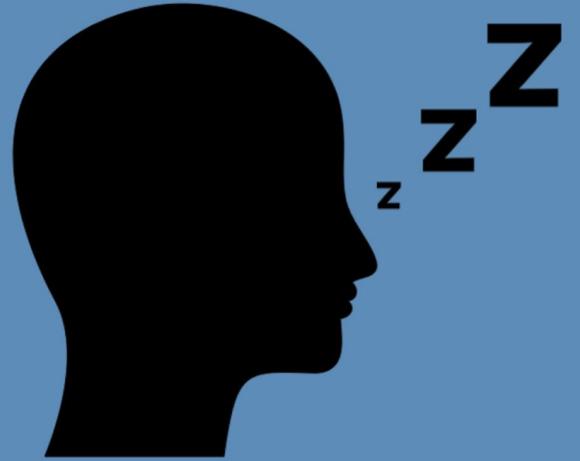




Drowsiness Detector



Problem:

Problem:

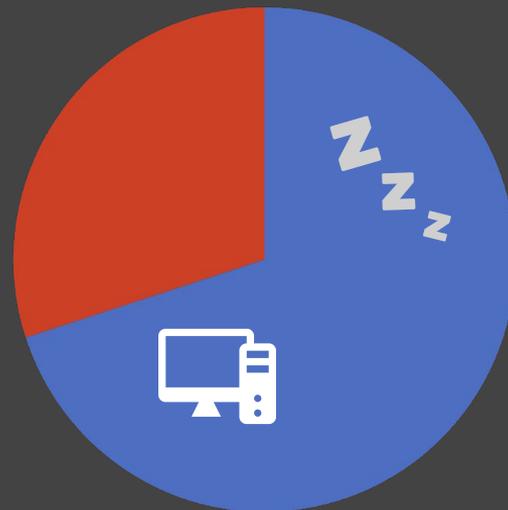
**51% of Americans
sleep on the job**



Problem:

- Satellite launches happen at all hours
- Employees need to stay vigilant

51% of Americans sleep on the job

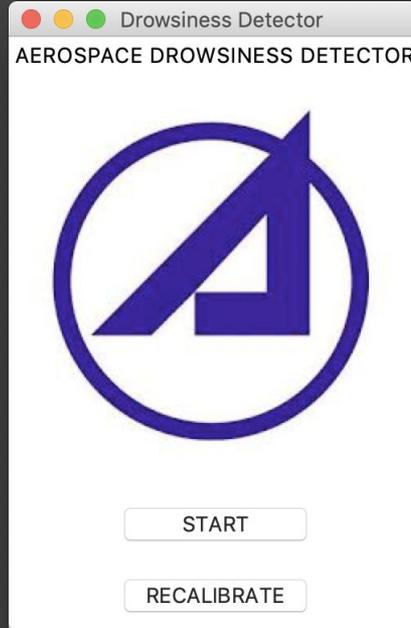


70% in tech!

Solution:

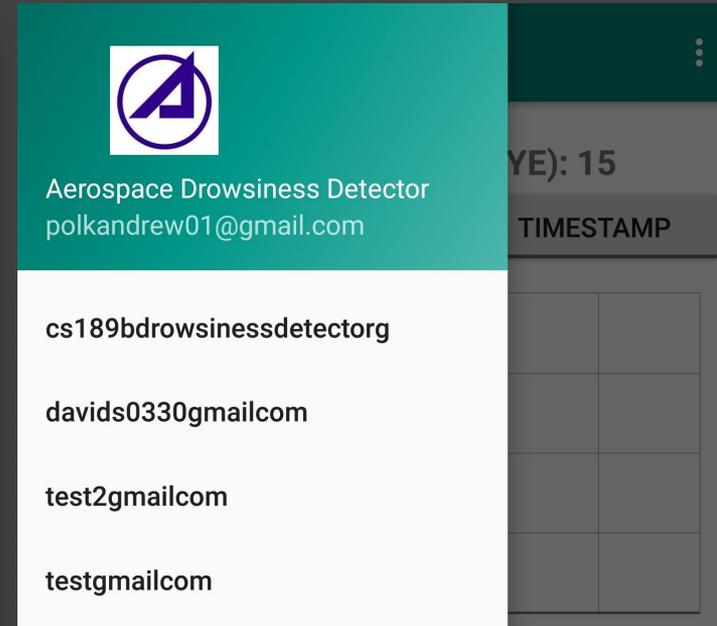
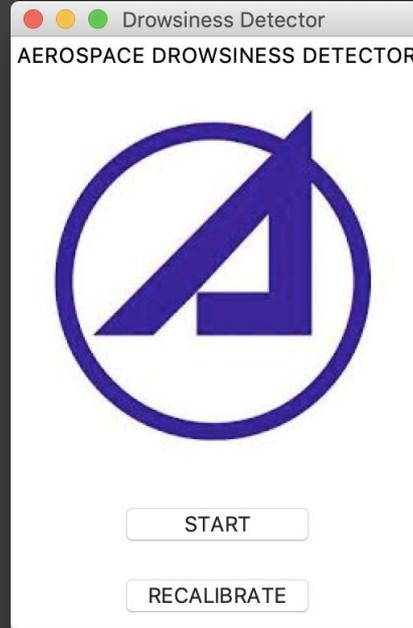
Solution:

