

# PROJECT REPORT

## WHO'S AT THE DOOR?

(In-Store Consumer Analytics using Facial Recognition and Analysis)

(Group ID : 15)

### Objective:

The main objective of this project is to effectively recognize and record meaningful information about customers who visit the store using facial recognition and provide a summary of the analytics of this obtained information to the store manager and staff via an Android app to implement necessary marketing strategies.

### Team Members:

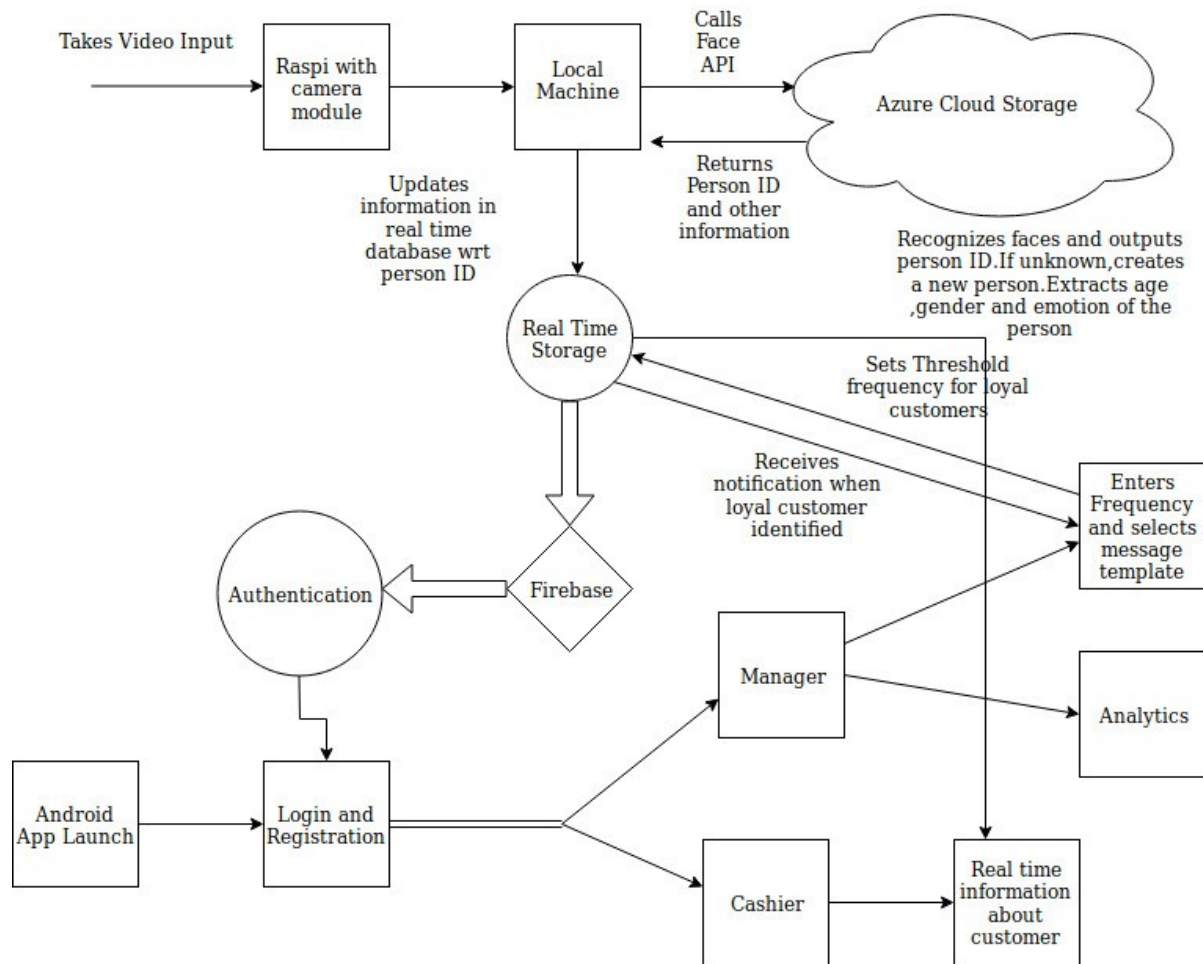
This project was designed and developed by:

- Aakanksha Sanctis (2015B3A70530G) [ff20150530@goa.bits-pilani.ac.in](mailto:ff20150530@goa.bits-pilani.ac.in)
- Shubhransh Jagota (2015B3A70348G) [ff20150348@goa.bits-pilani.ac.in](mailto:ff20150348@goa.bits-pilani.ac.in)

Both the team members put High effort in the development of the project.

### Architecture Diagram:

This project is consists of two major parts. The first part involves creating a facial detection and recognition software to identify each and every individual who shops at the store. The second part involves providing live and historical analytics updates via a mobile app to the store manager and staff so that they can implement effective marketing strategies.



