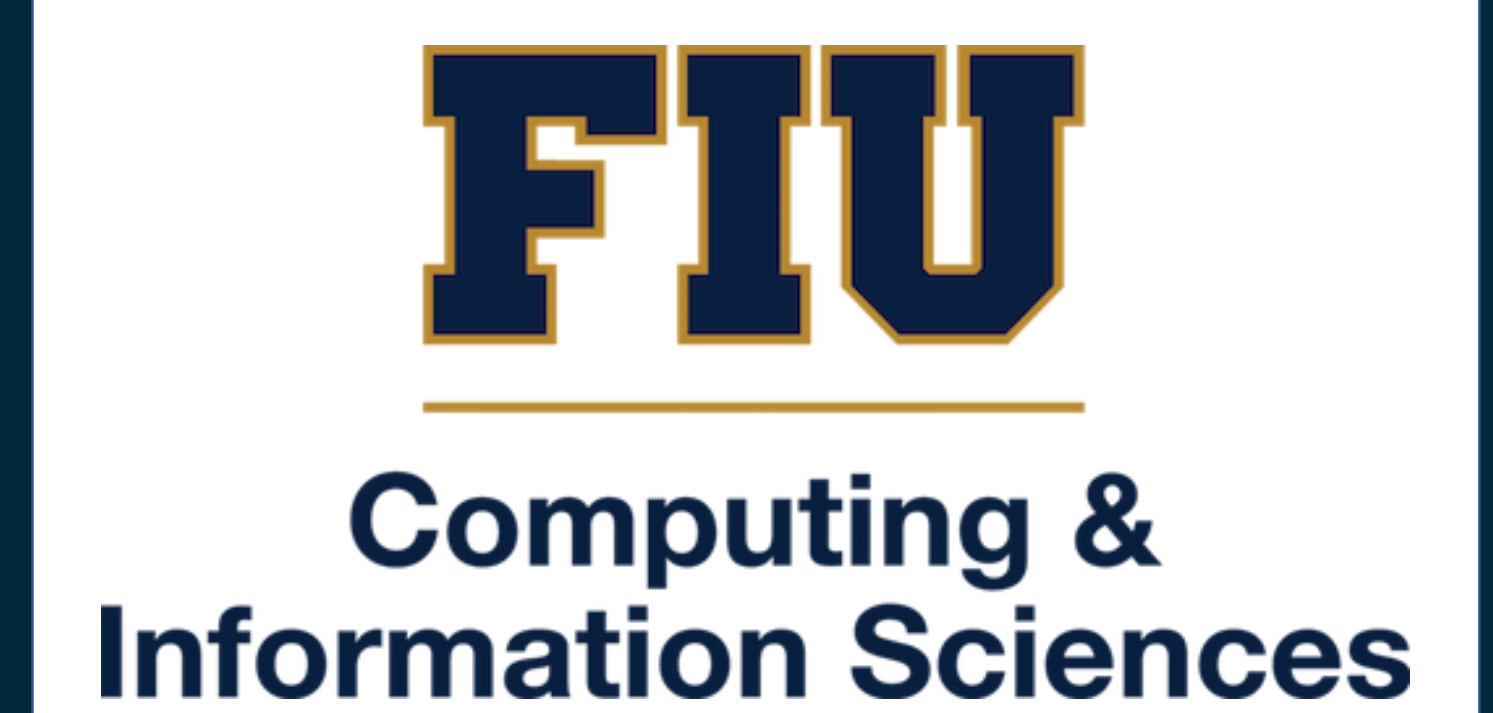
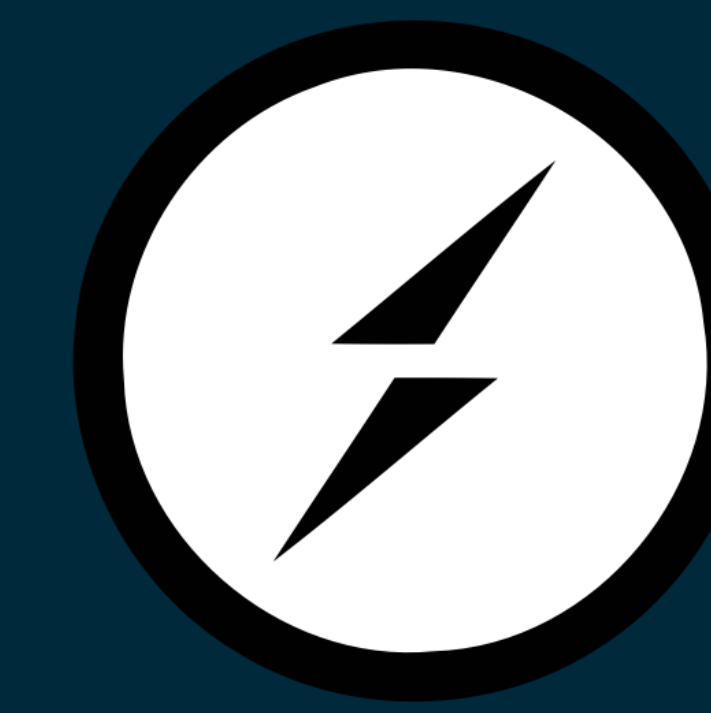




