EYE MATE FOR BLIND AND BLIND TRACKER

By

Vaishnav PN

[Regd. No. 20370060, Semester: IV]

Project Report

Submitted in partial fulfilment of the requirements for the award of the degree of

MASTER OF COMPUTER SCIENCE

Under the Guidance of

Prof. Dr. S.K.V. JAYAKUMAR

DEPARTMENT OF COMPUTER SCIENCE

SCHOOL OF ENGINEERING AND TECHNOLOGY

PONDICHERRY UNIVERSITY

PUDUCHERRY-605014

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BONAFIDE CERTIFICATE

This is to certify that the project work entitled **"Eye mate for blind and blind tracker"** is the bonafide record of work done by Mr. Vaishnav PN (Reg. No.: 20370060) at Pondicherry University, Puducherry in partial fulfilment for the award of degree of Master of Science (MSc), Department of Computer Science, School of Engineering and Technology, Pondicherry University.

This work has not been submitted elsewhere for the award of any other degree to the best our knowledge.

INTERNAL GUIDE

Dr. S.K.V. JAYAKUMAR
Associate Professor,
Department of Computer Science,
School of Engineering and
Technology, Pondicherry
University, Pondicherry - 605014

HEAD OF THE DEPARTMENT
Dr. S. SIVASATHYA
Professor and Head,
Department of Computer Science,
School of Engineering and
Technology, Pondicherry
University,
Pondicherry - 605014

Submitted for the Viva-Voce Examination held on _____.

INTERNAL EXAMINER

EXTERNAL EXAMINER

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Vaishnav PN [Reg. No. 20370060]

Chapter 1

INTRODUCTION

1.1 **Abstract**

In this project, I have presented a blind assistive and tracking embedded system. In this system the blind person is navigated through a spectacle interfaced with an application. The blind person is guided through English voice commands generated by the application according to the obstacle position. Using voice command, a blind person can establish voice call to a predefined number without touching the phone just by pressing the headset button. The blind assistive application gets the latitude and longitude using GPS and then sends them to a server. The movement of the blind person is tracked through another application that points out the current position in Google map.

1.2 **Background**

For the blind, the lack of sight is a major barrier in daily living: information access, mobility, way finding, interaction with the environment and with other people, among others, are challenging issues. In fact, school and working-age blind have very high analphabet and unemployment rates. In consequence, the person who is blind and his/her family faces important socioeconomic constraints. As blind person has to depend on others for their day-to-day life so often in our society, that people consider them as a burden. And often it happens that blind people fall down and get hurt while walking in the road so they need any device that can inform them about the position of the obstacle situated ahead. In this sense white cane is the most used blind assist tool for the blind person. Also, it is a common scenario that blind people are lost and as a result their

guardians and relatives are in tension and worst is that many of them are never found.

There are various types of assistive technologies invented which are currently available to assist visually impaired people [3]. The main concern that many researchers are trying is to navigate a blind or partially sighted person quickly and safely in an unfamiliar environment. And from this point of view various projects have been introduced in recent years after long tiring researches that include different technologies like GPS, RFID, Ultrasonic, Laser and GSM. Normally researchers have oriented wearable technology in various devices in such a way where these devices are actually worn on the body such as: assistive devices worn on fingers, wrist, forearm, and head. on these circumstances, we have implemented a system which enables the blind person to walk independently in the road avoiding obstacles, guided by the voice commands according to the various obstacle positions. Also, an emergency button triggers an SMS from the GSM module that will send the current location of the blind person to the registered caretaker and friend. And the system facilitates guardians to monitor the movement of the blind person and rescue him/her in any situation using "Blind Tracker", another application introduced in this system.

1.2.1 **Motivation**

Blind person needs a stick to walk. He needs other's help to walk in the road. Often blind person gets stumbled in the road not knowing the object, sometimes blind persons are lost people ignore blind person as they have to depend on other to go outside. This is the prime motivation behind implementing Blind assisting system helping blind person to walk without a stick. Informing blind person about the location of the obstacle telling blind person about the location of the obstacle. Blind person can seek emergency help using the Eye mate For Blind app Tracking

the location of the blind person. Rescue blind person immediately from any exceptional condition. Also, can detects the obstacle. Sends obstacle information to Android phone. Alerts the blind person through voice commands, Obtains location from GPS. Sends location to server, retrieves location from server points the current location of blind person in Google Map.

