

A Project Report on

Enhancing Customer Experience with Intelligence

In partial fulfilment for the award of the degree

Of

BACHELOR OF ENGINEERING
In
INFORMATION TECHNOLOGY

Submitted By

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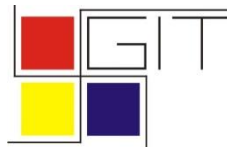
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GANDHINAGAR INSTITUTE OF TECHNOLOGY

Moti-Bhoyan, Gandhinagar

2018-2019

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Abstract

Enhancing customer Experience with intelligence

Customer Experience is nowadays very valuable to run a business. Customer behavior needs to be observed and what customer need. The central task is making customer Experience better and making sales higher than running current business growth hacking. This is providing business more opportunity through intelligence. Customer behavior observation is challenging. We discuss the model and design to solve the current customer experience.



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We wish him all the very best in all his future endeavors.

Thanking You,

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Symbol and Abbreviations

Acronyms

Abbreviations

IT	Information Technology
GIS	Geographic Information System
IOT	Internet of Things
HTML	Hypertext Markup Language
CSS	Cascading Style Sheet
MVC	Model View Controller
SQL	Structured Query Language
ADMIN	Administrator

Chapter 1: Introduction

1.1 Organization Profile

1.1.1 Introduction

- Skyblue Career Pathway is a company which operates professional projects on amazon web services and big data.

1.1.2 Company Address, Guide Detail

- Address 3, Prerna Arcade, Ground Floor, opp Doctor House, C G Road, Ahmedabad, Gujarat - 380006.
- Contact 9428503923
- Services This industry provide the services on the different technology like web, Mobile, Custom Development, etc.

1.2 Project Detail

1.2.1 Project Profile

The idea of customer experience services is right now very popular in shopping system. Main purpose of the customer experience services is to provide reliable service at reliable cost. Nowadays, number of mall are increasing in urban areas, due to increasing number of vehicles, pollution, traffic, congestion are also increasing. Managing cost is one of the important factor for the shopping system. So the customer experience is the service which can help us to overcome all this current problems in the shopping system. So this document is all about the customer experience service and how it can be useful for solving the current shopping experience.

1.2.2 Project Definition

- Day by day, due to escalation of traffic, congestion and pollution and rapid prices of FMCG goods, customer experience is now becoming very much popular.
- Recently, the customer experience services have become very popular in urban malls and shopping center.
- It's difficult to share customer experience on daily basis. So we need a system that provide reliable customer experience sharing on daily basis. In current situations, other organizations don't provide customer experience on daily basis.
- Therefore, we decided to develop an system application which would help people by sharing their customer experience.

1.3 Purpose

- Most of the companies don't provide customer experience services on daily basis.
- And customer experience is not secured like other services.
- Our aim is to provide a service to the shopping system, Which help them to share their customer experience with other peoples who has same shopping system.
- Shopping centers and malls can request different types of customer experience services.
- This customer experience system must be real time experience.

1.4 Scope

- The scope of this product is to be applied to tracking and recording customer behavior more secure and effective.

1.5 Objective

- Provide the real time tracking with centralized database system.
- This provide the selection of the facial recognition.
- The objective of this project is to show how the implementation of system can improve human behaviour.
- It provided the different kinds of the security by using different kind of security Notification.

1.6 Technology and Literature Review

1.6.1 Technology

Front End : html, css, python

Programming Language : python, machine learning

Architecture : Pycharm

Database :MySQL

1.7 Literature Review

- There were some limitations and challenges for the research study. By studying the facial recognition application deeply we found the some of the major problem faced by that organisations.
- So. We took this definition from the real life problem of the mall staff members, make the system such a way that it removes certain problem of that organization.

Chapter 2: Design: Analysis, Design Methodology and Implementation Strategy

2.1 AEIOU Summary Framework

2.1.1 Activities :

- Notification
- Log In
- Log Out
- Database
- Connectivity

2.1.2 Environments :

- python Technology
- pycharm
- Hardware
- Internet
- MY SQL
- Virtual Machine

2.1.3 Interactions :

- Electronic Device
- Application
- Internet
- Authorize Person

2.1.4 Objects :

- Internet
- Electric Device
- Laptop, Mobile, Camera
- Application

2.1.5 Users :

- Faculty Staff Members
- Admin

2.1.6 Scanned Copy of AEIOU Summary Canvas :

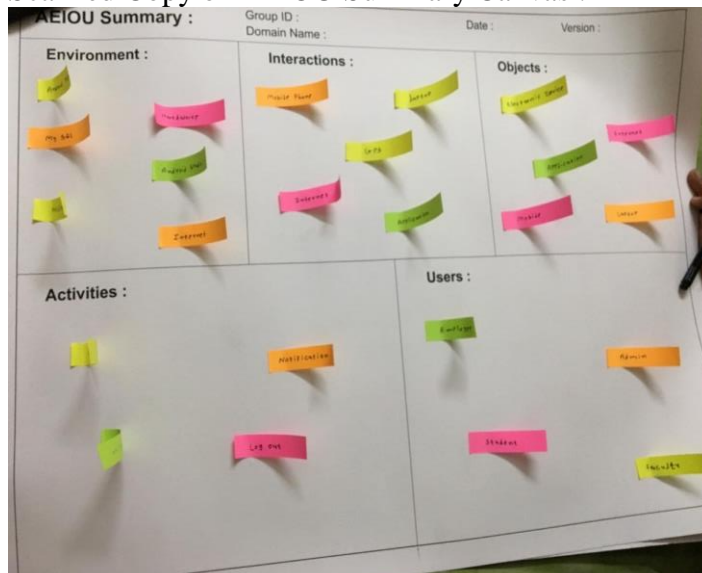


Figure 2.1

2.2 Empathy Mapping Canvas

2.2.1 User :

- Commercial Organization
- Malls
- Shopping Organization
- Private Organization

2.2.2 Stakeholders :

- Developer
- Investors
- staff
- Mobile

2.2.3 Activities :

- Admin/Login/Sign Up
- Faculty Performance
- Mobile Performance
- Face AI
- Live Tracking
- Notifications

2.2.4 Story Boarding :

Happy Story 1 :

FaceAI has been used successfully and effectively by many different organizations of specifically those that work with sensitive information or high security operations. For example: A FaceAI can disable a device that contains classified info as soon as the device crosses a set perimeter, law enforcement can use FaceAI in conjunction with ankle bracelets for people on house arrest, and administrators can be notified when an unauthorized person enters a high security area using a predefined geofenced boundary.

Happy Story 2 :

Location and time provide great context but it would be better if you knew that I was driving and that my gas tank was on empty ? then you solve my pain with a real time detection alert of cheap and close-by gasoline. Obviously this example would be difficult without a connection to car systems. But there are other valuable use cases. For example, a user located at a hotel in a new city would love nearby restaurant recommendations.

Sad Story 1 :

As this technology gains popularity, more and more people are expressing concerns about the violation of privacy FaceAI carries with it. In many cases, camera integrates with location-based services like FourSquare automatically checking you in when you arrive at a certain location.

Sad Story 2 :

There are rumors circulating that Starbucks is thinking about establishing a FaceAI around each of their locations. The FaceAI would alert passersby that there's a specialty coffee drink waiting for them just around the corner. It sounds pretty cool, but if you live in a place like New York City, the amount of alerts you would receive, simply by walking a few blocks down the street, would be outrageous.