Biometric Identification

Fall 2019 Senior Design Project | Florida International University
Instructor: Dr. Masoud Sadjadi, **Student:** Frederick Husson,
Product Owner: Rachelle Tobkes



Background

Most of the applications that are used nowadays require some sort of login that would authenticate a user into a system. Typically this login system would facilitate the user access to the system if the right username is matched to the right password.

While highly convenient this type of system is very vulnerable to brute force attacks; therefore, it is imperative that companies, and application developers modernized their authentication process. A contemporary way that this issue is being addressed is through the incorporation of two-factor authentication. In the two-factor authentication process users are asked to validate their identity through two of the following “factors”

- Something they know (password, PIN, etc.)
- Something they have (phone, key, etc.)
- Something the user is (fingerprint, voice scan, etc.)

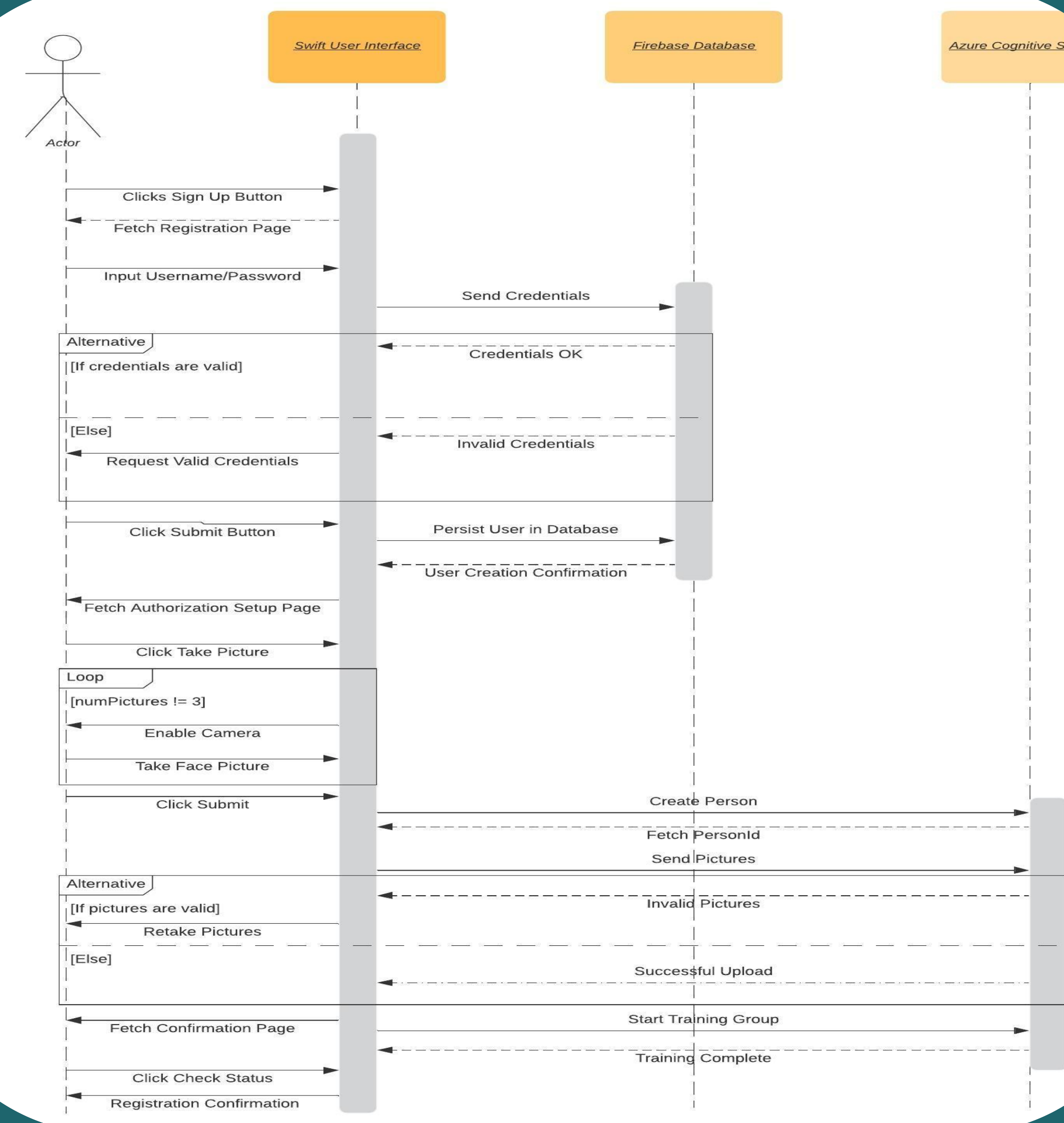
