MindGames

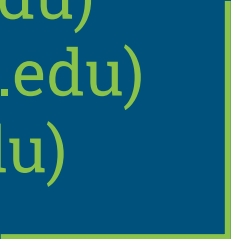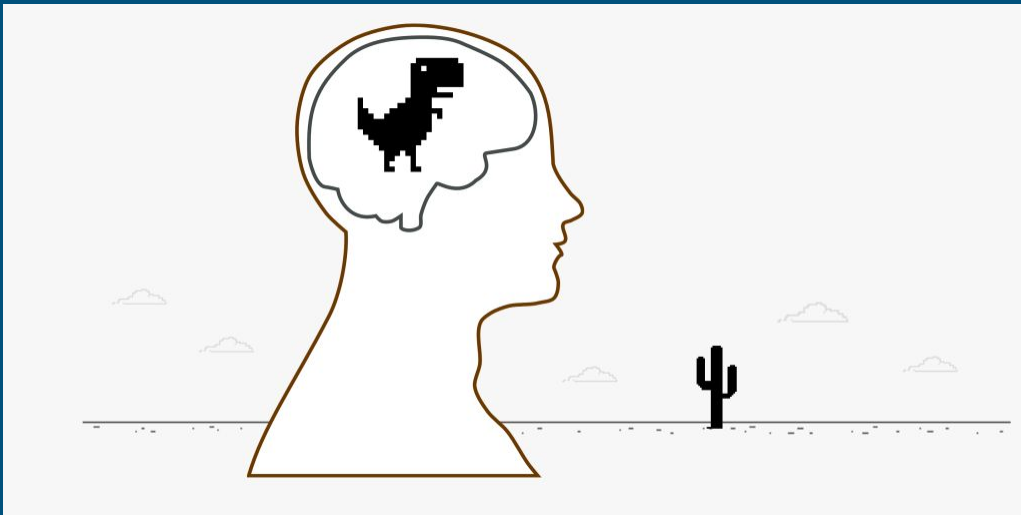## MIDTERM PROJECT REPORT
4/5/2022

Brandon Knotek (bk11@hood.edu)
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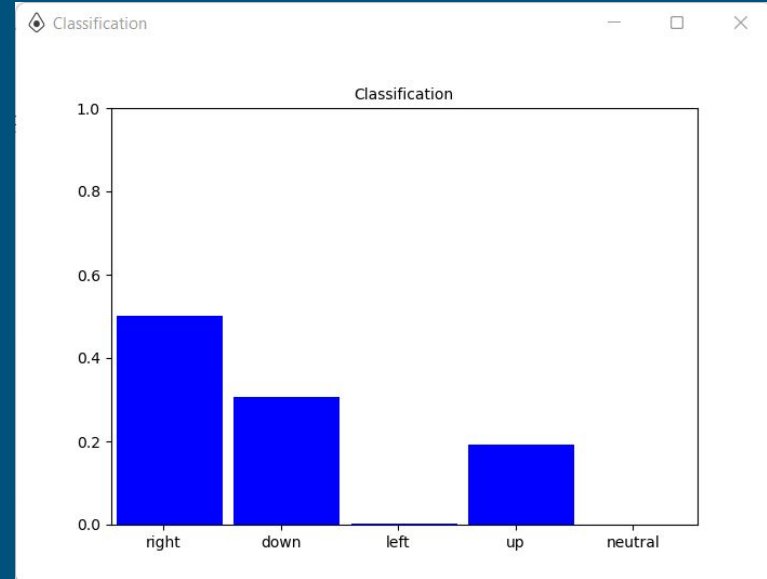Jack Wilder (jmw38@hood.edu)

Our Idea

- Enhance Accessibility

- Efficient Usage and Setup

Why Bother?