2.5 Scanned copy of Empathy mapping canvas :

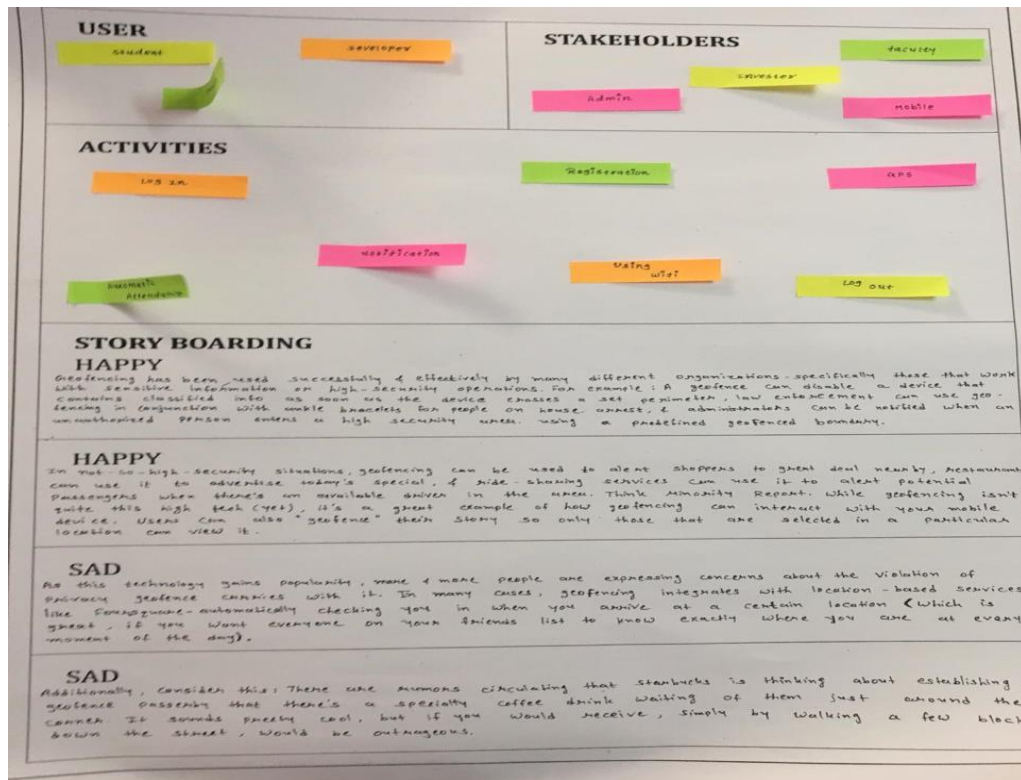


Figure 2.2

2.3 Ideation Canvas

2.3.1 People:

- Staff
- Admin
- Customer

2.3.2 Activities :

- Login
- Logout
- Notification
- Registration
- Using WIFI
- Camera

2.3.3 Situation/Context/Location :

- Mall
- Shopping Center
- Hotel
- Company
- Hospital

2.3.4 Props/Possible Solutions :

- Internet
- Database
- python
- Electricity, Electronic Device
- Notifications for security
- Hardware
- Data is updated after every 3 sec
-

2.3.5 Scanned Copy of Ideation Canvas :

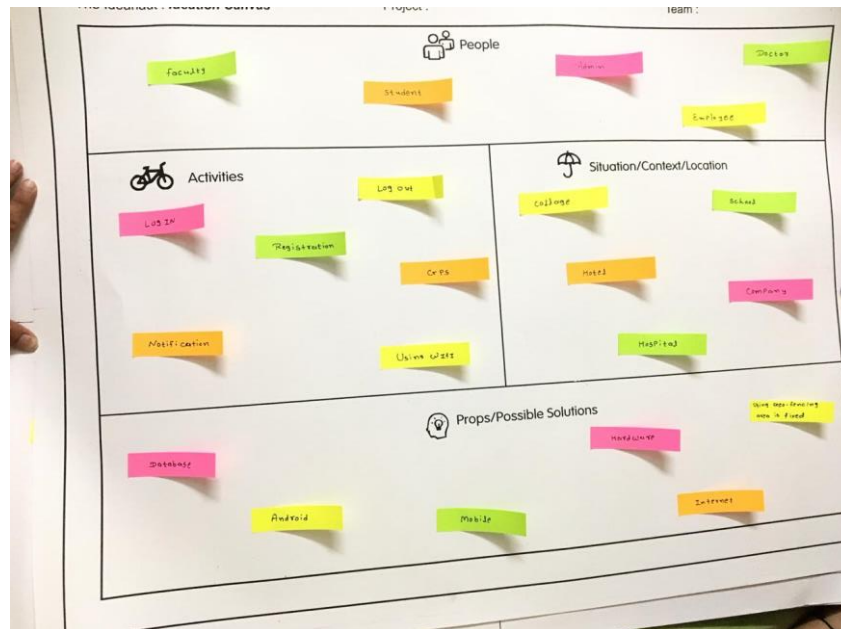


Figure 2.3

2.4 Product Development Canvas

2.4.1 Purpose :

- Real time tracking
- Centralized database
- Computerized record maintainance
- Unified

2.4.2 People :

- Less Timing
- No wastage of Energy

2.4.3 Product Experience :

- Happy
- Good
- Surprise

2.4.4 Product Functions :

- Log in
- Centralized data management
- Real time tracking n experience

2.4.5 Product Features :

- Remote access
- Live result

2.4.5 Components :

- Hardware
- Centralized database
- Account
- Application
- Internet connection

2.4.6 Scanned copy of Product Development Canvas :

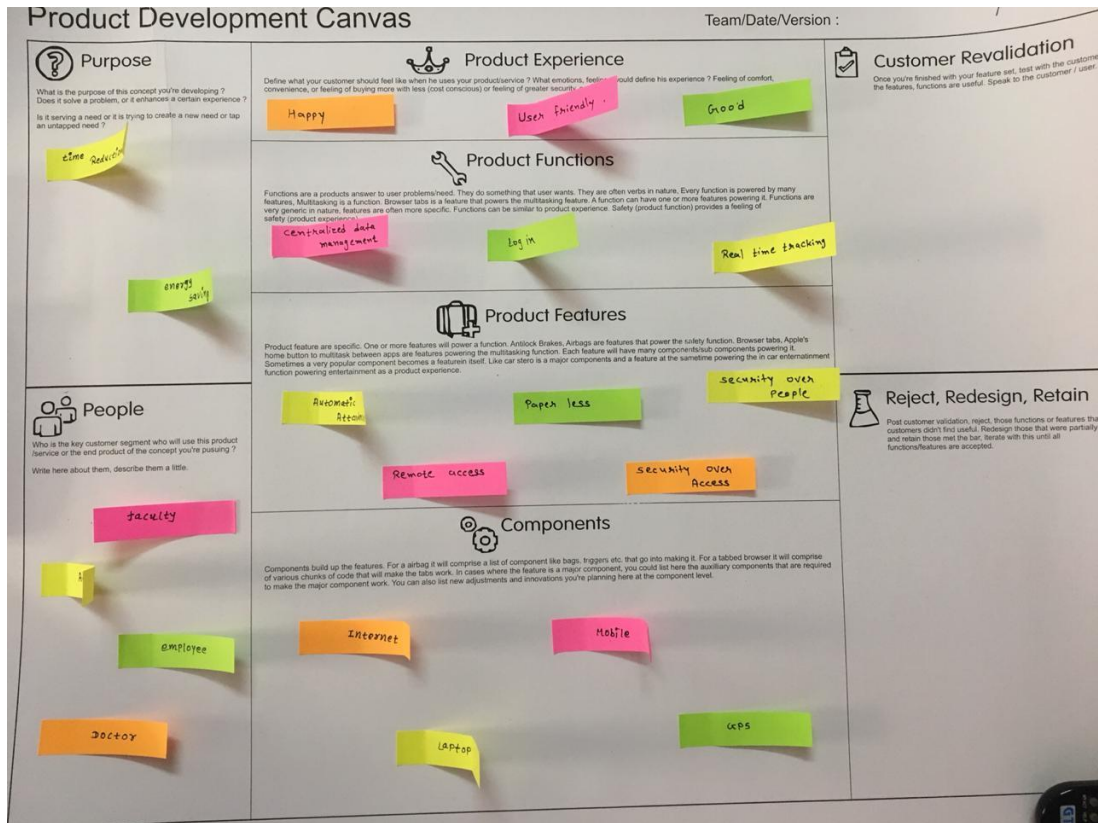


Figure 2.4

Chapter 3: About the System

3.1 System Requirement Specification

3.1.1 Functionality

- Login Capabilities: The system shall provide the different organization administration login capabilities for different level of security.
- Notifications: User will be given notification via application.