Project Description

The goal of the application was to create a two-factor authentication system that would use a desktop application to log users in, and a mobile application to authenticate users through a biometric check. The latter of which is the focus of this poster and was worked on primarily by Frederick Husson. The biometric check that we used for our second factor is a face scan that is done through the Microsoft Cognitive Services API. Additionally, the mobile application would be able to register users for future increase in user capacity.

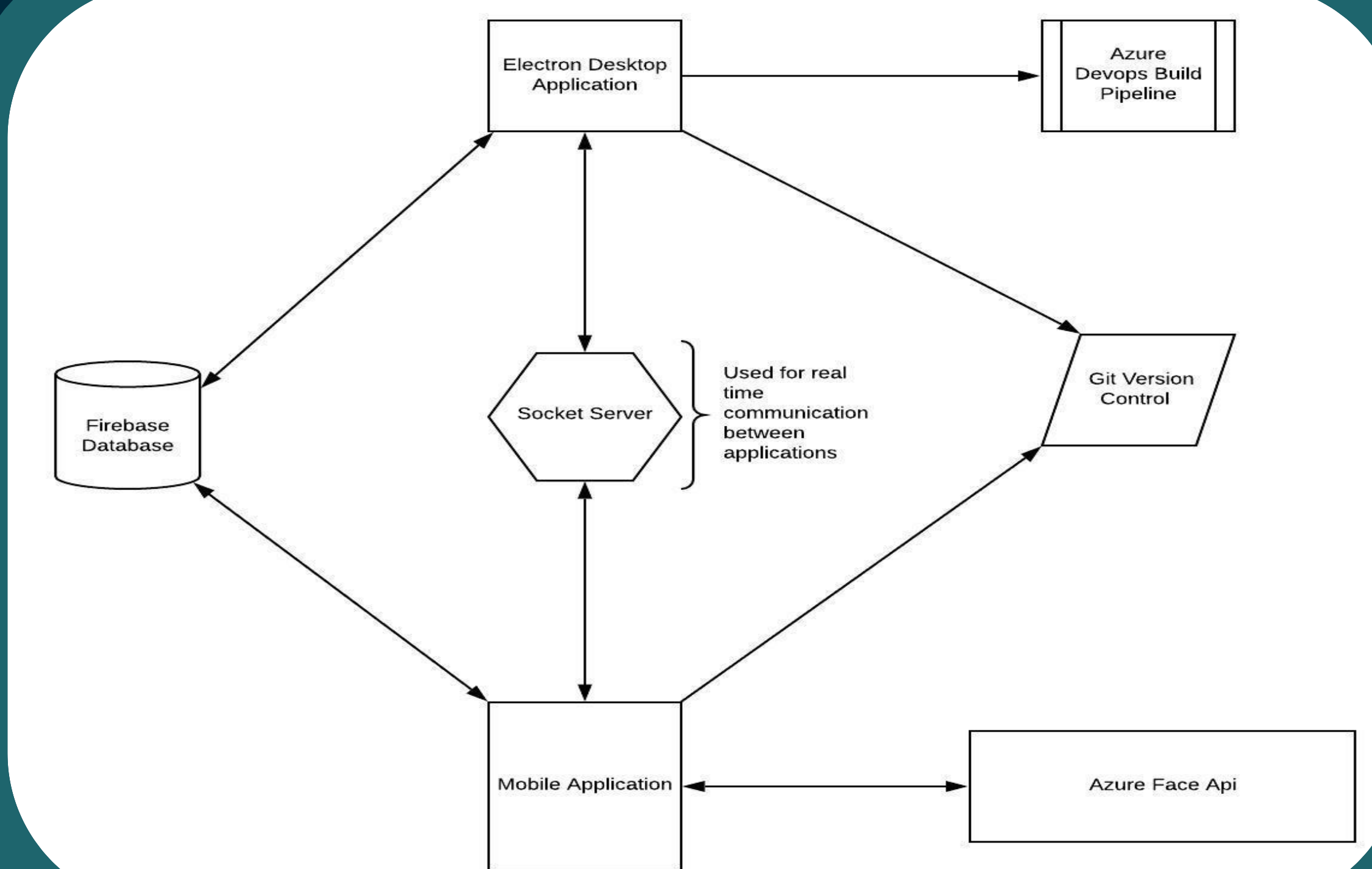
Main Features

- During the registration process the application creates an account for the user in Firebase with a given email and password
- Users can take face pictures as part of the registration process to later train the model to recognize their face
- Given a user is logged in, such user can be prompted to authenticate through sockets
- Application can detect, verify, and add faces of users
- Application communicates with a desktop application through sockets