1.3 **Objective**

Basic objective of this system the blind person is navigated through a spectacle interfaced with an application. The blind person is guided through English voice commands generated by the application according to the obstacle position. Using voice command, a blind person can establish voice call to a predefined number without touching the phone just by pressing a button. The blind assistive application gets the latitude and longitude using GPS and then sends them to a server. The movement of the blind person is tracked through another application that points out the current position in Google map.

Chapter 2
PROBLEM DEFINITION

2.1 **Existing System**

Blind mobility is one of the main brainstorming challenges that scientists are still facing around different parts of the world and still researching to implement suitable blind assistive devices. There are many applications available to help but not an application where you can do everything there is am app for image

recognition, there is another application for tracking blind person and if the blind person need help you have to install another application. There is no application where you can do all these functions.

2.2 **Proposed System**

There have been many efforts but even now, it is not easy for the blind people to move independently from one place to another. To solve this great problem we proposed a system, the system where a blind person can move without the help of other and can make emergency call to a predefined number and we can find out him/her easily if he/she is lost also we add the functionality of image recognition. The main feature that differs our system from other application is we have all the three functionalities in one place. The blind person doesn't even have to interact with the UI he can use a earphone and the image recognition is done automatically, also he just have to press one button if he needs help an alert notification will be sent to the registered caretaker and his friend with his location.

Chapter 3

FEASIBILITY ANALYSIS

3.1 **Technical feasibility**

The technical requirements for the system are economic and it only uses 1 hardware for the blind person which is very cheap. Software's like windows/Linux is necessary for implementing the application.

3.2 **Operational feasibility**

The purpose of the operation feasibility study is to determine whether the new system will be used if it is developed and implemented and whether there will be resistance from users that will undermine the possible benefits of the application. This project is based on running android system. Since android is a free and open-source software, any person with the least knowledge of android system can view and use this easily without any problems.

3.3 **Economic feasibility**

There is no initial investment for software or hardware. The software runs on android operating systems which are available in most of smart phone devices, so they are available at cheap rate. We have used only PyCharm which is available at free of cost. And we only used libraries which are available freely. We only needed to buy one cheap hardware for blind person. Hence economically not much amount has been spent for this project. Hence, this system is economically feasible.

Chapter 4

SOFTWARE REQUIREMENT SPECIFICATION

4.1 **System requirements**

The app requires the following hardware and software requirements at the developer's as well as at the user’s end.

4.1.1 **Hardware Requirements**

- Input Device : Mouse, Keyboard
- Output Device : Monitor
- Memory : 4 Gb Ram (Minimum)
- Processor : Intel core i3 or above

4.1.2 **Software requirements**

- Operating System : Windows 8 /10 for Better Performance
- Front End : Python (Flask)
- Back End : MySQL
- Software Used : PyCharm
- Web Browser : Internet Explorer/Google Chrome/Firefox (for web application)

Chapter 5

SYSTEM DESIGN

5.1 Modules

ADMIN

- Login
- View complaint and post reply
- View users

REGISTRED USER

- Register
- Login
- Register blind person
- View alert from blind
- Track blind person
- Post complaint and view reply
- Approve Friend request

BLIND

- Capture Image
- Identity captured images as voice
- Send emergency alert
- Call My Friends

FRIENDS

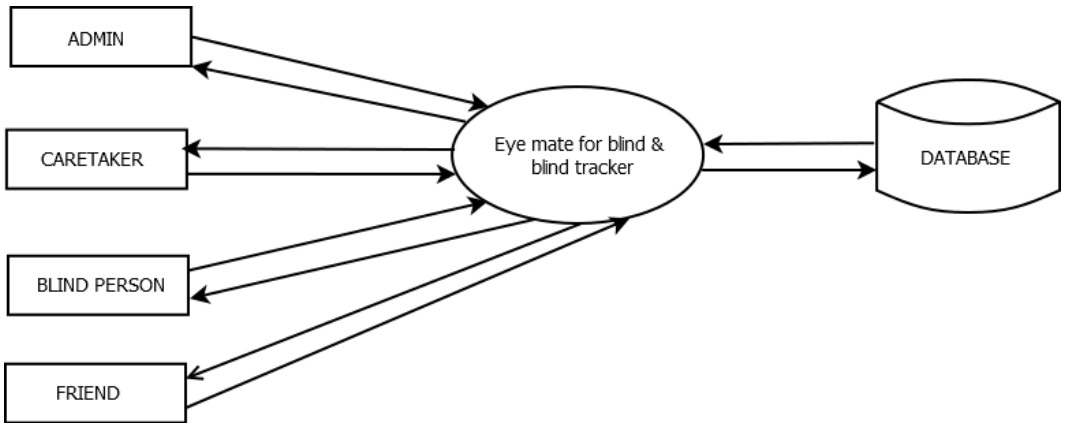
- Register
- Send friend request
- View alert from friends (Blind)
- Track Location

