ACCENTURE INNOVATION CHALLENGE

INNOVATE FOR THE SOCIETY

AUXILIO

An all-in-one mobile application for the visually impaired

Netaji Subhas Institute of Technology (NSIT, Delhi)
Computer Engineering

Contact Info:
Team Members: Arshia Kaul (Leader), Pooja
Email ID: arshiakaul09@gmail.com, poojasharma99a@gmail.com
Phone No: 8383009353, 9821100895

accenture

TEAM GIJUTSU

AUXILIO

THE AID YOU CAN DEPEND UPON

INTRODUCTION AND MOTIVATION

- The age of technology has brought about a revolutionary change in the field of assistive technology.

- Nonetheless, availability of reliable and portable technical solutions for the visually impaired is still a thorny situation for many.

- In the light of this argument, Team Gijutsu brings forth an all-in-one mobile application which serves as a standalone solution to some of the everyday problems encountered by the visually impaired. After interacting with a handful of people who fall under this category, we tried to understand their needs in order to figure out ways in which current technology can be put to use to overcome the challenges they face.

PROPOSAL

The most prominent gadget which occupies space in everyone's pocket is a smartphone. Therefore, phones tend to be an unquestionable choice when it comes to reaching out to people in a cheap and efficient manner.

Our observations led us to develop a mobile application that would serve as an aid for numerous purposes including home security and currency and object detection.

THE PROTOTYPE

The current working model of the app incorporates the home security solution feature. The user can save the image and name of a person in his contact list. On the arrival of a visitor, the app which is connected to an IP Camera retrieves a real time image from it and plays the name of the person if he is included in the contact list. In case of an unknown visitor, the user is informed about the same. It is made sure that all interaction with the application takes place through audios keeping in mind user's dependence on Google's Talkback feature used in Android phones.

TECHNOLOGY STACK / TOOLS AND PLATFORMS

Computer Vision -
Artificial Intelligence -
Android Studio (Java) -
Firebase -
Open CV -
Kairos API -

HOME SECURITY SOLUTION

A home security solution enabling the visually impaired to easily recognize a person on their doorstep.

OBJECT DETECTION

The object detection feature to assist them to perceive the world in a friendly way.

CURRENCY DETECTION

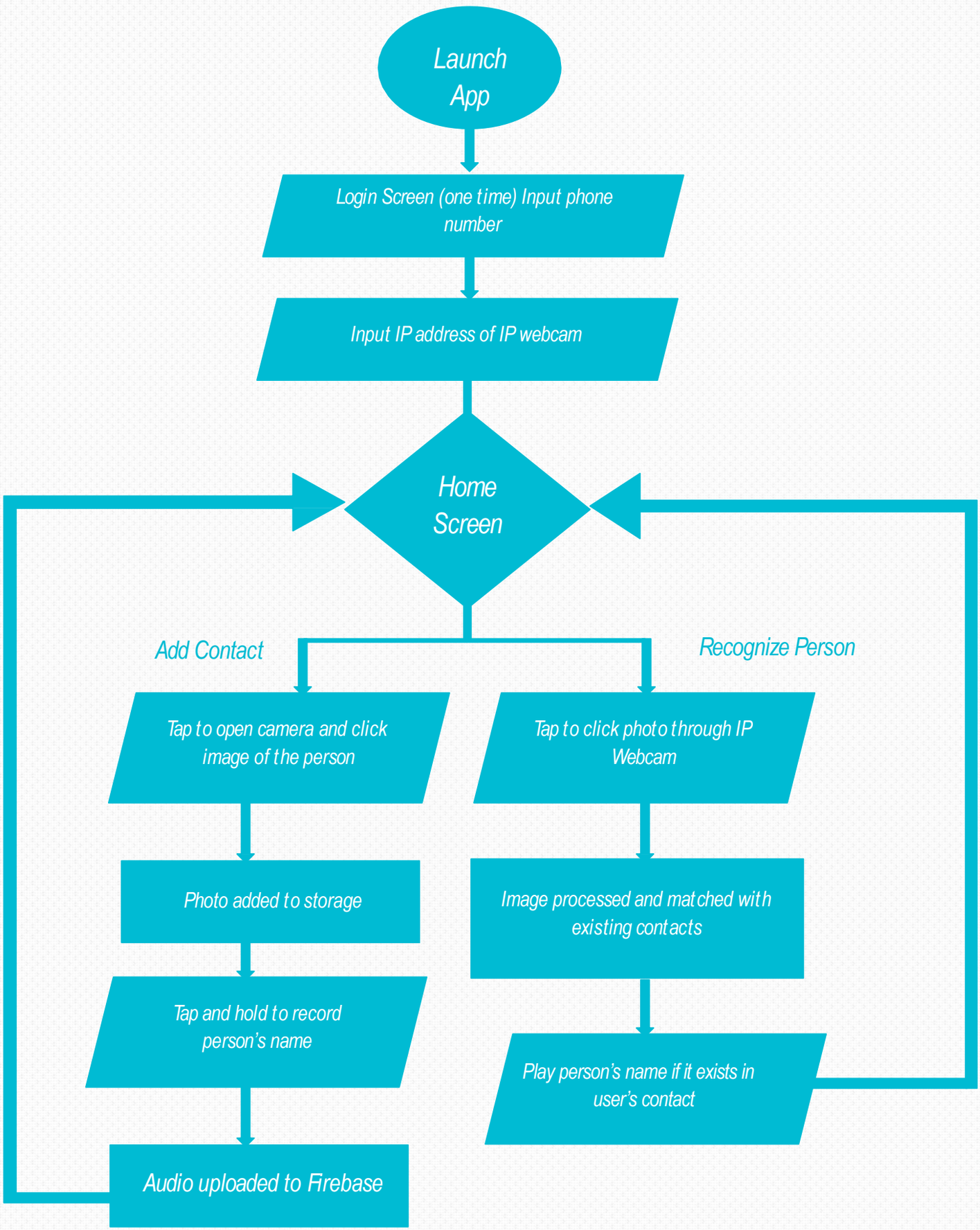
Currency detection feature to help identify currencies.