- **Employee:** Desktop program detects drowsiness via facial recognition



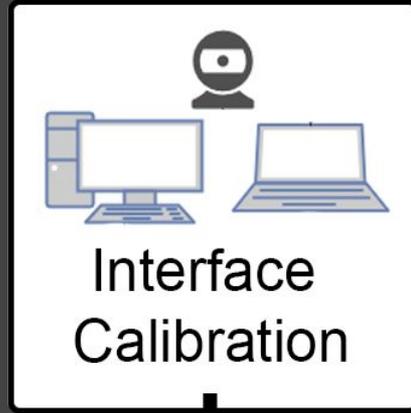
Solution:

- **Employee:** Desktop program detects drowsiness via facial recognition
- **Manager:** Android app displays user profiles stored in Firebase

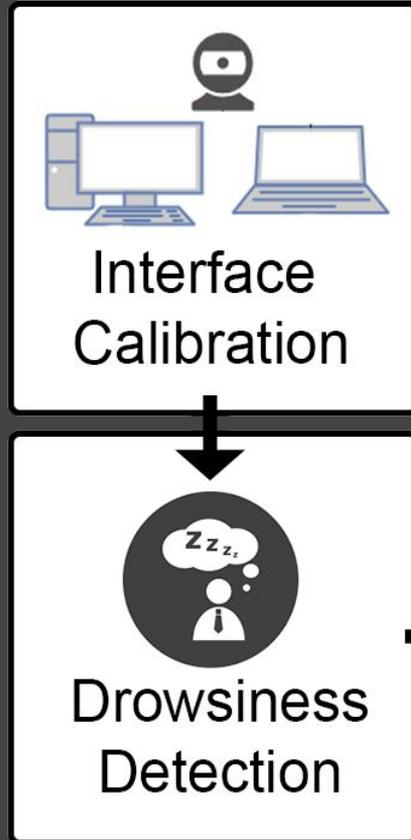


Overview

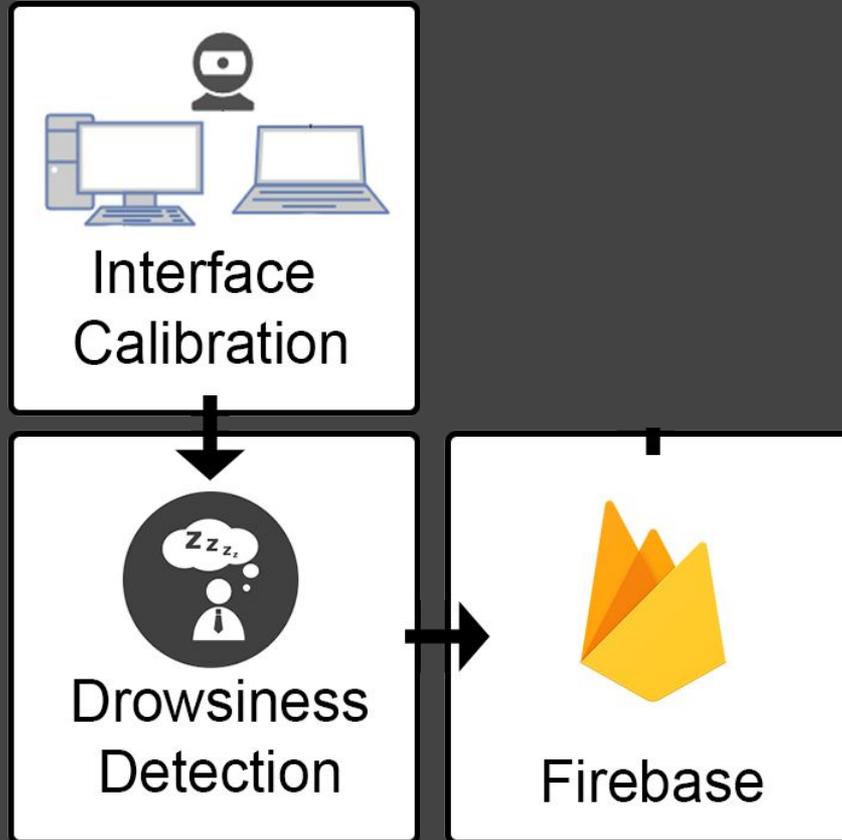
Overview



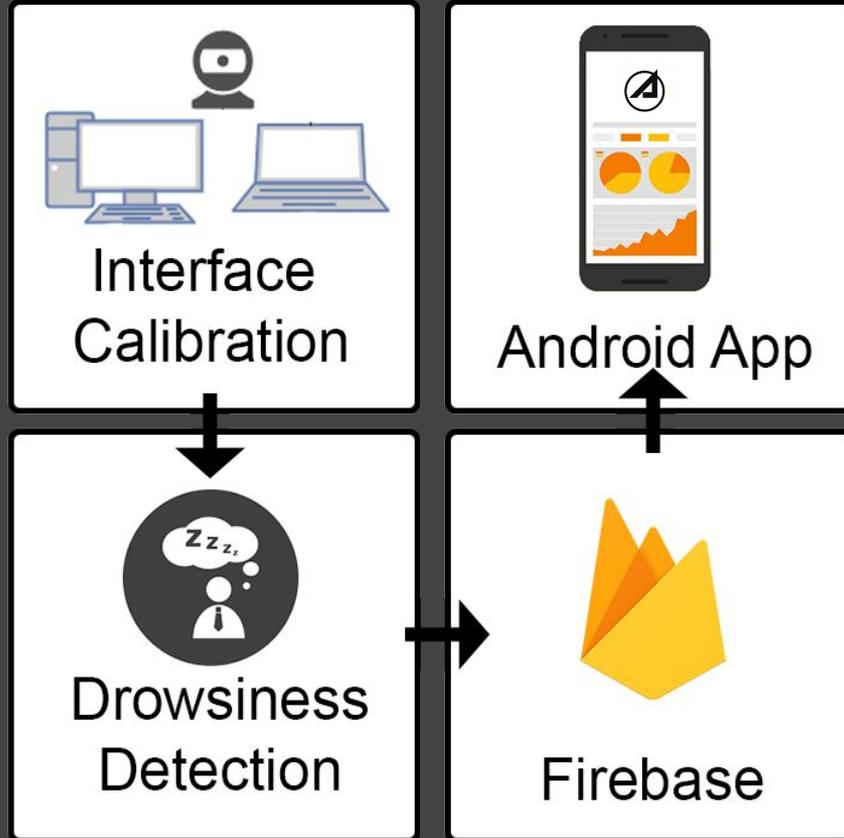
Overview



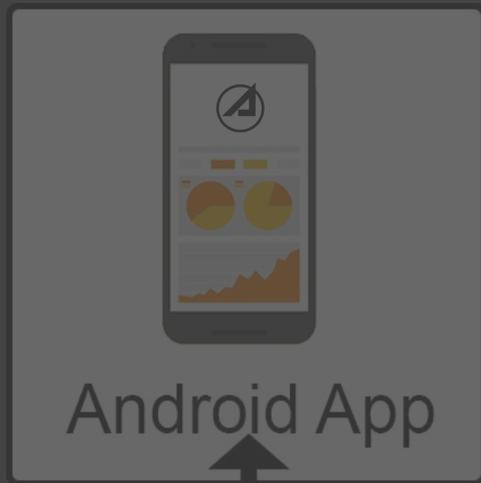
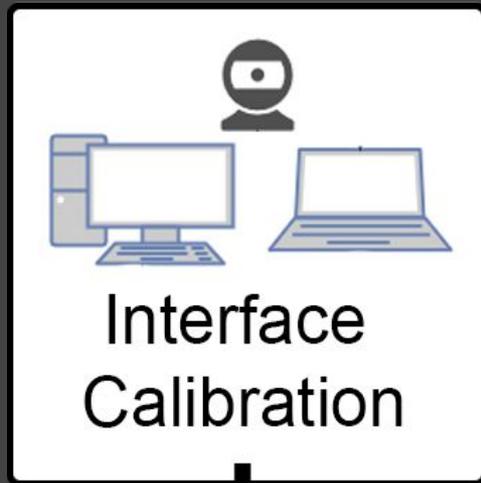
Overview