3.1.2 Usability

- The system shall allow the users to access the system from the Internet using application. The system uses a web browser and camera App as an interface.
- Since all users are familiar with the general usage of browsers and Camera App, no specific training is required.
- The system is user friendly and self-explanatory.

3.1.3 Reliability

- The system has to be very reliable due to the importance of data and the damages Incorrect or incomplete data can do.

3.1.4 Functional Requirement

- *Availability*
 - ✓ As this application will be accessible 24 x 7. Services will also be available 24 x 7 as it is accessible from the internet with centralized database management with computerized record.
- *Mean Time to Repair (MTTR)*
 - ✓ Our Technician will be doing regular system check-ups to keep a look after the physical errors, network errors, etc. We will try to take care of it as soon as possible.
- *Accuracy*
 - ✓ As this application is require Camera App so it is purely depends on the Internet Connectivity. So if there is weak network its accuracy will be reduced otherwise good accuracy is there.

- ***Access Reliability***

- ✓ Our application will provide 100% access reliability.

3.1.5 Non-Functional Requirement

- ***Response Time***

- ✓ It is also dependent on internet. But if there is some problem in internet then response time will be more.

- ***Administrator Response***

- ✓ When the application will detect the problem, admin/technician will directly find the source of the problem and try to solve it quickly. So administrator response will be very fast.

- ***Security***

- ✓ In the security purpose we will protect the application from viruses and malicious access.
- ✓ We will maintain sessions to check how many time login/logout has been done.
- ✓ Different kind of security is provided in this with Notification like security over high speed, region and number of kilometers and many more.

3.2 Feasibility Study :

A feasibility study determines whether the proposed solution is feasible based on the priorities of requirements of the organization. The study begins by classifying the definition. It helps you to evaluate the cost-effectiveness of the system. During this phase, various solutions to the existing problems were examined. A system that passes the feasibility tests is considered a feasible system. The systems analyst needs to decide whether it is possible to solve the problem, using a system known as “TELOS”;

T – Technical: Is the project technically possible?

E – Economic: Can the project be afforded? Will it increase profit?

L – Legal: Is the project legal?

O – Operational: How will the current operations support the change?

S – Scheduling: Can the project be done in time?

There are various types of feasibility as follows:

i. Technical Feasibility

10

ii. Economic Feasibility

iii. Legal Feasibility

iv. Operational Feasibility

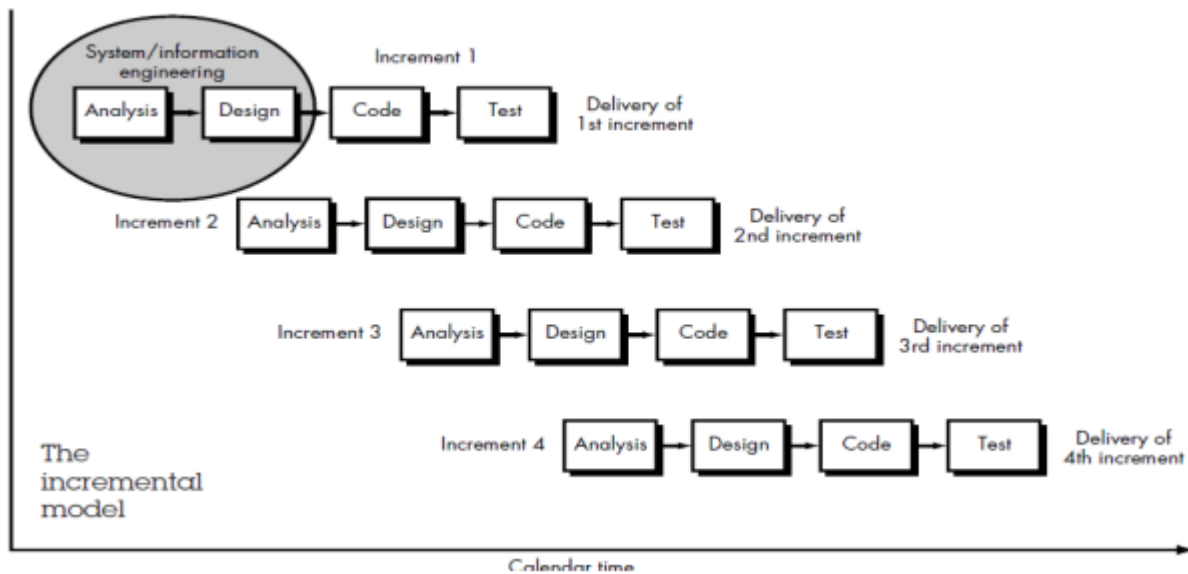
v. Schedule Feasibility

3.2 Project Planning

3.2.1 Project Development Approach

Incremental Model

- For our project Service Point, the model which has been selected is the incremental model. In incremental model the whole requirement is divided into various builds. Multiple development cycles take place here, making the life cycle a “multi-waterfall” cycle. Cycles are divided up into smaller, more easily managed modules. Each module passes through the requirements, design, implementation and testing phases. A working version of software is produced during the first module, so you have working software early on during the software life cycle. Each subsequent release of the module adds function to the previous release. The process continues till the complete system is achieved.



Advantages of Incremental Model: -

- Easier to manage risk because risky pieces are identified and handled during it's iteration.
- Generates working software quickly and early during the software life cycle.
- This model is more flexible – less costly to change scope and requirements.
- It is easier to test and debug during a smaller iteration.
- In this model customer can respond to each built.
- Lowers initial delivery cost.

Disadvantages of Incremental Model: -

- Needs good planning and design.
- Needs a clear and complete definition of the whole system before it can be broken down and built incrementally.
- Total cost is higher than waterfall.

3.2.2 Project Plan**i) Phase 1 in the month of July**

- First 8 days: We have visited different companies and understand about different project and tools required for those projects then we have finalized our company.
- We are defined this activity as “INDUSTRIAL SODHYATRA”.
- Next 2 days: We had understood the current project of our company and current problems faced by the people so we can satisfy their requirements and based on that we select our definition of project.
- Next 2 days: We have finalized our project definition and approved it from the respected faculty. After that we started for requirement gathering for our project. Then we have understood the tools require for our project and finalize the technology.

ii) Phase 2 in the month of August

- First 10 days: The reference material given by company for learning tools and technology which are used in our project.
- Next 10 days: We have started training Python programming language.
- Last 10 days: We have started our Python virtual machine training.

iii) Phase 3 in the month of August

- First 15 days: We have started study of database. In this section we have learnt how to create a query like join, insert, select, edit, update etc. we have also learnt tools of our database

iv) Phase 4 in the month of September

- Last 15 days: We have started Interaction with internal guide and external guide. We have created on paper form design and data dictionary.
- First 10 days: We have finalized flow of our project. We have completed form and data dictionary part. We have started documentation session and HTML design.

v) Phase 6 in the month of October

- Next 10 days: We have finalized flow of our project. We have completed form and data dictionary part. We have started documentation session and HTML design.
- Last 10 days: We have started to learn about template customization and it's Integration. We have completed our documentation session and decided System architecture. We have revalidated our work with internal and external guide.

