

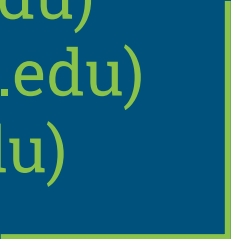


MindGames

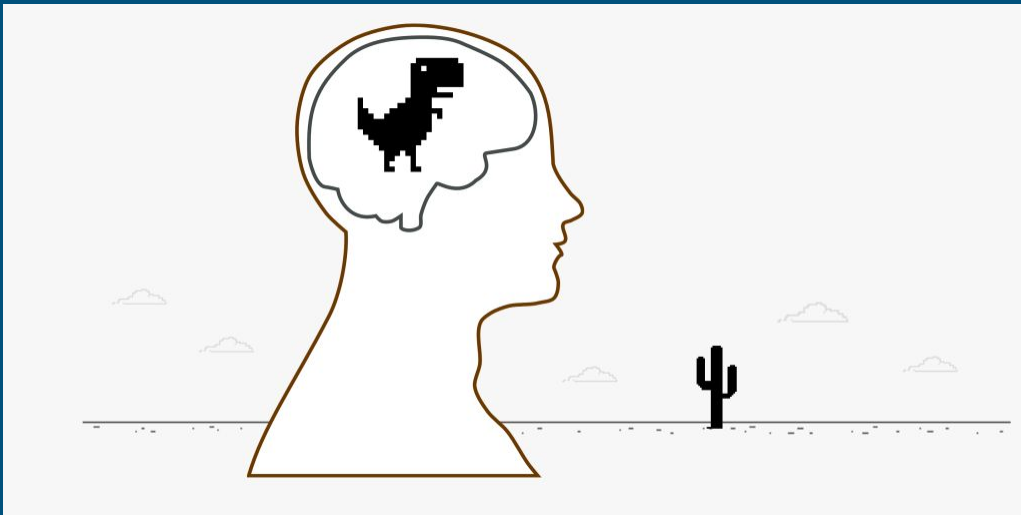
MIDTERM PROJECT REPORT
4/5/2022



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Our Idea



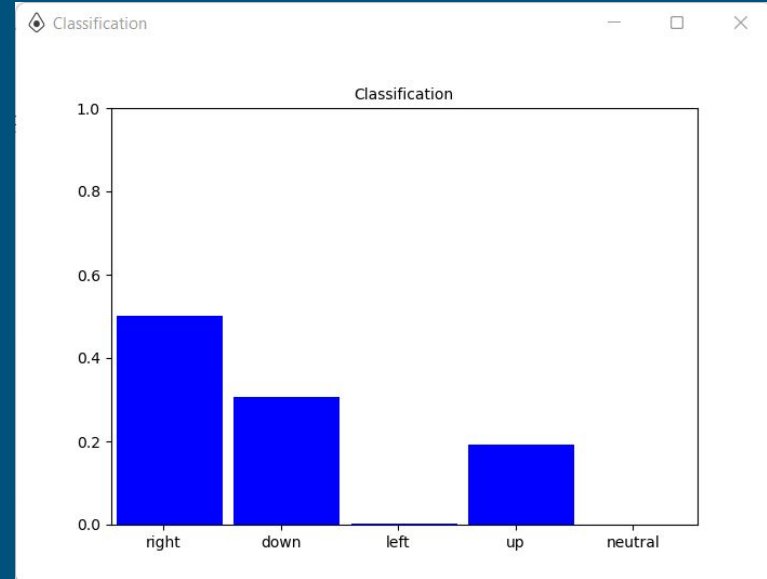
- Enhance Accessibility
- Efficient Usage and Setup

Why Bother?