TEXT DETECTION

Text detection to aid reading menus, notices, newspapers, sign boards.

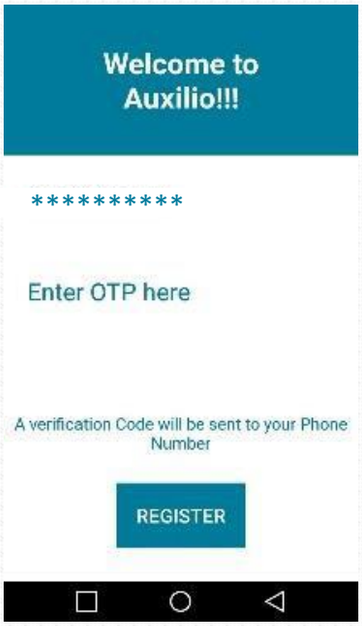
FEATURES

USE CASE


Launch App
Login Screen (one time) Input phone number
Input IP address of IP webcam
Home Screen
Add Contact
Recognize Person
Tap to open camera and click image of the person
Tap to click photo through IP Webcam
Photo added to storage
Image processed and matched with existing contacts
Tap and hold to record person's name
Play person's name if it exists in user's contact
Audio uploaded to Firebase

APP IN ACTION

[GITHUB LINK FOR THE CODE]



USER ENTERS THE PHONE NUMBER AND RECEIVES AN OTP

When the app is installed for the first time, the user is asked to enter his/her mobile number for verification through an OTP. This entire procedure is one time and takes place only when the user launches the app for the first time just after its installation.

IP ADDRESS OF IP CAMERA IS ENTERED

After the user has been verified, the IP address of the IP Camera that is connected to the user's door has to be entered so that the images captured are directly received on the phone and can be used to Verify/Add the person.

HOME SCREEN LAUNCHES AND TWO OPTIONS ARE PROVIDED- TO RECOGNIZE A PERSON AND TO ADD A NEW CONTACT.

The user can press any one of the buttons according to his choice.

ADD CONTACT

USER OPENS UP THE CAMERA AND CLICKS A PHOTO

The *add a new contact* button when tapped, opens a *tap to open camera* activity which captures the image of a person who is to be added in the contact list and then stores it to Firebase.

USER TAPS AND HOLDS TO RECORD PERSON'S NAME

Once the image is stored, a *tap to record audio* screen shows up and asks the user to record the name of the person which too gets stored to Firebase.

RECOGNIZE PERSON

USER TAPS ON THE SCREEN AND THE IP CAMERA CLICKS THE VISITOR'S PHOTO. THIS PHOTO IS RETRIEVED BY THE APP.

The recognize button when clicked, opens a *tap to click photo* activity which captures the image of the person to be recognized using the IP camera. The captured image is then sent to the Kairos API which uses AI to analyze and understand emotion, facial identity, demographics and attention. The API returns a JSON response which has a *subject_id* and audio associated(name) to it is played.

USER TAPS TO GO TO THE HOME SCREEN

LATER STAGES OF DEVELOPMENT

SATGE 1

Currently, the app prototype includes a of home security solution. The final version will incorporate the object, text and currency detection features also.

STAGE 2

Efforts will be made to keep most features offline.

STAGE 3

The application is designed on Android Studio and thus, limits the usage to Android users only. The app can either be shifted to the React Native framework or an iOS version can be created using Swift.

'The team will strive to make the app more accessible to the visually impaired.'

APP Requirements

- Android (API Level 16 and Above)
- IP Camera
- Access to Audio and Camera
- Internet Connection
- Good Battery Life


thank
you