

Virtual Hand Simulation

Introduction

This document outlines the set-up and installation to run the Virtual Hand Simulation.

The Virtual Hand Simulation has been designed as a tool to be used alongside the MyoSensor Application, it provides a visual representation of a virtual hand which can be controlled via the keyboard. The MyoSensor key control application will allow myoelectric control of the virtual hand via key mapping engaging an amputee or non-amputee with a visual representation.

Set-Up

The hand model was designed in Blender and the game is controlled and hosted via game engine Unity.

The Virtual Hand Simulation can be run directly as an application on Windows or Mac Os or hosted on a sever and ran via a web-browser. The experience and control are the same on both as application or web-based.

Virtual Hand Simulation Control

Welcome Window

Title: Virtual Hand Simulation

Buttons:

- 1. PLAY: play game window*
- 2. CONTROLS: view controls of game window*
- 3. QUIT: exit application/game*
 - a. Application: exit + close window*
 - b. Web-browser: exit + web-browser window will remain open*



Controls Window

Title: Controls

Instructions:

- A Key: Closes hand
- D Key: Opens hand
- SPACE Key: Change hand model state
- Two States:
 - Open hand (D) and Close hand (A)
 - Index Finger Point (D) and Open hand (A)

Button: BACK – return to Welcome Window



Virtual Hand Simulation Play Window

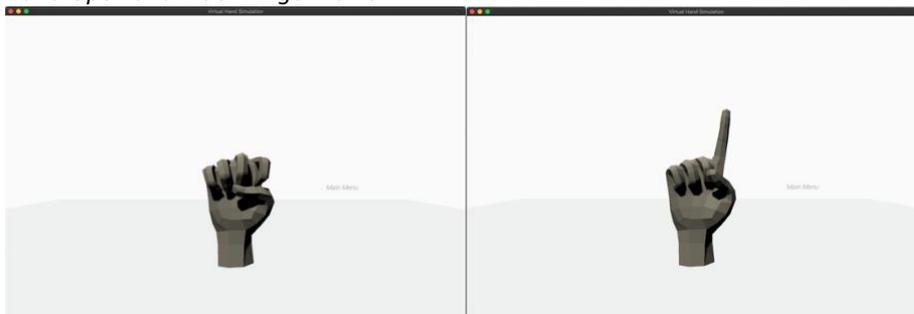
Keys control hand model

Button: Main Menu (highlighted on hover) – return to Welcome Window



Two States:

1. Hand Open and Fist
2. Hand Open and Index Finger Point



Link to MyoSensor Application – Key Control

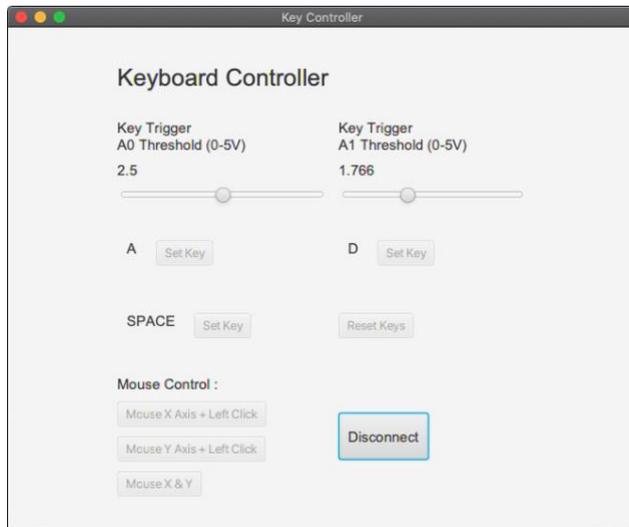
Follow MyoSensor Application Instructions.

Map keys

Map keys:

- A0 Sensor to A or D
- A1 Sensor to A or D (opposite of A0)
- A0+1 (co-contraction) to SPACE

As MyoSensor Application Instructions show you can lower or increase the threshold to increase or decrease difficulty of trigger.



Trouble shooting

If the model hand becomes unresponsive:

1. Physically press the SPACE bar to change states on the keyboard
2. Click Main Menu and reload the simulation