Registration Process



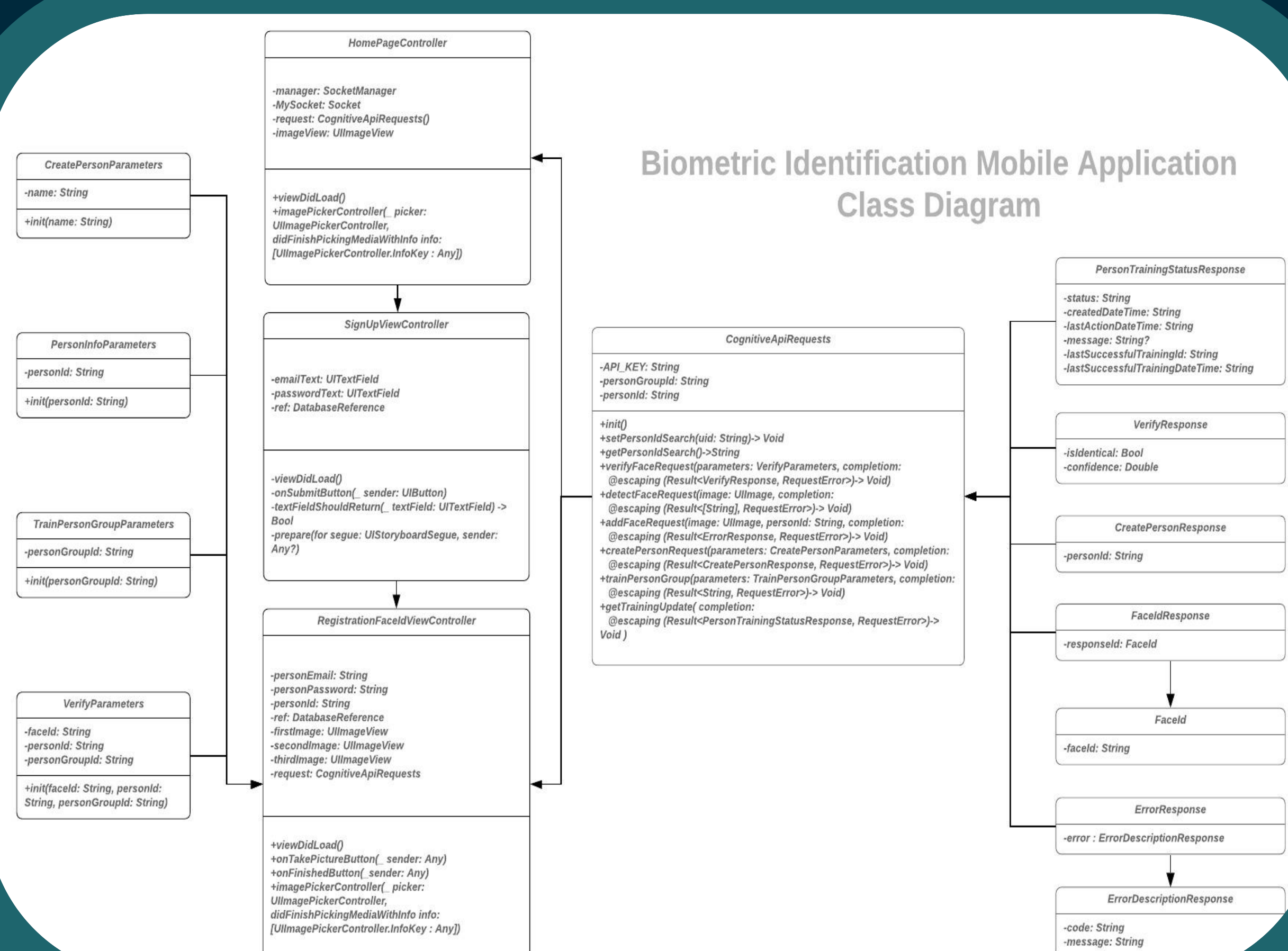
System Design



Implementation

- Swift was used to develop the mobile application
- Git was used for version control
- Firebase was used to authenticate users, and persist related data
- Azure Cognitive Services was used to scan, compare, and properly identify individuals in a picture
- Socket.io was used for communication between the mobile and desktop application

Class Diagram



Screenshots



Acknowledgements

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