Overview



Demo: Employee Workflow



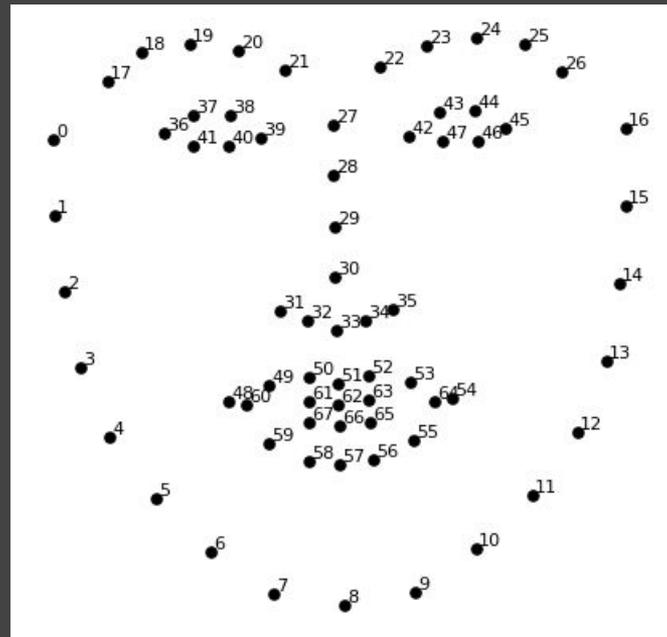
Detection Technologies

OpenCV

- Real-time computer vision

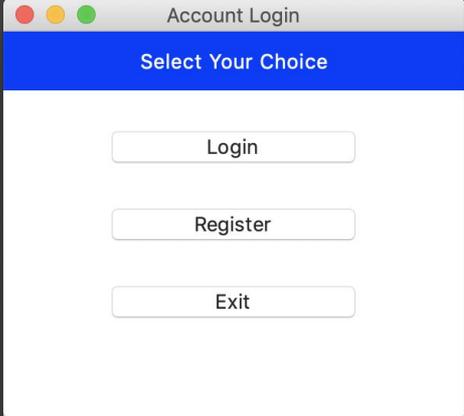
Dlib

- Facial landmarks



Login and Calibration

- Log in or register
- Calibrate facial features
- User specific thresholds



Account Login

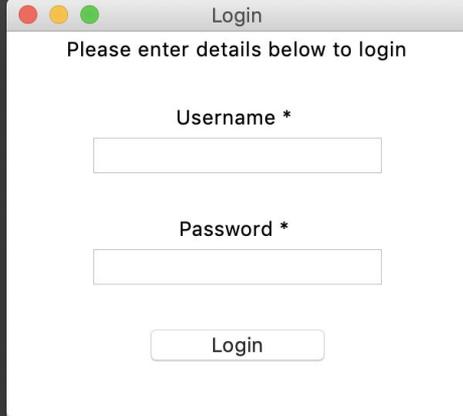
Select Your Choice

Login

Register

Exit

This is a screenshot of a window titled "Account Login". It features a blue header bar with the text "Select Your Choice". Below the header, there are three buttons: "Login", "Register", and "Exit", arranged vertically.