- Motor-Limiting Diseases/Injuries
- Communication Improvement
- Muscle Activation is Nearly Universal

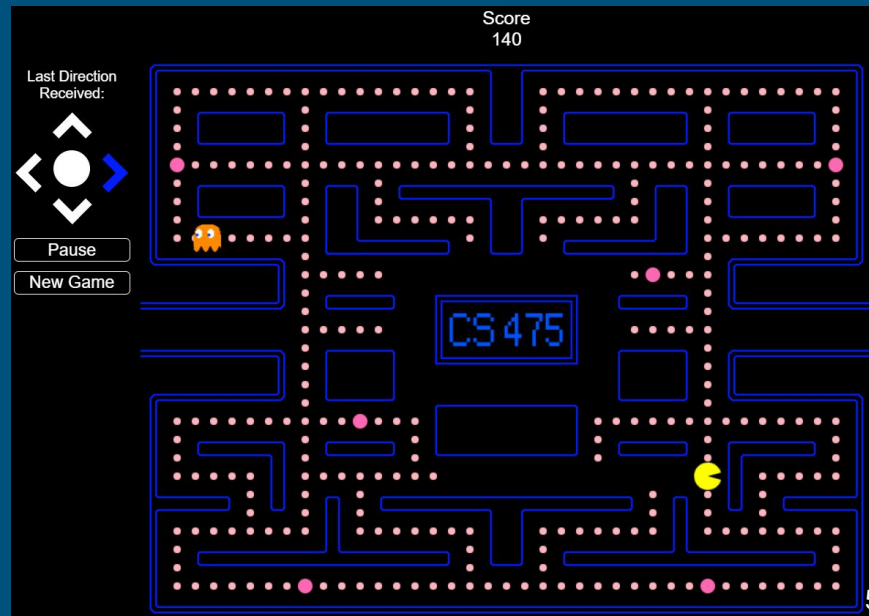
Unraveling the Brain

- Electroencephalography (EEG)
- Data and Signal Processing



Mental Control - Not Just Sci-Fi

- Not a Universal System Immediately
- Training Modules
- Continuous Comparison

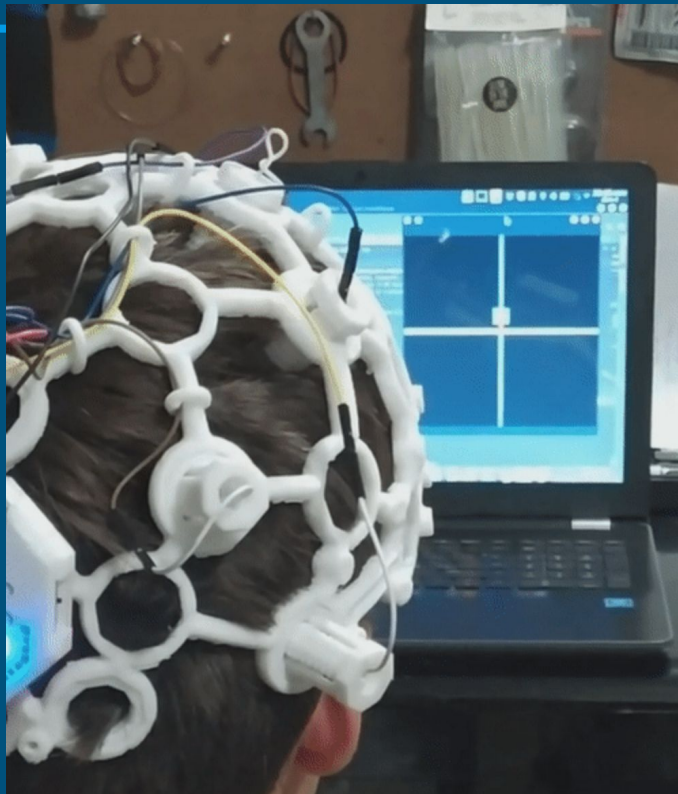


Our Plan

- Configure Headset
- Develop Efficient Method for Training
- Transmit Matched Commands to Pac-Man