Architecture Diagram

## Hardware and Software pre-requisites

### Hardware :

1. Raspberry Pi
2. Camera Module V2

### Software:

1. Microsoft Cognitive Service- Face API (cognitive\_face)
2. Firebase
3. Python 3
4. OpenCV
5. pyrebase
6. python-firebase
7. Android-studio integrated with Firebase
 

```

      {
        implementation 'com.google.firebase:firebase-core:15.0.2'
        implementation 'com.google.firebase:firebase-database:16.0.2'
        implementation 'com.google.firebase:firebase-database:15.0.0'
        implementation 'com.google.firebase:firebase-auth:16.0.1'
        implementation 'com.squareup.picasso:picasso:2.71828'
      }
      
```

```
        apply plugin: 'com.google.gms.google-services'
    }
```

## **Progress after midsem demo:**

In our midsem demo, we had developed the basic UI for our app without any functionality. Since then we have achieved:

### *Facial Analysis Module:*

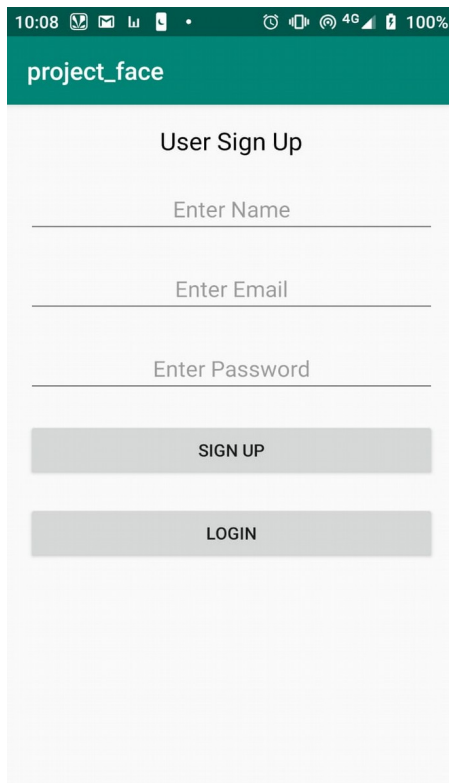
1. Detecting faces from video input from Raspi and saving the cropped face in the local Machine using OpenCV
2. Once image is received by the Local Machine through a ssh server, we run a python script to recognize the face in the image saved by the Raspi using Microsoft's Cognitive services Face API. If person is unknown, a new Person object is created in the Person Group. Else frequency of visit is updated. Along with this information like Age, Gender, Current Emotional State (Happy, Sad and Neutral) is recorded using the same API. This information is gathered and stored in JSON format in Firebase's Real Time Database.

### *Android App*

1. Authentication for users (Managers and Staff) is created via Login and Registration using Firebase's Authentication module. This stores new user's Email and Password in Firebase Real time database.
2. Once logged in as the Cashier, he/she will receive real-time information about the customer detected through the Raspi's video input on the android app, retrieved from Firebase real time database.
3. Once logged in as the Manager, he/she can set the threshold number for frequency to identify loyal customers. Message templates are available to be chosen to send to the loyal customer when he/she crosses the threshold. Since SMS services are not free, we send a toast message only to the Manager.

The comments we had received from Sir was to have an efficient face recognition system which we have successfully implemented.