Login

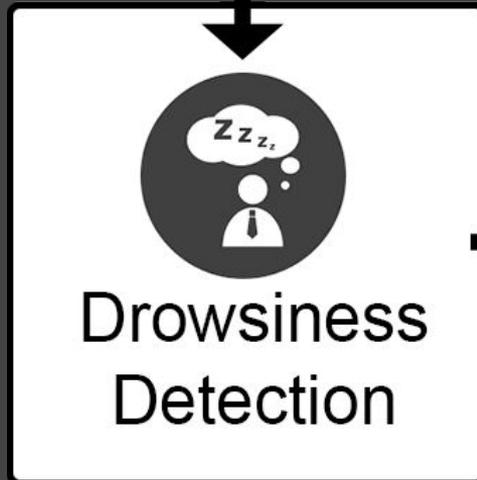
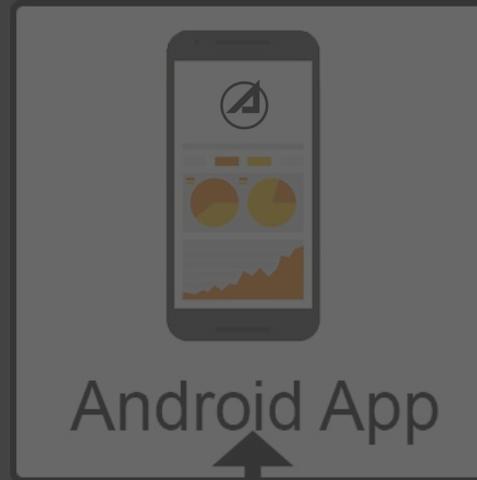
Please enter details below to login

Username *

Password *

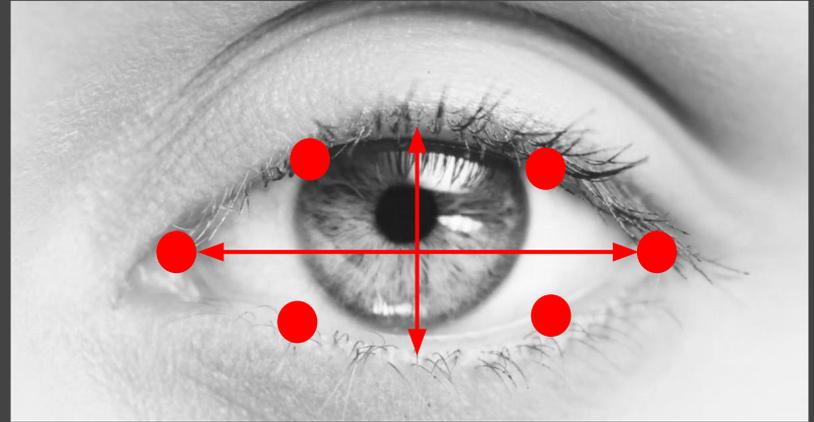
Login

This is a screenshot of a window titled "Login". It contains the text "Please enter details below to login" at the top. Below this, there are two input fields: "Username *" and "Password *". At the bottom of the window, there is a "Login" button.

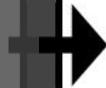
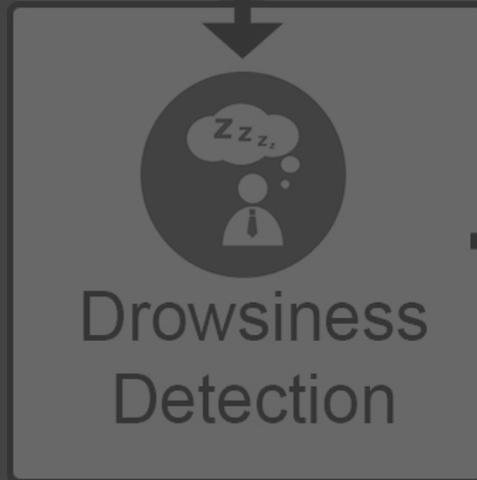
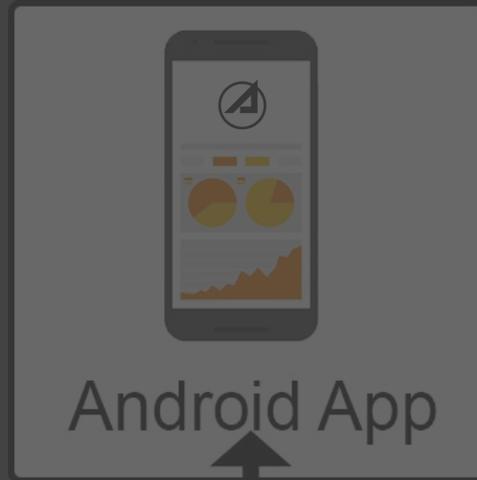