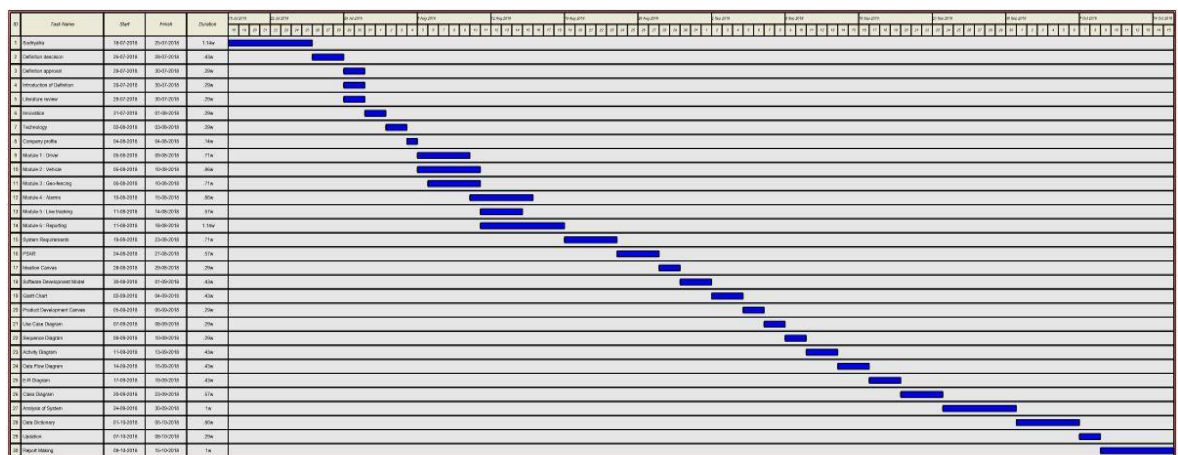


Figure 3.2 Gantt Chart

Chapter 4: Analysis of System

4.1 Use Case Diagram

4.1.1 System Tracking System

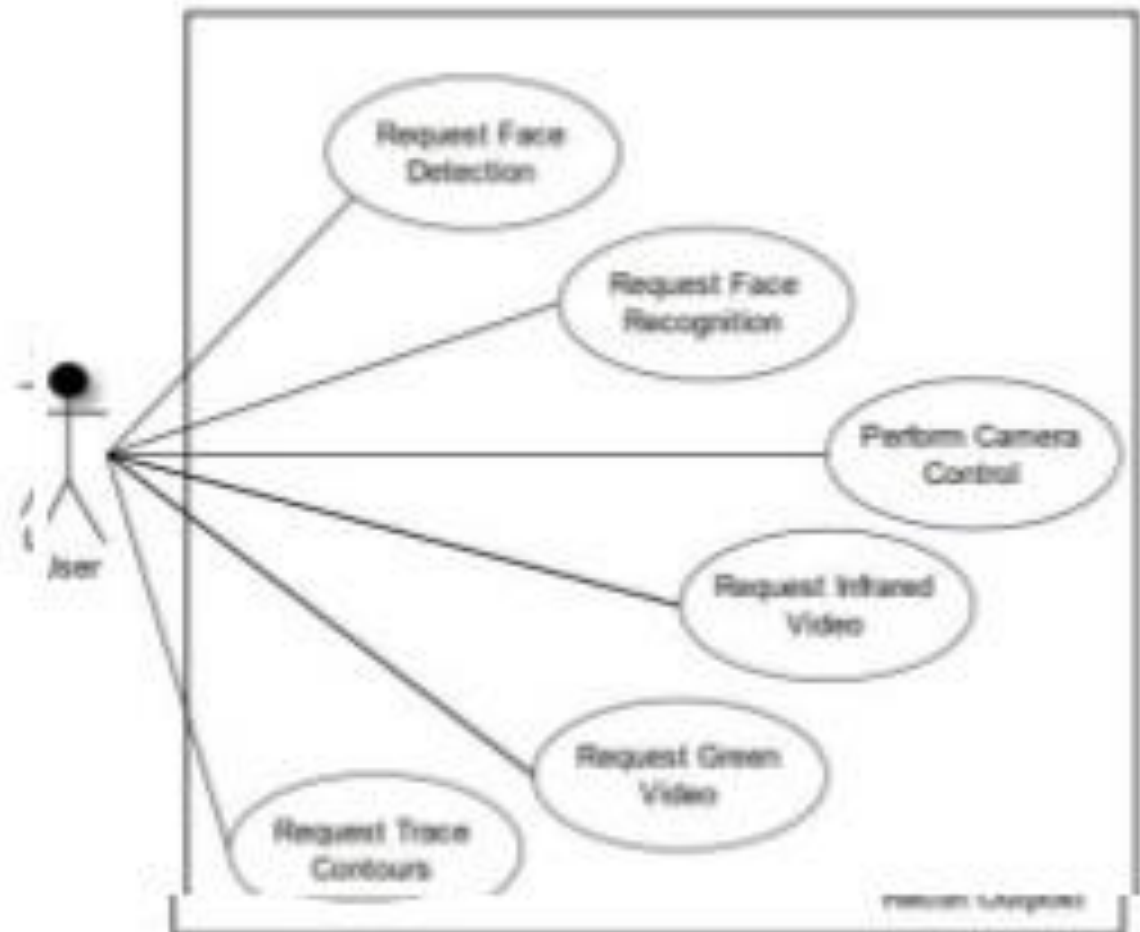


Fig 4.1.1 Use Case Diagram for Mobile Tracking System

4.1.2 System

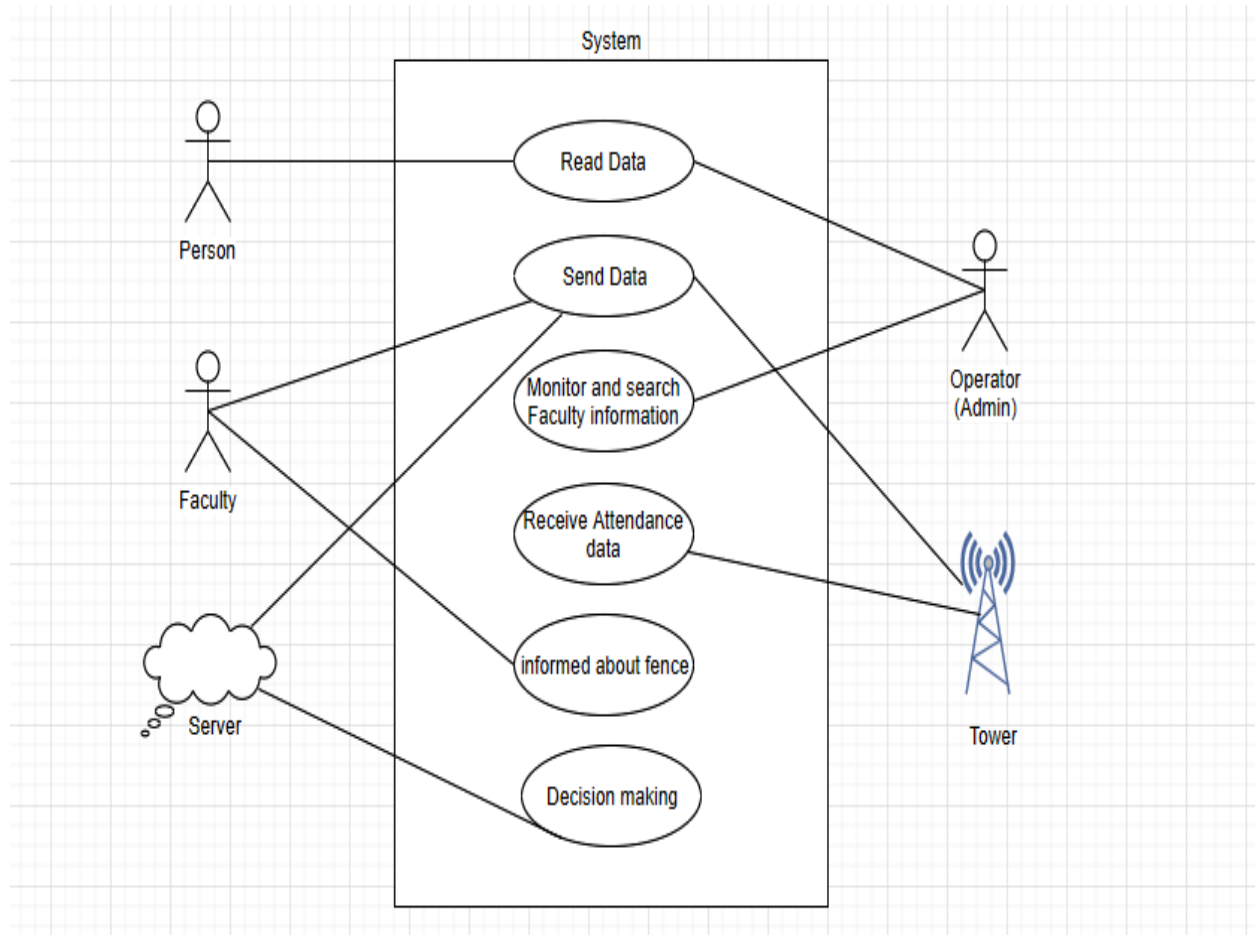


Fig 4.1.2 Use Case Diagram for System

4.2 Sequence Diagram

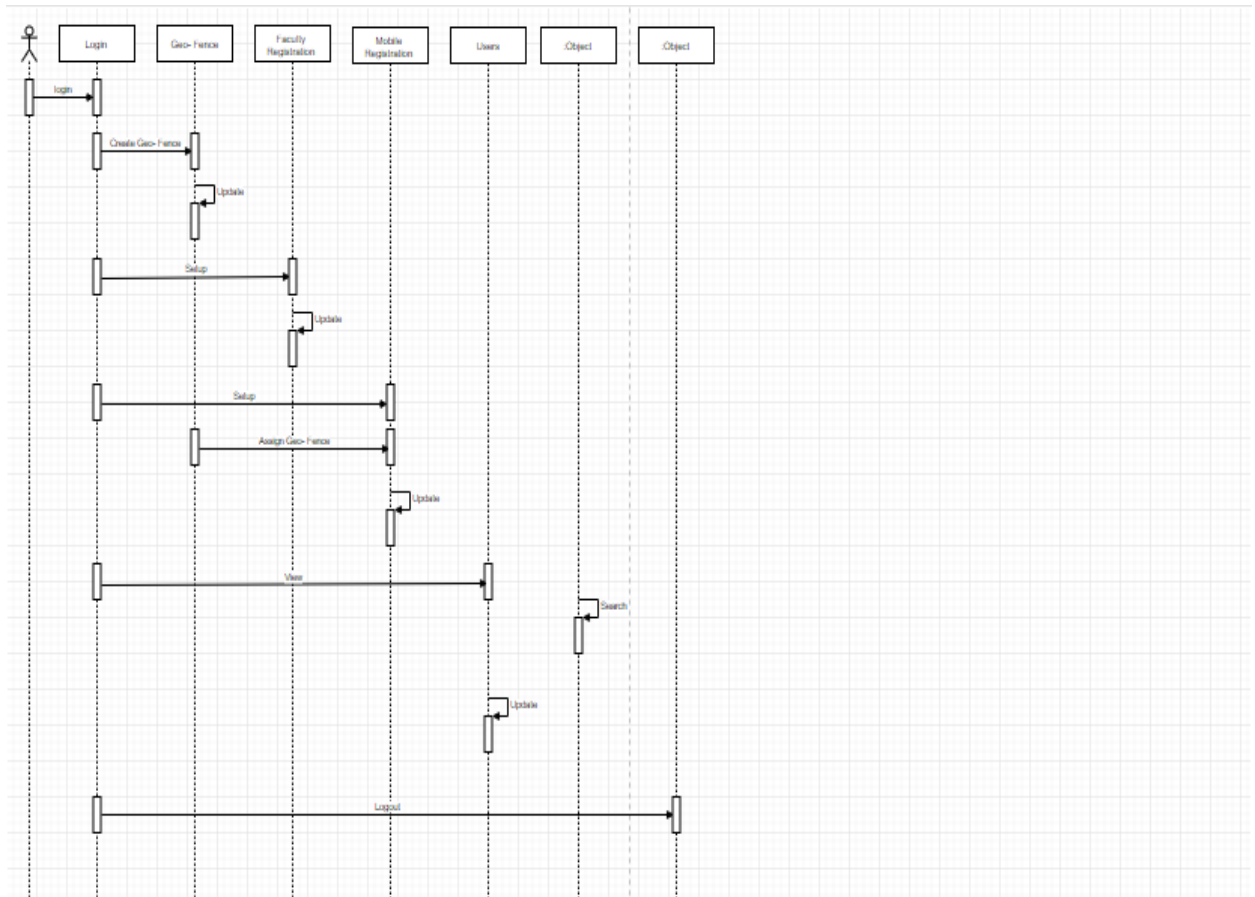


Fig 4.2.1 Sequence Diagram

4.3 Activity Diagram

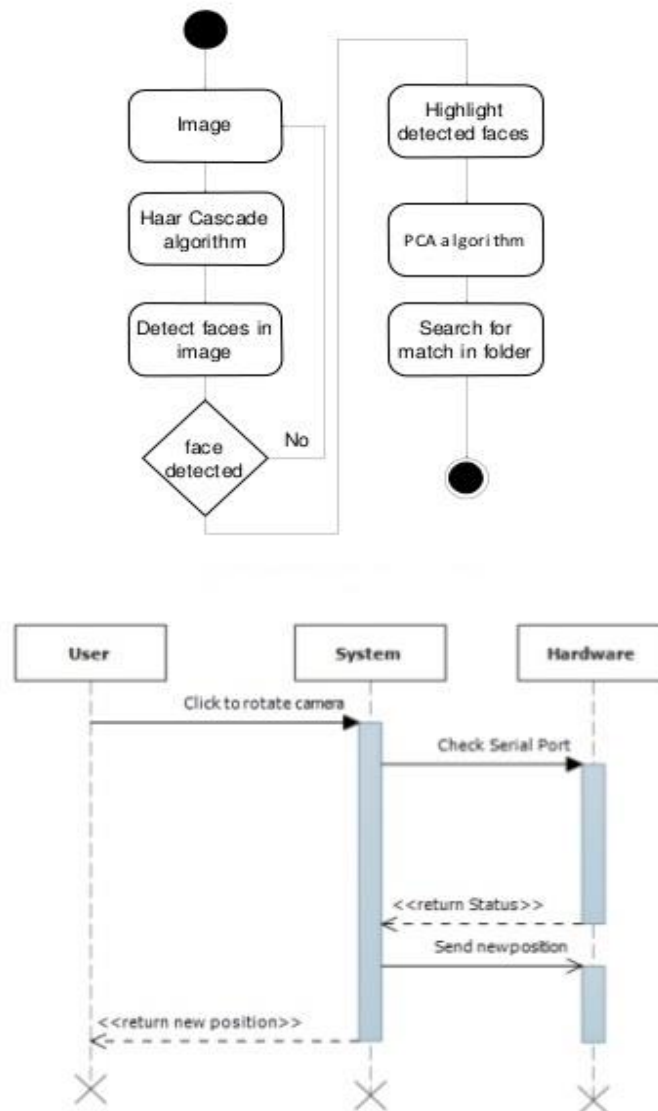


Figure 4.3 Activity Diagram

4.4 Data Flow Diagram

4.4.1 Level 0