5.2 **Diagrams**

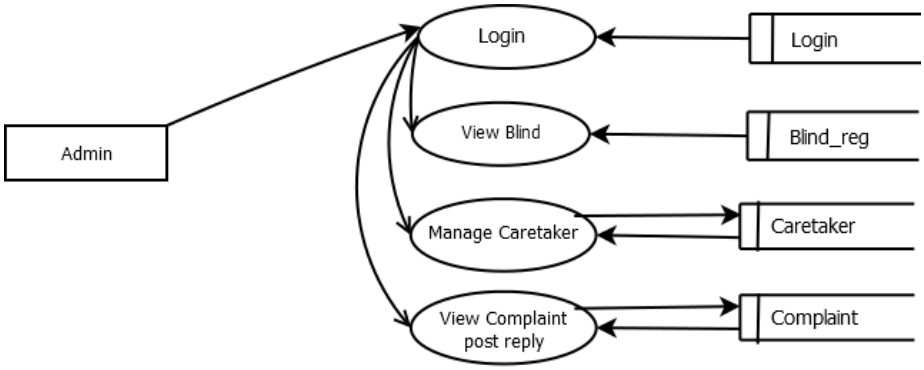
A diagram is a symbolic representation of information using visualization techniques.

5.2.1 **Dataflow Diagram**

Level 0:



Level 1.1



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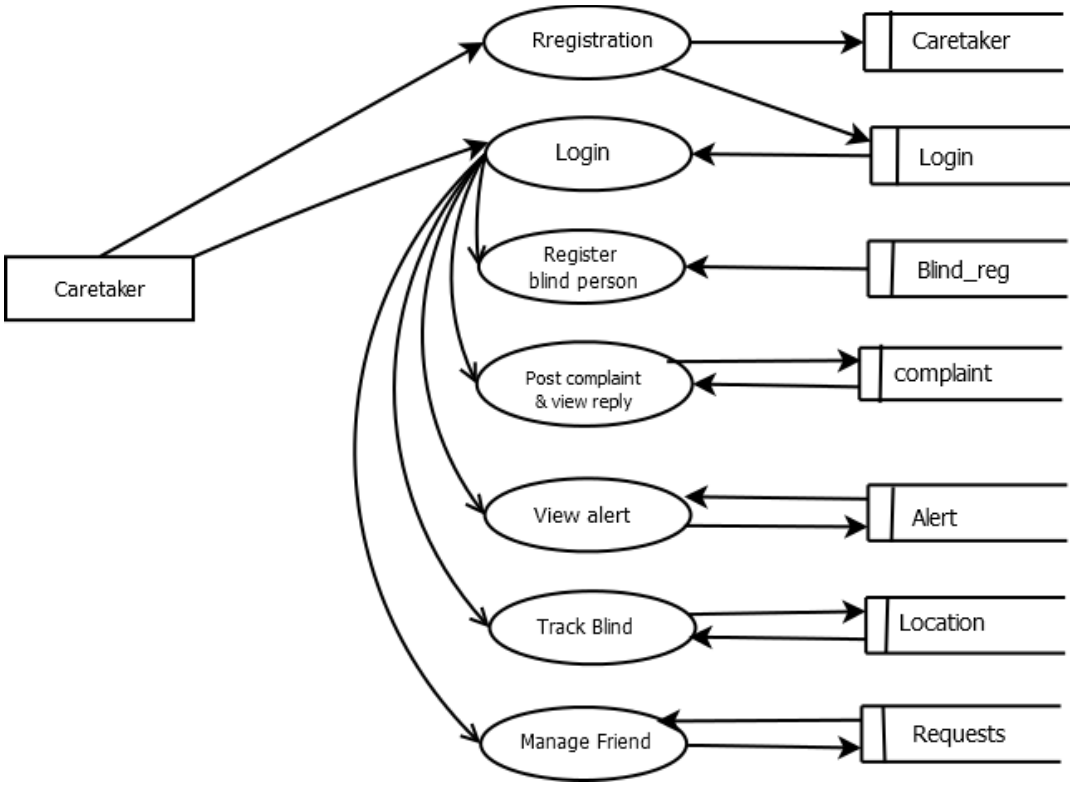

