

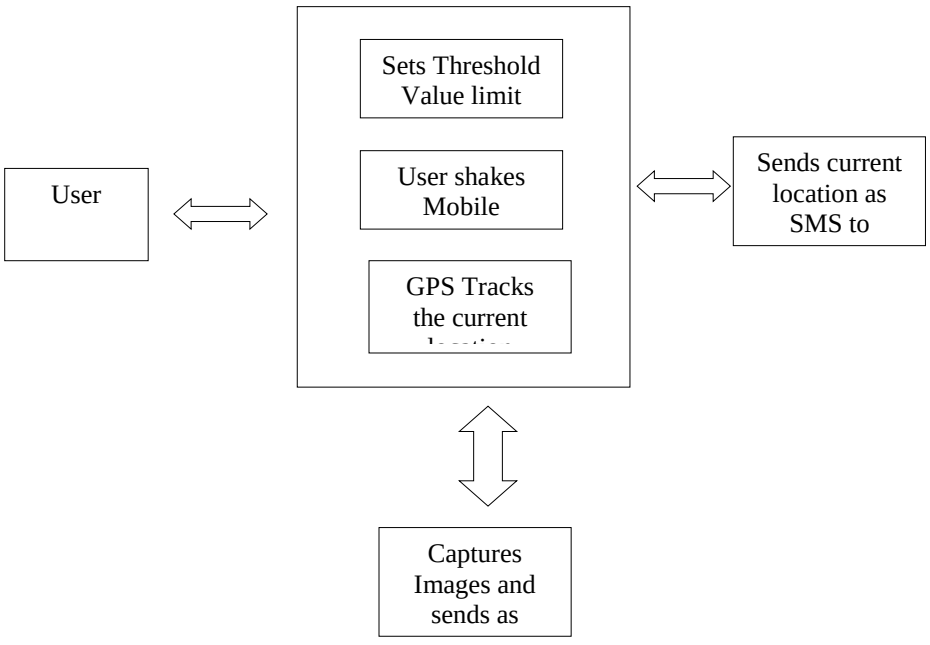

Fig. 7 Fall Detection and Report

IV.SYSTEM DEVELOPMENT

- *User Registration Page*

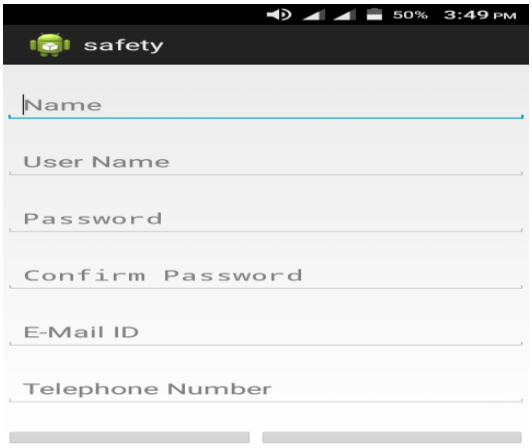

Fig.8 In this page user add the Details.

- *Login Page*

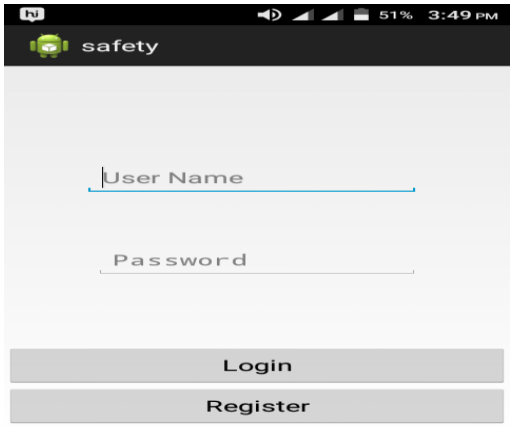

Fig.9 In this page user login into the app.

- *User Interface Design*

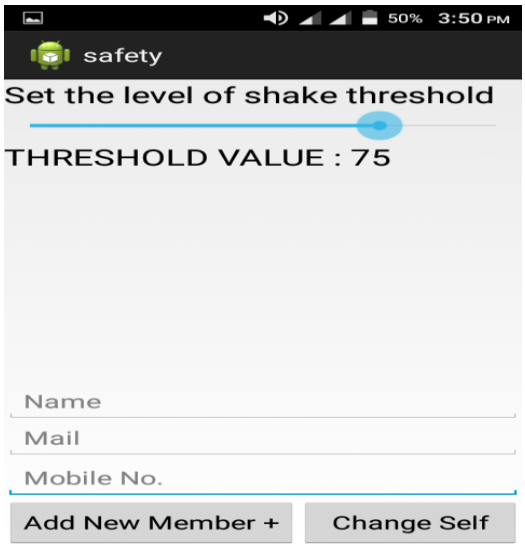

Fig. 10 in this page user adds the user friend's detail.

- ***Identify Location***

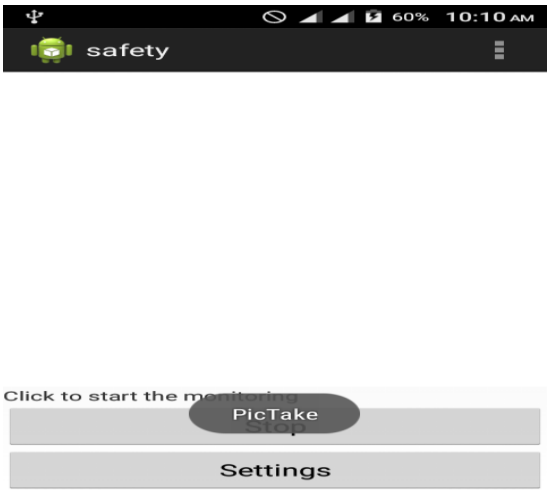

Fig. 11 in this page monitoring the user location and find the user friend's location using GPS.

CONCLUSIONS

In this paper, we proposed the Elder person's security concept. This project can be implemented in different areas of security and surveillance. The system can perform the real time monitoring of the desired area and detect the violence with a good accuracy. In a master console using the very high-resolution camera and dedicated software for this application make system perfect use in our public places. The gender detection algorithm and motion tracking will more precise for future real-time monitoring application to prevent the generation of a false alarm. It can be concluded by saying such a system can revolutionize the present scenario of Elder person safety.

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