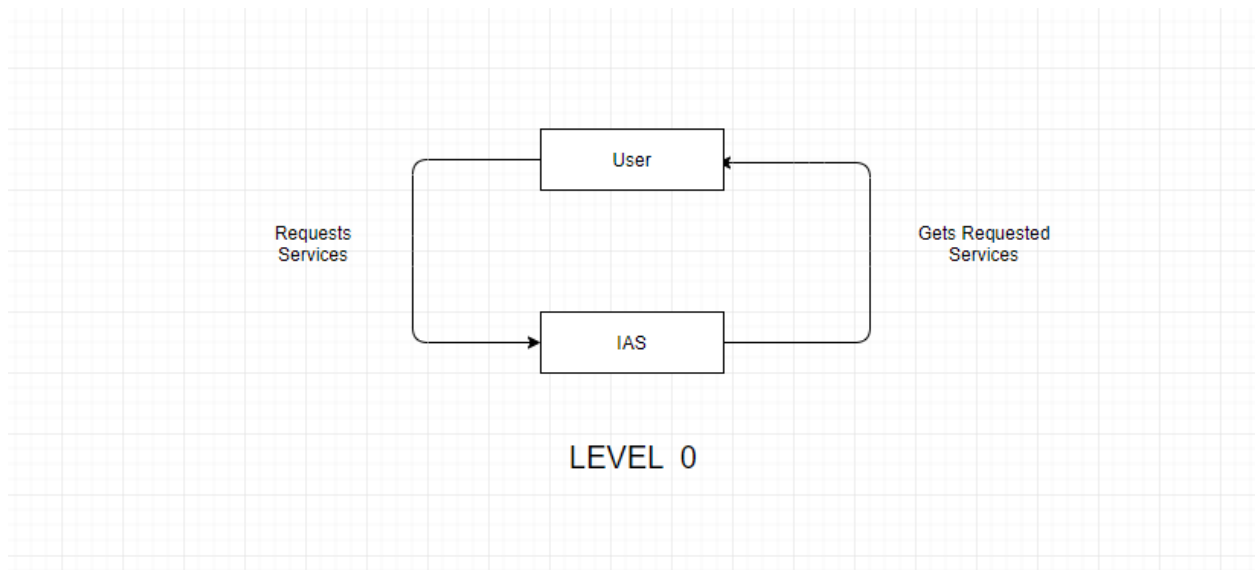


Figure 4.4 Data Flow Diagram

4.4.2 Level 1

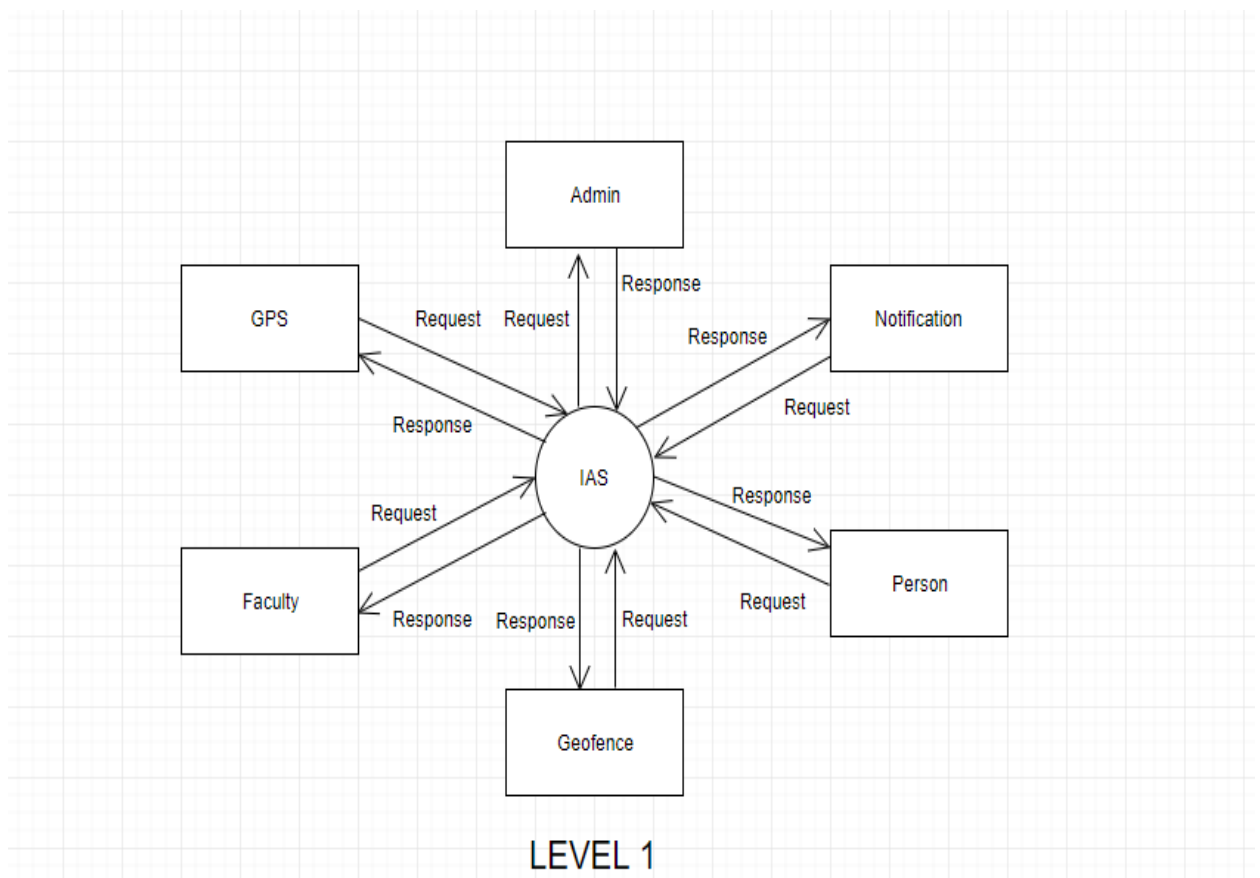


Figure 4.4 Data Flow Diagram

4.4.3 Level 2

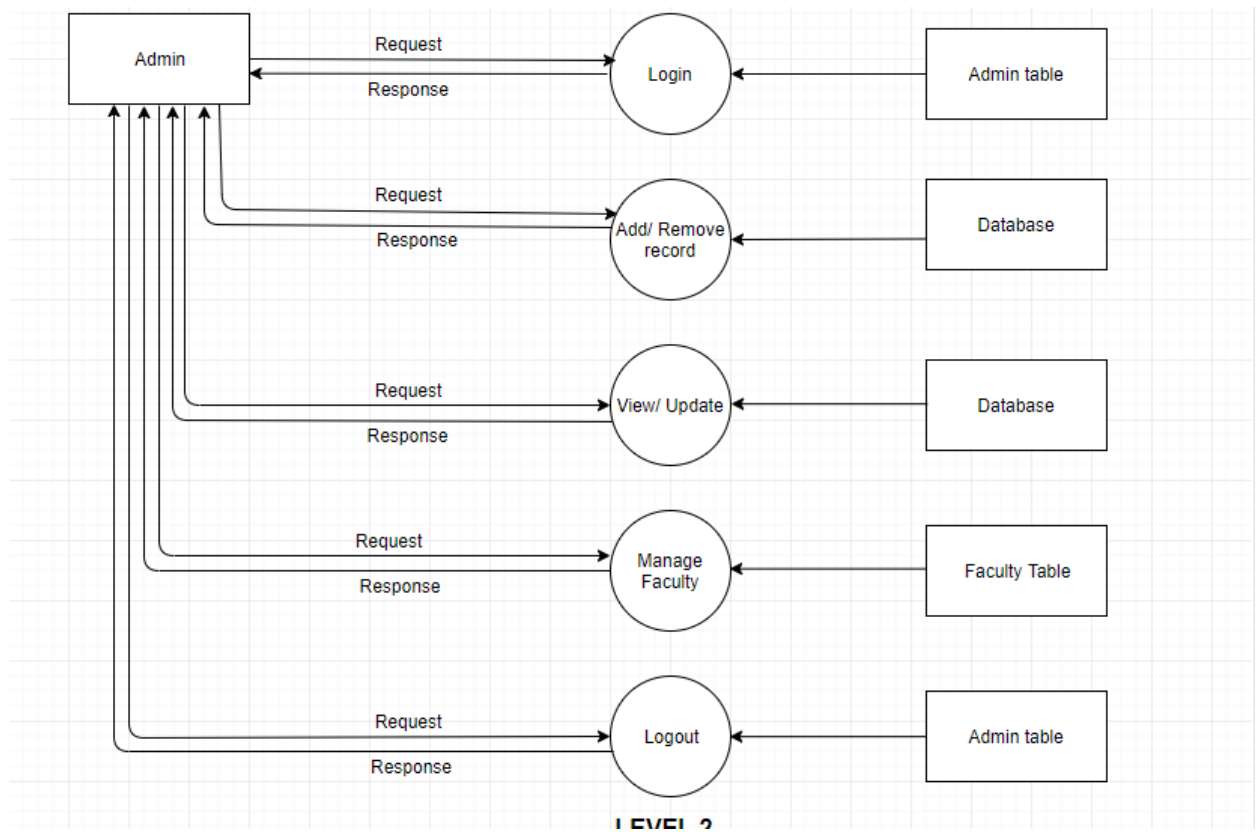


Figure 4.4 Data Flow Diagram

4.5 E-R Diagram

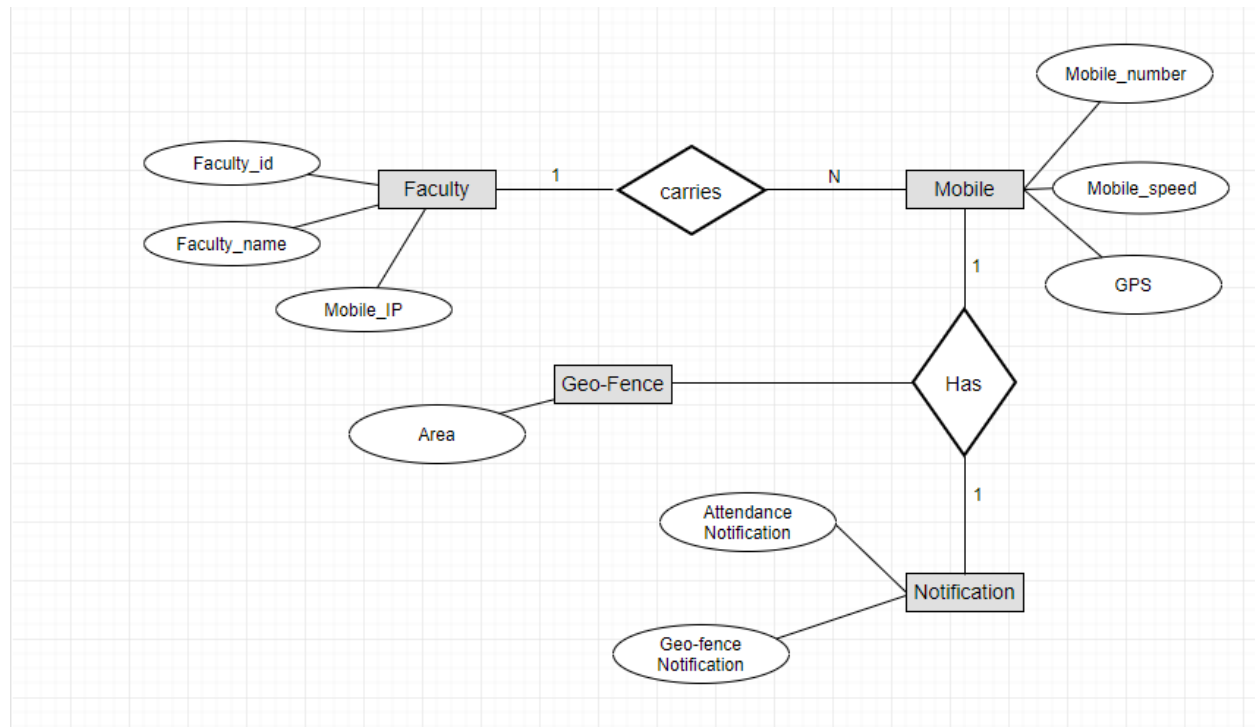


Figure 4.5E-R Diagram

4.6 class Diagram

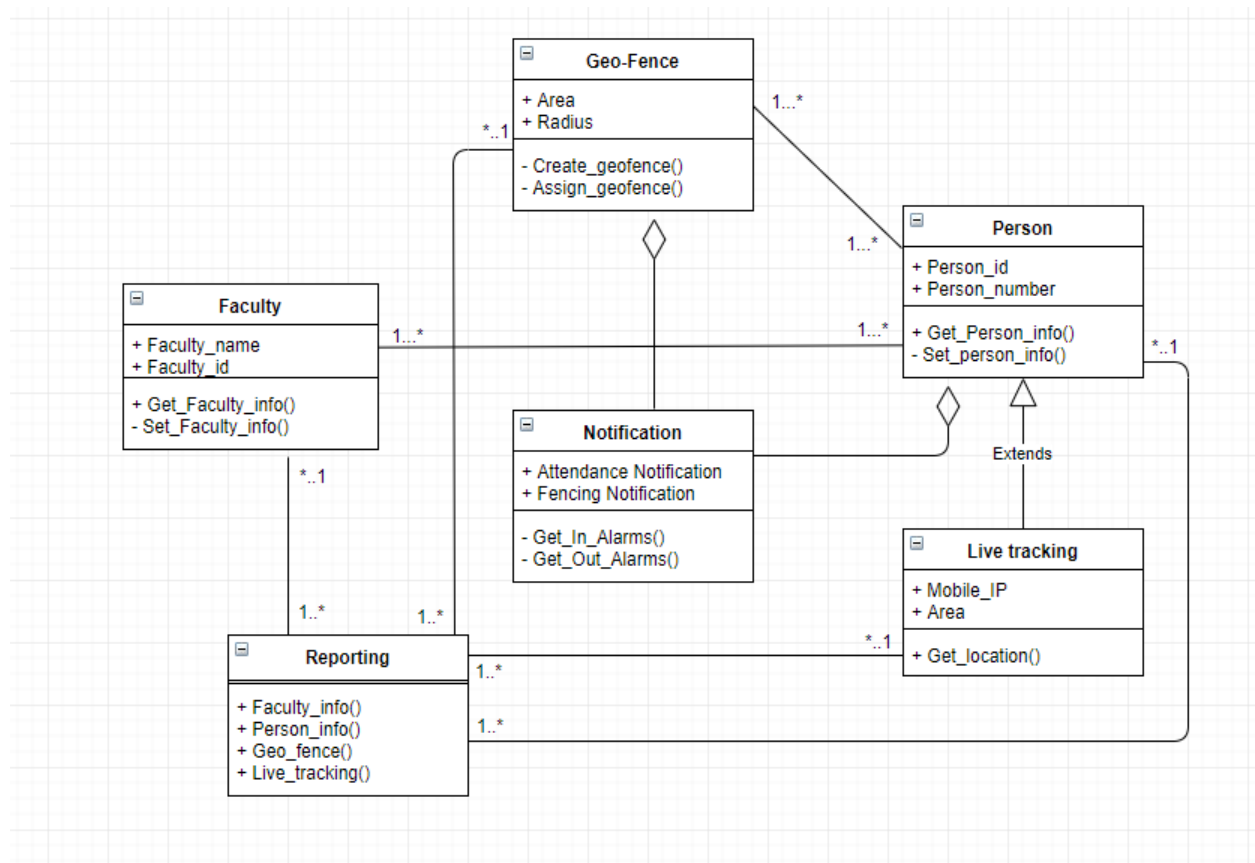


Figure 4.6 Class Diagram

Chapter 5: Design

5.1 Data Dictionary:

Name of Table:Company_Admin_Master

Description of table:It Stores basic details of the Organization which provide this application.