# Usage of the App



10:08

project\_face

User Sign Up

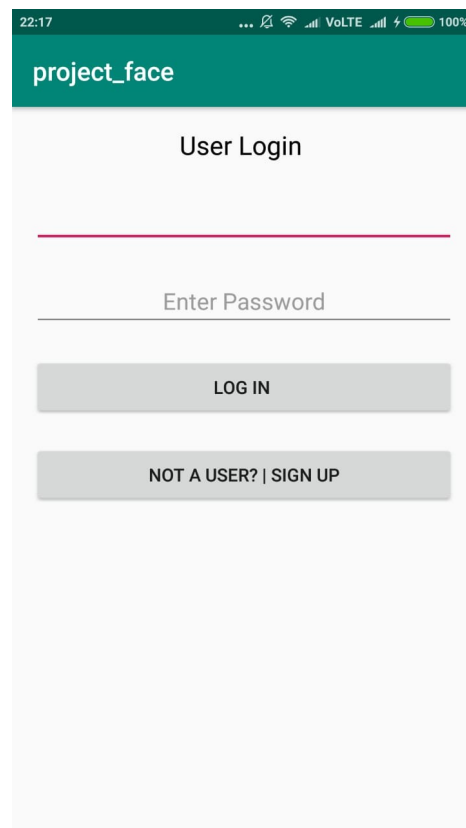
Enter Name

Enter Email

Enter Password

SIGN UP

LOGIN



22:17

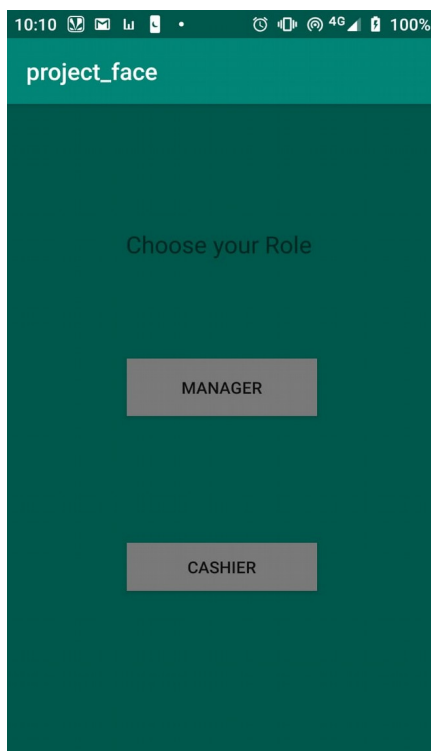
project\_face

User Login

Enter Password

LOG IN

NOT A USER? | SIGN UP



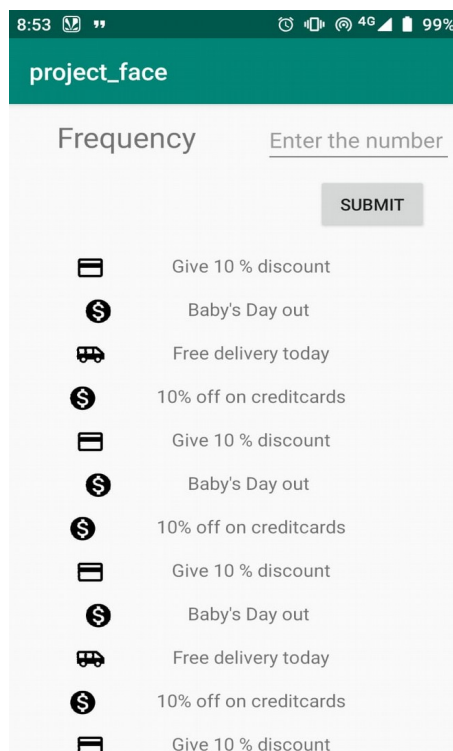
10:10

project\_face

Choose your Role

MANAGER

CASHIER



8:53

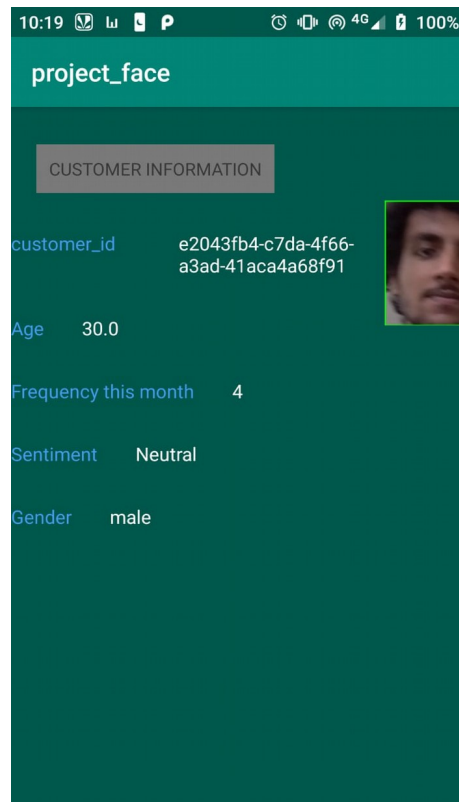
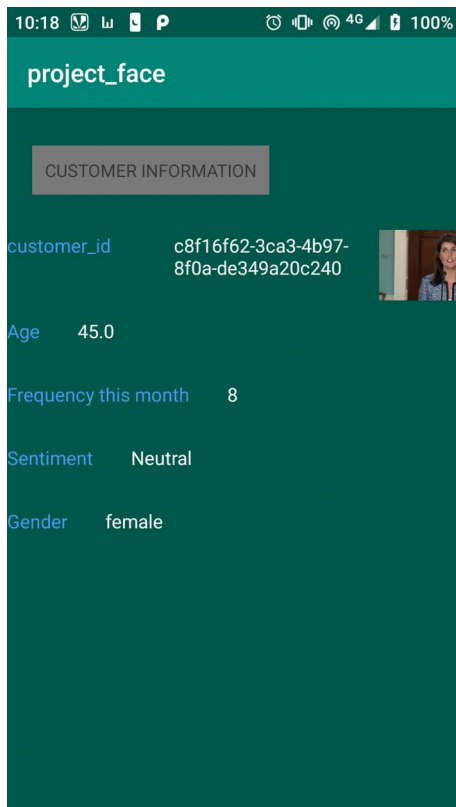
project\_face

Frequency

Enter the number

SUBMIT

Give 10 % discount
Baby's Day out
Free delivery today
10% off on creditcards
Give 10 % discount
Baby's Day out
10% off on creditcards
Give 10 % discount
Baby's Day out
Free delivery today
10% off on creditcards
Give 10 % discount



## Link to source code and executable :

[https://drive.google.com/file/d/162GMTFn3ak2jT0LBm\\_xhVteAuZ6f\\_zhu/view](https://drive.google.com/file/d/162GMTFn3ak2jT0LBm_xhVteAuZ6f_zhu/view)

## Unfinished Work:

We had proposed to provide analytics for the data at the end of the day for the Manager module in the Android app. However it could not be implemented successfully and hence we have not included it in our final app.