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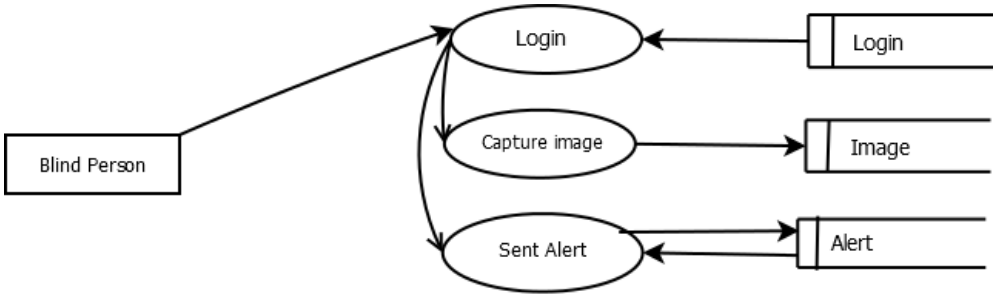

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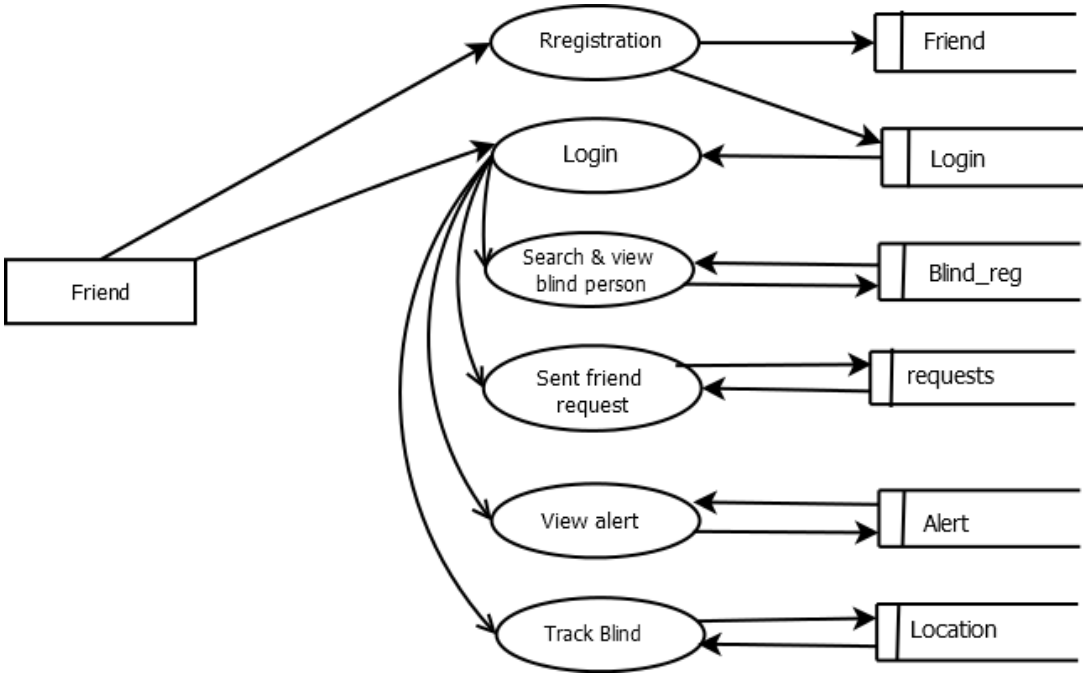


5.3 **Tables**

Login

Fieldname	Datatype	Constraints
login_id	Int	Primary Key
u_id	Int	Foreign Key
username	Varchar (30)	Not Null
Password	Varchar (25)	Not Null
type	Varchar (20)	Not Null

Caretaker

Fieldname	Datatype	Constraints
Caretak_id	Int	Primary Key
Name	Varchar (30)	Not Null
Password	Varchar (30)	Not Null
Contact	Int	Not Null
Email	Varchar (20)	Not Null

Place	Varchar (30)	Not Null
District	Varchar (30)	Not Null
Pin	Int	Not Null
Image	Varchar (300)	Not Null
Status	Varchar (30)	Not Null

Blind Person

Fieldname	Datatype	Constraints
Blind_id	Int	Primary Key
Name	Varchar (30)	Not Null
Password	Varchar (30)	Not Null
Contact	Int	Not Null
Email	Varchar (20)	Not Null
Place	Varchar (30)	Not Null
District	Varchar (30)	Not Null
Pin	Int	Not Null
Image	Varchar (300)	Not Null

