CSE 535 2017 Fall Tasks List for BraiNet Project

This project is about using brain signals to do privacy management for smartphones. This is similar to FaceID in iPhone X but instead of using face image you use brain signals. We can call it “Thought ID”.

Phase 1: Developing a UI to show image/video stimulus and obtain brain data. The video stimulus is to instruct the user to close their eyes and relax.

1] Creating a UI for username/brainwave signal.

2] Getting brainwave signal information from SD card for input

3] Creating pipeline

4] Use the pipeline to connect UI to query the API

5] Testing the UI

Phase 2: Remote server setup

Sub-tasks:

1. Remote server setup and configuration
2. Database setup and connection/configuration
3. Creating pipelines to store and query the data
4. Designing an UI for user query
5. Testing database configuration and operations

Phase 3: Setting up a fog server and developing an adaptive offloading algorithm to derive when to use fog server

1) Fog server setup in the same network as smartphone

2) Implement recognition algorithm in fog server (obtain a sample implementation from IMPACT Lab)

3) Sense smartphone status including battery level and network delay

4) Run an algorithm in the smartphone to determine whether to use fog or remote server

5) End to end implementation of the recommendation of the algorithm

Phase 4:

Performance analysis using fog server vs. cloud server for the database.

1. Obtain real EEG data from IMPACT Lab and run your end to end system

2. Report accuracy of detection

3. Recording Execution times for both fog and cloud server

4. Record power consumption of the smartphone when using fog server or cloud server

5. Compare fog server only v.s. remote server only, v.s. adaptive offloading techniques with respect to execution time and power.