How It Works

- Feature detection
- Time series analysis
- Drowsiness threshold triggers



Demo: Manager Workflow



Firestore

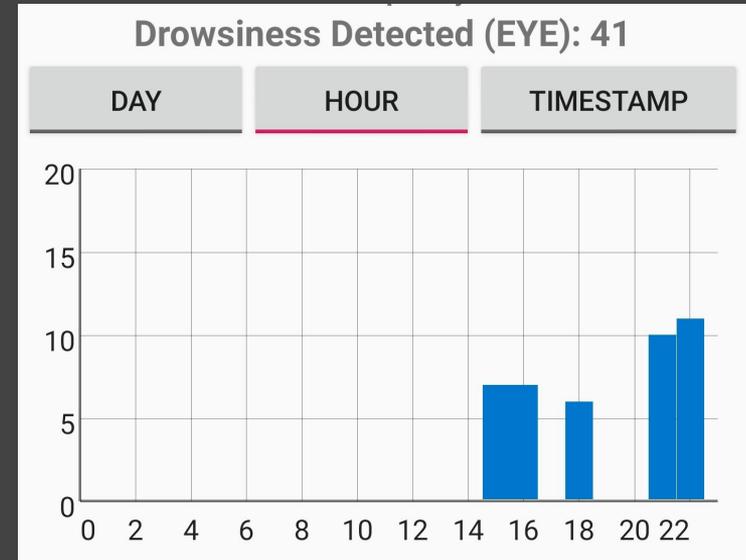
- Stores threshold values and blink frequency
- Notifies app of updates in real time
- Stores timestamps in UTC

```
└─┬─ davidsunucsbedu
   │  └─ blink frequency: 0
   │  └─ current eye timestamp: 0
   │  └─ current yawn timestamp: 0
   │  └─ eye ratio: 0.3
   │  └─ mouth ratio: 0.4
   │  └─ tag: "is not manager"
   │  └─ timestamp
   │  └─ username: "davidsun@ucsb.edu"
```



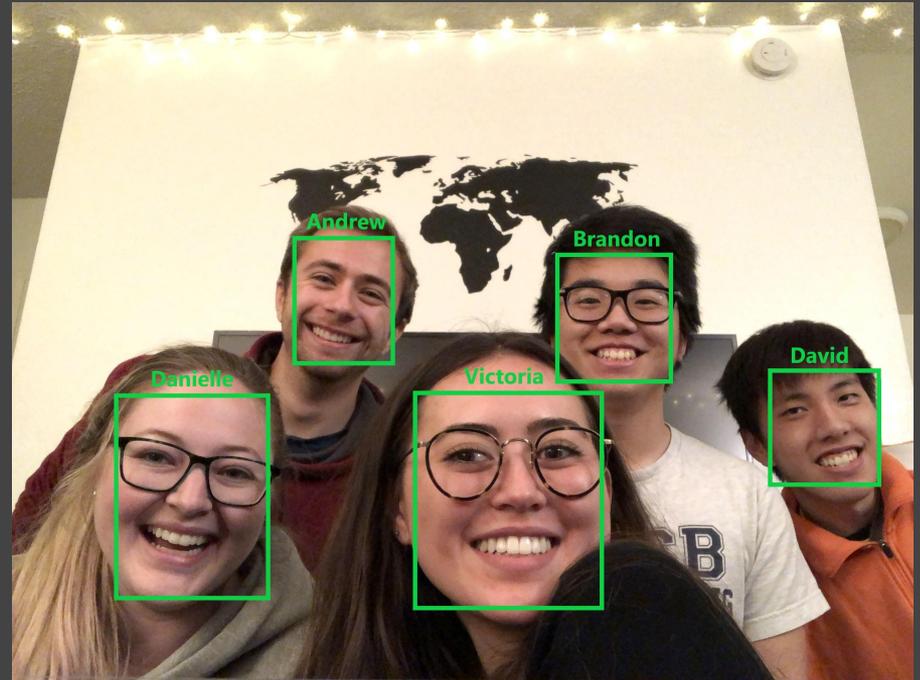
Android App

- Hour/Day drowsiness graphs
- Timestamps for detections
- Manager can see employee profiles
- Real-time updates from Firebase



Future Steps

- Log in using facial recognition
- Keeping track of user even in the presence of multiple faces
- Dockerize it for easier installation



Thanks!
Questions?