Friend

Fieldname	Datatype	Constraints
Friend_id	Int	Primary Key
Name	Varchar (30)	Not Null
Password	Varchar (30)	Not Null
Contact	Int	Not Null
Email	Varchar (20)	Not Null
Place	Varchar (30)	Not Null
District	Varchar (30)	Not Null
Pin	Int	Not Null
Image	Varchar (300)	Not Null
Status	Varchar (30)	Not Null

LOCATION

Fieldname	Datatype	Constraints
Loc_id	Int	Primary Key
Blind_id	Varchar (30)	Foreign Key
Name	Varchar (30)	Not Null
Latitude	Int	Not Null
Longitude	Varchar (20)	Not Null

Help

Fieldname	Datatype	Constraints
Help_id	Int	Primary Key
Blind_id	Varchar (30)	Foreign Key
Name	Varchar (30)	Not Null
Contact	Int	Not Null
Image	Varchar (300)	Not Null
Latitude	Int	Not Null
Longitude	Varchar (20)	Not Null
Date	Date	Not Null
Time	Time	Not Null

Complaint

Fieldname	Datatype	Constraints
Comp_id	Int	Primary Key
Caretak_id	Varchar (30)	Foreign Key
Complaint	Varchar (150)	Not Null

Reply	Varchar (150)	Not Null
Date	Date	Not Null
Time	Time	Not Null

Chapter 6

IMPLEMENTATION

6.1 **Tools and technologies**

6.1.1 **PyCharm**

PyCharm is an integrated development environment (IDE) used in computer programming, specifically for the Python programming language, and to operate across multiple platforms like Windows, Linux, and macOS. It was developed by the Czech company JetBrains on 3 February 2010. It provides a wide range of essential tools for Python developers, tightly integrated to create a convenient environment for productive Python, web, and data science development. The IDE comprises code analysis tools, debugger, testing tools, and also version control options. It also assists developers in building Python plugins with the help of various APIs available. The IDE allows us to work with several databases directly without getting it integrated with other tools. Although it is specially designed for Python, HTML, CSS, and JavaScript files can also be created with this IDE.

6.1.2 **FLASK**

Flask is a web application framework written in Python. Armin Rancher develops it. Flask is a small and lightweight Python web framework that provides useful tools and features that make creating web applications in Python easier. It gives developers flexibility and is a more accessible framework for new developers since you can build a web application quickly using only a single Python file. Flask is also extensible and doesn't force a particular directory structure or require complicated boilerplate code before getting started. Flask supports extensions that can add application features as if they were implemented in Flask itself. Extensions exist for object-relational mappers, form validation, upload handling, various open authentication technologies and several common framework related tools. Flask uses the Jinja template engine to dynamically build HTML pages using familiar Python concepts such as variables, loops, lists, and so on

6.1.3 **XAMPP**

XAMPP is one of the widely used cross-platform web servers, which helps developers to create and test their programs on a local webserver. It was developed by the Apache Friends, and its native source code can be revised or modified by the audience. It consists of Apache HTTP Server, MariaDB, and interpreter for the different programming languages like PHP and Perl. It is available in 11 languages and supported by different platforms such as the IA-32 package of Windows & x64 package of macOS and Linux.