- Motor-Limiting Diseases/Injuries

- Communication Improvement

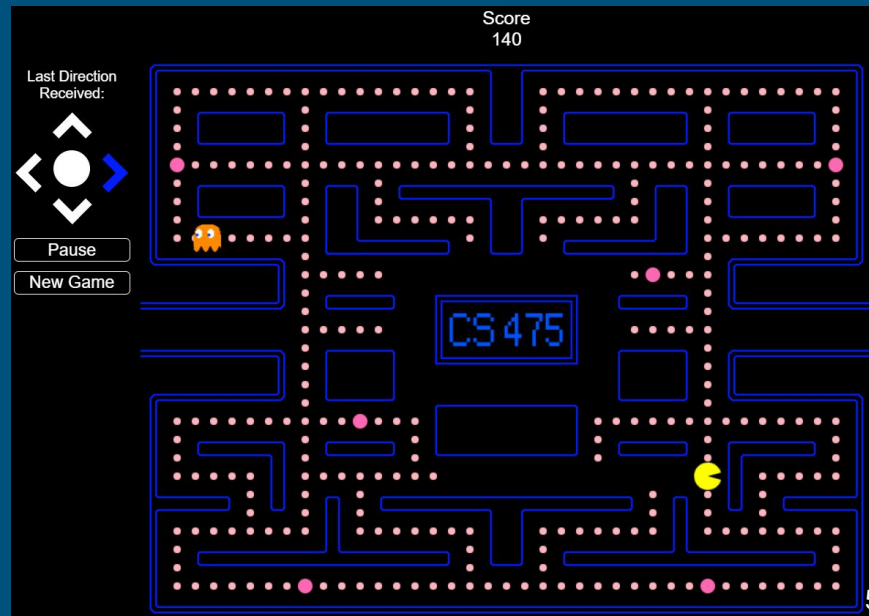- Muscle Activation is Nearly Universal

Unraveling the Brain

- Electroencephalography (EEG)