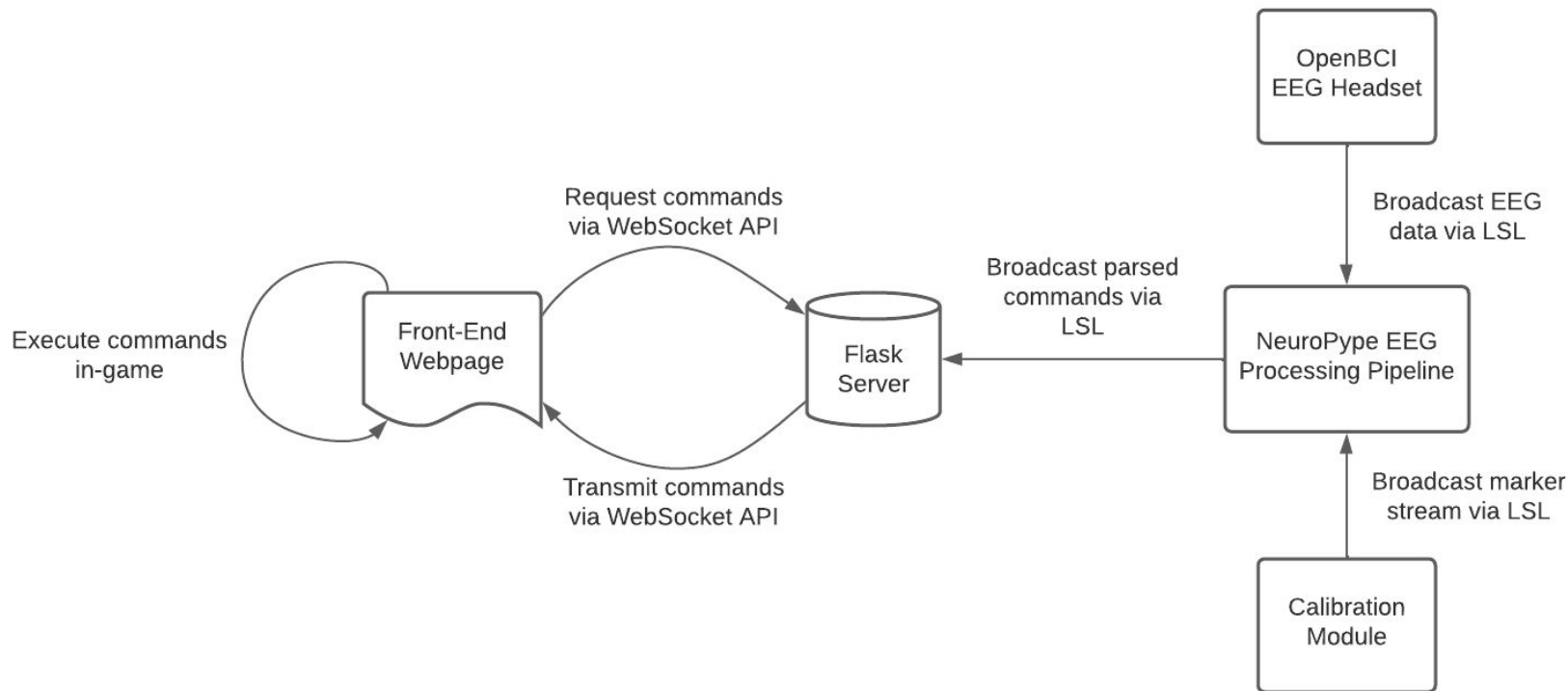
Previous Solutions

Citation: <https://github.com/CrisSherban/BrainPad#readme>



- Bigger, More Complex Systems
- Generalized Signal Processing

System Overview

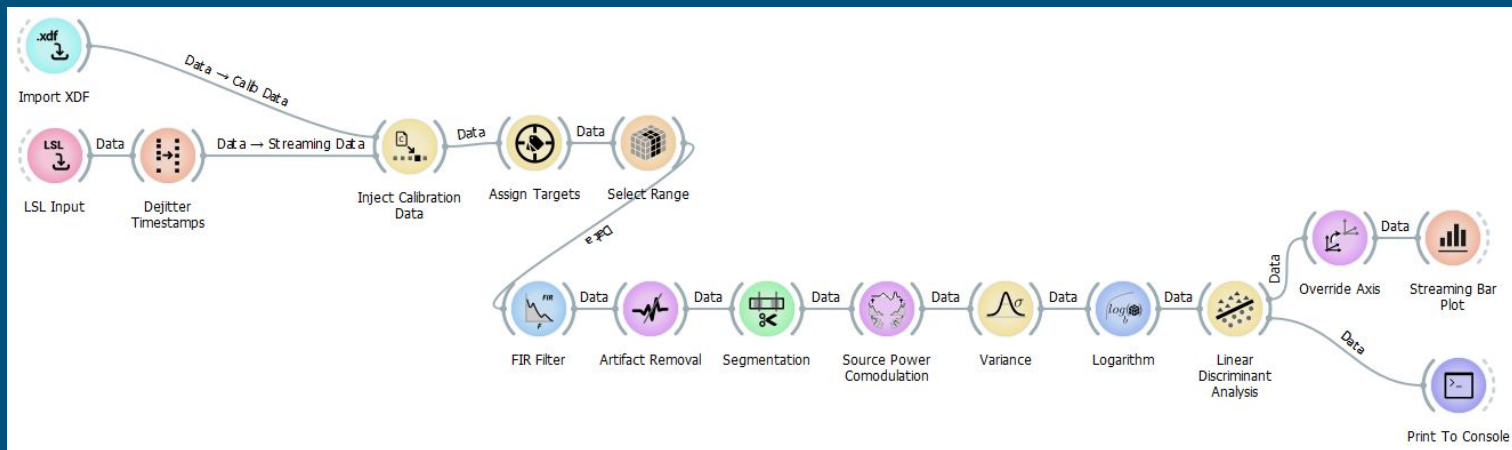


Communication Protocols

- 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

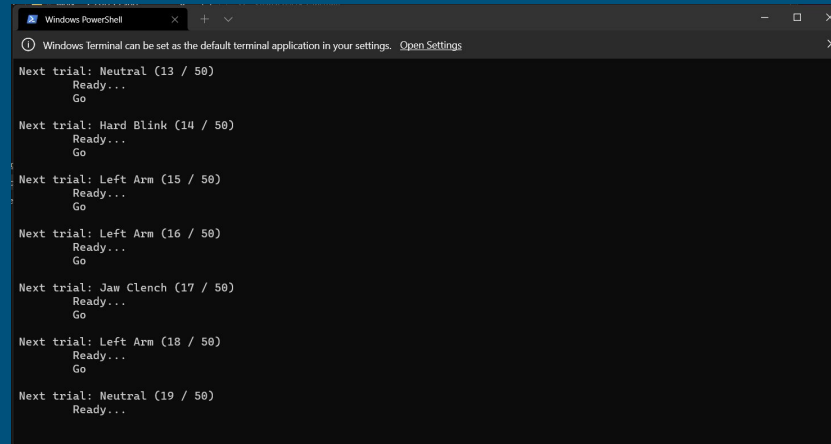
- Each Member Excelled in Certain Areas
- Consistent Group Meetings
- Individual Methodologies

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



```
Windows PowerShell
Windows Terminal can be set as the default terminal application in your settings. Open Settings

Next trial: Neutral (13 / 50)
Ready...
Go

Next trial: Hard Blink (14 / 50)
Ready...
Go

Next trial: Left Arm (15 / 50)
Ready...
Go

Next trial: Left Arm (16 / 50)
Ready...
Go

Next trial: Jaw Clench (17 / 50)
Ready...
Go

Next trial: Left Arm (18 / 50)
Ready...
Go

Next trial: Neutral (19 / 50)
Ready...
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Questions?