Table 1 Company_Admin_Master

Sr. No	Column name	Data Type	Size	Constraints	Description
1	Company_ID	varchar2	15	NOT NULL	Uniquely identify the company
2	Company_name	varchar2	30	NOT NULL	Name of the Company
3	Company_Email	varchar2	30		Email of the Company
4	Company_Mobile	BIGINT	10		Mobile number of the company
5	FK_User_Admin_Id	INT	15	NOT NULL	Foreign Key from User_Admin_master
6	Password	varchar2	30	NOT NULL	Password of user

Table 5.1.1

Name of Table:User_Admin_Master

Description of table:It Stores basic details of the Organization which uses this Application Services.

Table 2 User_Admin_Master

Sr. No	Column name	Data Type	Size	Constraints	Description
1	User_Admin_ID	INT	15	NOT NULL	Primary key to uniquely identify the user admin
2	User_Admin_Name	varchar2	30	NOT NULL	Name of the Admin user
3	FK_Company_ID	varchar2	15	NOT NULL	Foreign Key from the Copany_Master
4	User_Admin_Email	varchar2	20		Email of the User Admin Master
5	User_Admin_Mobile	Number	10		Mobile no. of User Admin Master
6	Password	varchar2	30	NOT NULL	User Admin Password

Table 5.1.2

Name of Table:Staff_INFO

Description of table:It Stores details about the Facultys.

