

**An Android Based Personal Security Application**



**TrackMe**

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# Abstract

The aim of this project is to create a smartphone application that utilizes the unique capabilities of smartphones in order to aid the personal security for vulnerable adults and children.

The application was designed to utilise a smartphones inbuilt GPS and accelerometer to track the users location and detect scenarios in which the user may be in a vulnerable situation. This involved detection of scenarios such as a user physically falling, or veering outside a particular boundary when such behavior is unexpected. When possible (i.e. User device has Internet connectivity) a users location data is uploaded to a backend server where other users of the application can query their most recent location and time. The application also has the ability to send an emergency text message in the case of an emergency such as a fall being detected or a user travelling outside of a pre-defined boundary from their starting position.

The application was designed, developed and deployed on the Android platform using the Android Studio IDE.

The project also incorporates the use of both PHP and MySQL to develop the supporting backend remote database server.

The project meets the primary aims allowing periodic check-ins from a users smartphone, remote monitoring of device location, detection of lack of user movement and movement outside certain boundaries.

# Acknowledgements

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# 1. Introduction

## 1.1 Background

Personal security has always been an issue especially for more vulnerable people such as younger children and the elderly. Issues such as people getting lost,

The idea of creating a smartphone application to aid personal security is not revolutionary and indeed there are already many existing implementations.

This project includes the implementation of many of the same features from existing personal security applications.

Vunerable people

Other implementations exist

Advancements in smartphone capability -> possibility of enhanced security

Latest user location, boundary, emergency text/call

## 1.2 Project Objective

This project involved the creation of a fully functional android smartphone application and the application was designed to provide the end user with the following core features:

* Track user location at a user-specified time interval
* Track another users latest location update
* Enable Fall Detection

These core features required the following to also be implemented in the project:

* Allowing application to upload location data to backend server (when possible i.e. Internet connection available on user device).
* Allowing application permission to access acceloromter, GPS, etc

save profile preferences for location tracking and fall detection

## 1.3 Context

### Android Development

### Learn PHP

### Server Setup with MySQL

### Would find the application useful for socialising

# 2. State Of The Art Review

## 2.1 Technology Overview

### GPS Considerations

### Tracking Location

### Fall Detection

### Emergency Contacts

### Database Server

### PHP Project

## 2.2 Similar Applications

### BSafe

Social Personal Safety Network

Location Sharing

Location Tracking (Similar to TrackMe feature of TrackMe application)

Location Check-In

Check-In Timer

Fake Call Triggers

Guardian Alert Button



### Emergensee

Live streaming of video & audio

GPS location data

Preset timer for check-in

Text & email distress notifications

Incident recording capability

24/7 monitoring

Real-time precautionary escort

Pre-set safety contacts

# 3. Implementation Details

## 3.1 Mobile Application

### Application Module

### Activity Module

### Services Module

### Helper Module

### UI

## 3.2 Database

## 3.3 Server-Side Scripting

# 4. Evaluation

## 4.1 Testing During Development

## 4.2 User Feedback

# 5. Conclusion

# References

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# Appendices

# Screenshots