Chapter 7

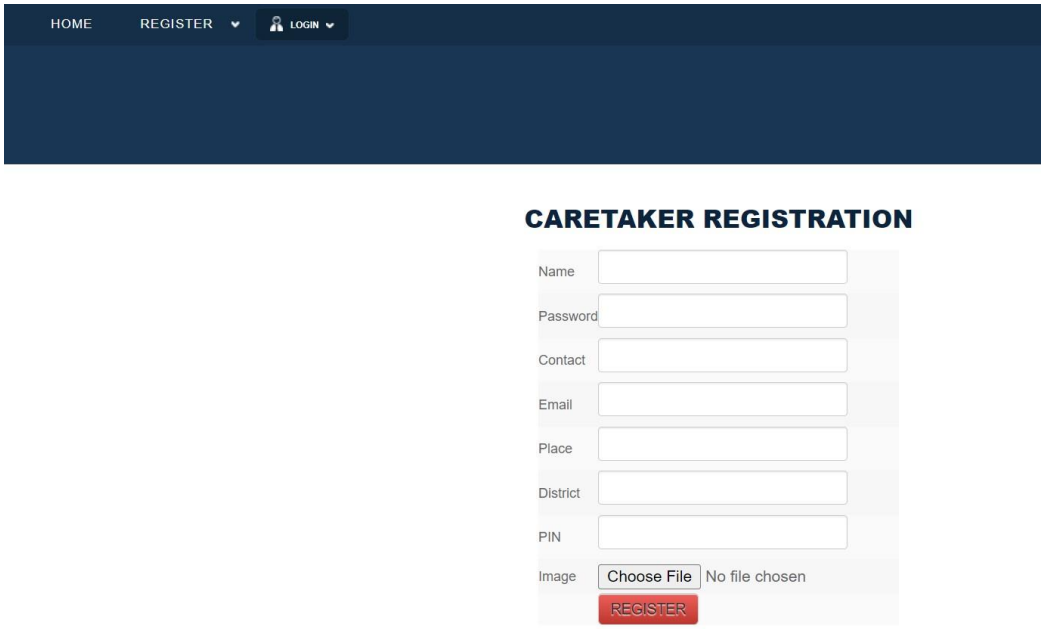
CONCLUSION

In this Project, we have implemented a system for blind navigation and an image recognition device without interacting with the screen from the blind person. The final result of our approach is a blind navigation and tracking system with a flexible architecture that can be adopted in blind mobility. The system has been tested through several test cases. The blind assistive device with Eye mate for Blind application is very useful for a blind person to move without the help of other and the user can seek emergency help just by pressing a button in the device. The tracking system involved here through Blind Tracker application is very applicable to track the current location of the blind person