- Data and Signal Processing

Mental Control - Not Just Sci-Fi

- Not a Universal System Immediately

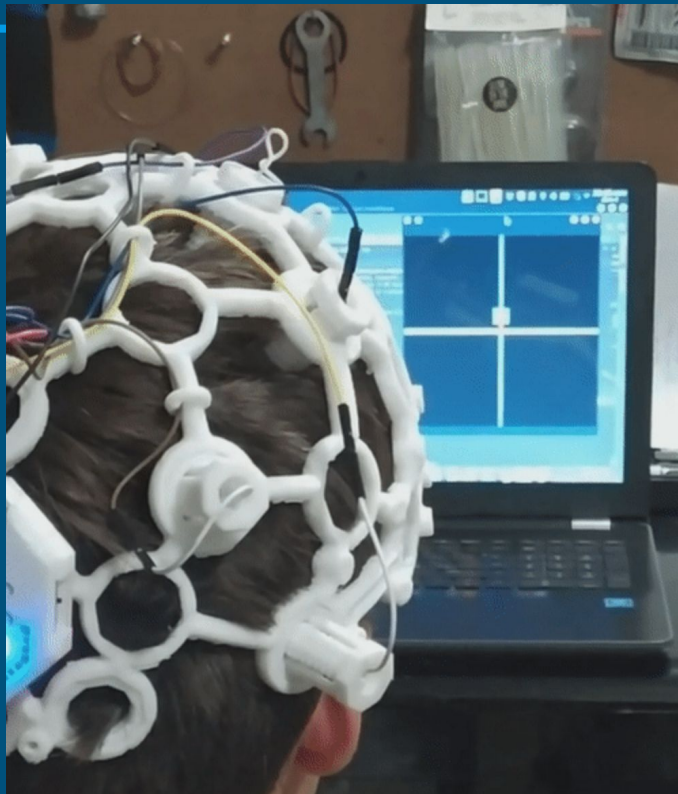- Training Modules

- Continuous Comparison

Our Plan

- Configure Headset

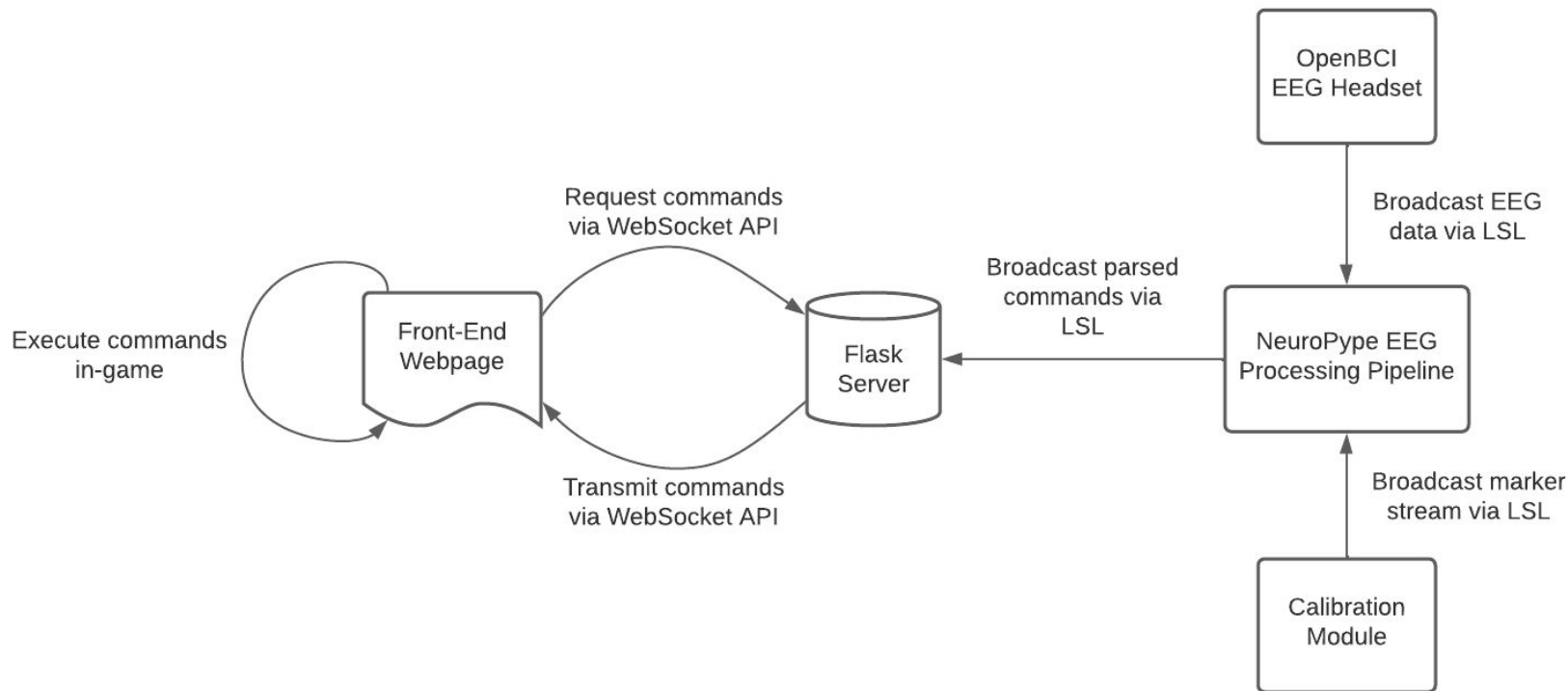- Develop Efficient Method for Training

- Transmit Matched Commands to Pac-Man

Previous Solutions

- Bigger, More Complex Systems

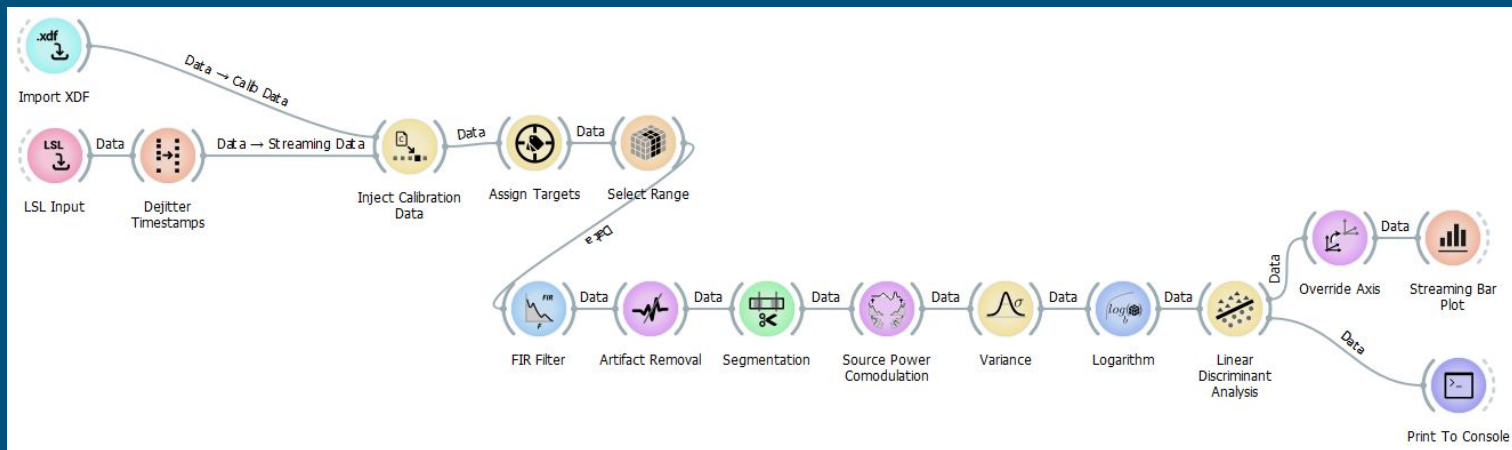- Generalized Signal Processing

System Overview

Communication Protocols

- Bluetooth
  - EEG data (external)
- LSL (Lab Streaming Layer)