Table 3 Faculty²²INFO

Sr. No	Column name	Data Type	Size	Constraints	Description
1	Staff_ID	varchar2	10	Primary Key, Starts with 'D'	Define unique identity of Staff

2	Staff_Name	varchar2	20	NOT NULL	Name of the Staff
3	Staff_Address1	varchar2	30	NOT NULL	Address of Staff
4	Staff_Address2	varchar2	30		Address of Staff
5	Staff_City	varchar2	15	NOT NULL	City Name
6	Staff_Pincode	Number	8	Length value must be 8	PIN Code number
7	Staff_state	varchar2	15		State name
8	Staff_Salary	Number	15	NOT NULL	Salary of Staff
9	St_Mobile_number	Number	10	NOT NULL	Foreign Key From Mobile table

Table 5.1.3

Name of Table:Mobile_INFO

Description of table:It Stores details about the Mobiles.

Table 4Mobile_INFO

Sr. No	Column name	Data Type	Size	Constraints	Description
1	Mobile_Number	Number	10	NOT NULL	Mobile number
2	Mobile_Type	varchar2	20	NOT NULL	Mobile Type
3	Mobile_IMEI_NO	Number	15	NOT NULL	Number on Hardware
4	FK_Faculty_ID	varchar2	10	Primary Key, Starts with 'D'	Foreign key from Faculty Table
5	Mobile_IP	Number	10		IP Of Mobile
6	Mobile_Notification	varchar2	20		Notification of the Mobile
7	Mobile_GeoFence	Number	15	NOT NULL	Region of the Mobile
8	Mobile_Active	varchar2	20	NOT NULL	Mobile is Active
9	Mobile_Model	varchar2	20		Model of the Mobile

Table 5.1.4

Name of Table:Notification_INFO

Description of table:It Stores details about the Notification.

Table 5 Notification_INFO

Sr. No	Column name	Data Type	Size	Constraints	Description
1	IP_Notification	INT	10	On the basis of the speed decided by the organization	Notification on the IP of Mobile
2	FaceAI Notification	INT	10		Notification on Geo-Fence(Region)
3	FK_Mobile_ID	Number	10	NOT NULL	Foreign Key from Mobile table

Table 5.1.5

Name of Table:FaceAI_INFO

Description of table:It Stores details about the FaceAI(Region).

Table 6 FaceAI_INFO

Sr. No	Column name	Data Type	Size	Constraints	Description
1	INSIDE	varchar2	30	NOTNULL	GeoFence of Inside
2	OUTSIDE	varchar2	30	NOTNULL	GeoFence of Outside
3	Create_FaceAI	varchar2	30	NOTNULL	Making the Geo-Fence(decide the region)
4	Assign_FaceAI	varchar2	30	NOTNULL	Assign it to the GeoFence

Table 5.1.6

Name of Table:Latitude_Longitude_INFO

Description of table:It Stores details about the GeoFence Latitude and longitude.

Table 7 Latitude_Longitude_INFO

Sr. No	Column name	Data Type	Size	Constraints	Description
1	Latitude	Number	35		Latitude of the Geo- Fence
2	Longitude	Number	35		Longitude of the Geo-Fence
3	Direction	Number	30		Direction of the Camera
4	Location	varchar2	30		Location of the Camera

Table 5.1.7

Name of Table:Active_Mobile_INFO

Description of table:It Stores details of the Mobile whether or not it is Activated.

Table 8 Active_Mobile_INFO

Sr. No	Column name	Data Type	Size	Constraints	Description
1	FK_Mobile_Number	Number	10	NOT NULL	Foreign Key from Mobile table
2	FK_Faculty_ID	varchar2	10	NOT NULL	Foreign Key from Faculty table
3	Mobile_IP	Number	10		IP of the Mobile
4	Mobile_Location	varchar2	30		Location of the Mobile
5	Mobile_Notification	varchar2	20		Notifications on the Mobile
6	Mobile_Direction	Number	30		Mobile Direction

Table 5.1.8

Name of Table:Archive_Mobile_INFO

Description of table:It Stores details of the Mobiles (History like information).

Table 9 Archive_Mobile_INFO

Sr. No	Column name	Data Type	Size	Constraints	Description
1	FK_Mobile_Number	Number	10	NOT NULL	Foreign Key from Mobile table
2	FK_Staff_ID	varchar2	10	NOT NULL	Foreign Key from Faculty table
3	Mobile_IP	Number	10		IP of the Mobile
4	Mobile_Location	varchar2	30		Location of the Mobile
5	Mobile_Notification	varchar2	20		Notifications on the Mobile
6	Mobile_Direction	Number	30		Mobile Direction

Table 5.1.9

5.2 User Interface

User Interface(UI) design is a very important factor in the development of websites. The UI provides a mechanism for end users, or target audience, to interact with the website. Designing a good user interface that is easy to use and understand is crucial for a successful website then the design is easier to implement as you will already be familiar with their expectations and needs. The target audience, for example, can be visitors, businessman, housewives, employees, Students, etc. A well-designed user interface provides intuitive interaction for the target audience. On the other hand, a poorly designed user interface will be hard to understand and use and can lead to distractions and frustrations.

A good user interface is possible if it is designed with the following principles in mind:

- 1.Simplicity
- 2.Positioning of controls
- 3.Consistency 4.Aesthetics

5.2.1 Simplicity

Simplicity is a key factor when designing a user interface. If a user interface looks crowded with controls, then learning and using that application will be hard. Simplicity means the user interface should allow the user to complete all the required tasks by the program quickly and easily. Also, program flow and execution should be kept in mind while designing, try to avoid the use of flashy and unnecessary images that distract the user.

5.2.2 Positioning of Controls

The Positioning of controls should reflect their importance. For example, if you are designing an application that has a data-entry form with textboxes, buttons, and radio buttons the controls should be positioned in such a way that they are easy to locate and matches the program flow. The last item on the page would then be a submit button to allow the user to send the form information to the next page for processing, then to the database.

5.2.3 Consistency

The user interface should have a consistent look throughout the website. The key to consistency lies during the design process. Before developing a website, plan and decide a consistent visual scheme for the website that falls in line with the look and feel of the department or with the pre-established design of others UCS developed.NET Web applications.

5.3.4 Aesthetics

A website should project a visually appealing user interface. The following elements ensure an aesthetically pleasing UI:

- **Colour:** The use of colour is one way to make the UI attractive to the user. Avoid using gaudy colours that are disturbing to the eye, for example, black text on a red background.
- **Fonts:** The fonts which you use for text should also be selected with care. Simple, easy-to-read fonts like Verdana, Times New Roman should be used. Try to avoid bold, strikeout, or overly large text in most parts of the application. The use of bold, italics and another formatting should be limited to important text or headings.
- **Images:** Images add visual interest to the application. Simple, plain images should be used wherever appropriate. Avoid using flashing images that do not add functional value to the application. Remember, no matter how images are used, include the alt tag to ensure accessibility.

4.1 System Navigation

System Navigation is the navigation which talks us about the flow of the system that is how the user navigates through the whole system. So, at first whenever user open the system he has to login than and only he will redirected to the home screen of the application.

On the home screen, user can see the category of the system on which he can select any of the category which will takes to subcategory of the system. According to the categories use can get information or performs tasks.

Chapter 6: Conclusion & Future Work

6.1 Conclusion

- The customer Experience with intelligence (CEI) developed consists of an Desktop App, camera, Wi-Fi access point and a server. The function of the entire system is very simple. It involves the camera to get staff location and automate scan it. The Camera and AI information for the system is transferred to a database. The system is a possible option for replacing the current FaceAI methods. From the implementation, the system has successfully tested in real situation inside the building. It helps the process of taking customer efficiently and cost effective when the user is inside in office mall or shopping centres. CEI is a must-have application for those customer that value every minute of their shopping time. The future scope of the desktop app is to develop for phones as well such as android and IOS.

6.2Future Work

Start-ups Integration, with the help of which start up projects or websites or application can be linked with each other.

We also planned to developed in multiple applications which help users to get more information about face recognition.

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