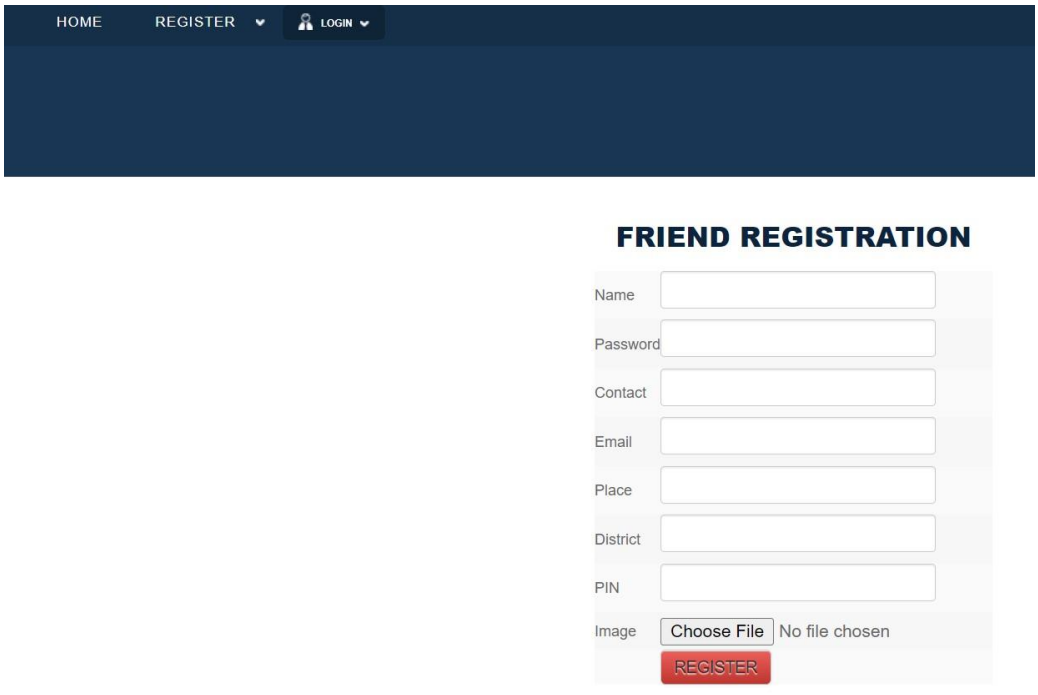
Chapter 8

Appendix -Screenshot

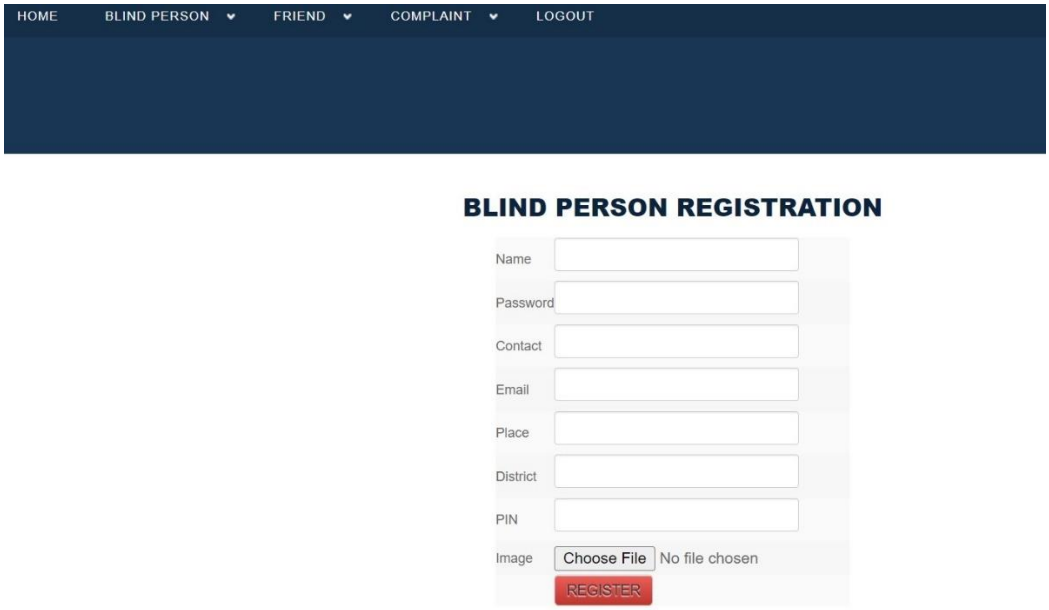
Caretaker Registration



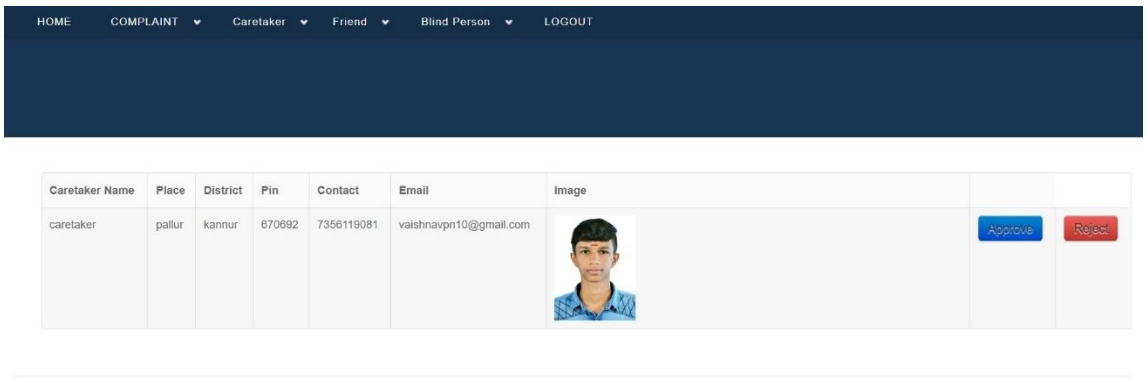
Friend Registration



Blind Person Registration



View Caretaker (Admin)



View Friend (Admin)

NAME	PLACE	DISTRICT	PIN	CONTACT	EMAIL	IMAGE
friend 1	kerala	kannur	670692	9633258814	friend1@gmail.com	

View Blind Person (Admin)

Name	Place	District	Pin	Contact	Email	image
shamal	mahe	kannur	673310	8765765356	shamal123@gmail.com	
arjun	pallur	kannur	673310	7356119081	arjunck24@gmail.com	

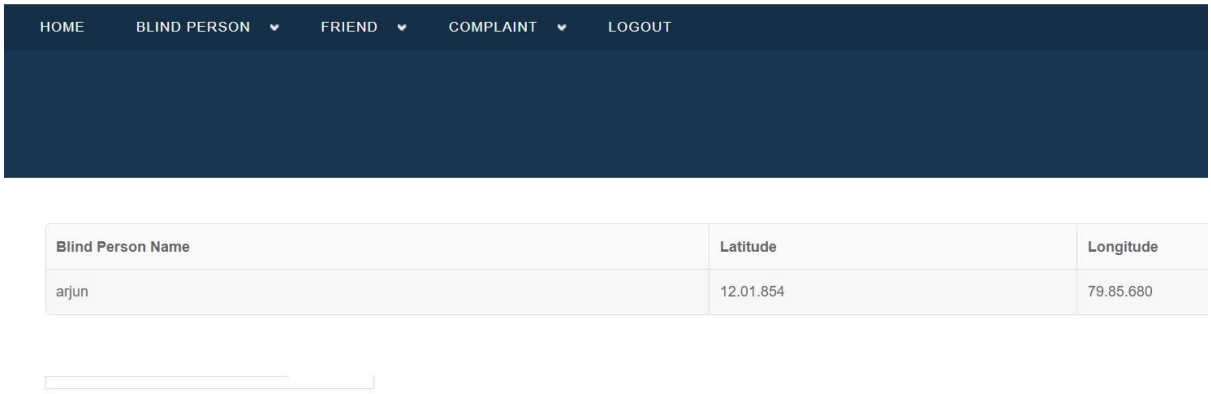
View Complaint & Post Reply (Admin)