  - EEG data (internal)
  - Marker stream
- WebSocket
  - Parsed commands

Accomplished Work

- Configuration/Training
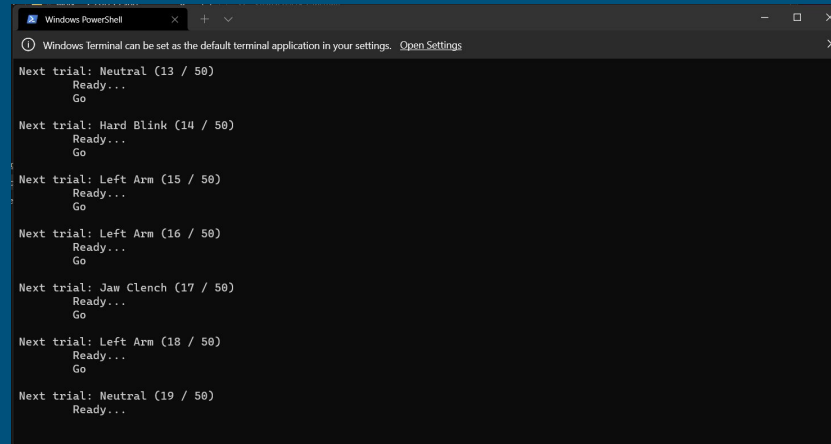- Pipeline Connections
- Pac-Man

Development Dynamics

- Each Member Excelled in Certain Areas

- Consistent Group Meetings

- Individual Methodologies

Lessons Learned

- Importance of Subdivision of Tasks

- One Step at a Time

- Development Needs a Large Breadth

What's Left?

- Refinement of Signal Processing

- Expansion of Applicable Movements

- New and Different Real-World Applications

Questions?