Complaint	Date	Time	
new complaint	April 29, 2022	2:12 p.m.	Post Reply
complaint 1	May 9, 2022	1:12 p.m.	Post Reply

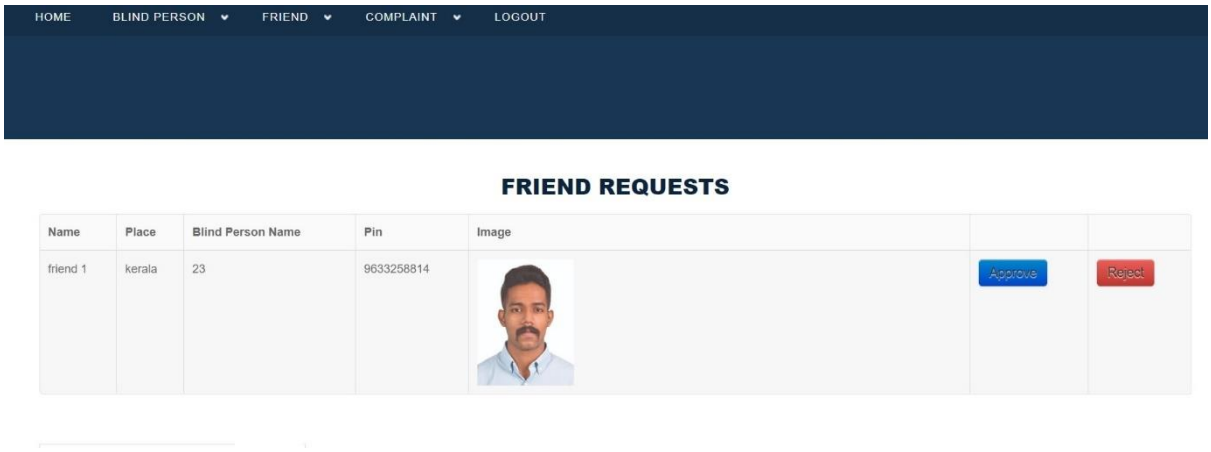
View Alerts

Name	Contact	Latitude	Longitude	Date	Time
arjun	7356119081	12.01.854	79.85.680	2022-06-07	12:12:23

Track Location



Manage Friend (Caretaker)



Post Complaint & View Reply

Complaint	Reply	Date	Time
new complaint	complaint noted and will make improvement	April 29, 2022	2:12 p.m.
complaint 1	done	May 9, 2022	1:12 p.m.

Search Blind & Sent Request (Friend)

Blind Person name	Place	District	Pin	Image	
arjun	pallur	kannur	673310		Sent Request

Chapter 9

BIBLIOGRAPHY

1. https://www.youtube.com/
   YouTube is an American online video sharing and social media platform launched by Steve Chen, Chad Hurley, and Jawed Karim in February 2005. Around the world, its users watch more than one billion hours of videos each day.

2. https://www.geeksforgeeks.org/
   A Computer Science portal for geeks. It contains well written, well thought and well explained computer science and programming articles, quizzes and so on.

3. MySQL Website: https://www.mysql.com/
   MySQL is a relational database management system based on the Structured Query Language, which is the popular language for accessing and managing the records in the database.

4. PyCharm IDE: https://www.jetbrains.com/pycharm/
   PyCharm is an integrated development environment (IDE) used in computer programming, specifically for the Python programming language, and to operate across multiple platforms like Windows, Linux, and macOS.

5. XAMPP: https://www.apachefriends.org/
   XAMPP is one of the widely used cross-platform web servers, which helps developers to create and test their programs on a local webserver. It was developed by the Apache Friends, and its native source code can be revised or modified by the audience