

Self Defense: VR

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Introduction

We set out to create a Virtual Reality experience where the user could learn some basic self defense without needing to pay for expensive courses. We hope the user will be able to throw proper punches at the end of our experience.

Meet “Boris” your own personal trainer. Boris looks like he can wrestle a Rhino, but he is a kind soul and a great trainer! He will guide you through tutorials on how to learn/practice each punch, and he'll guide you through the Drill exercises.

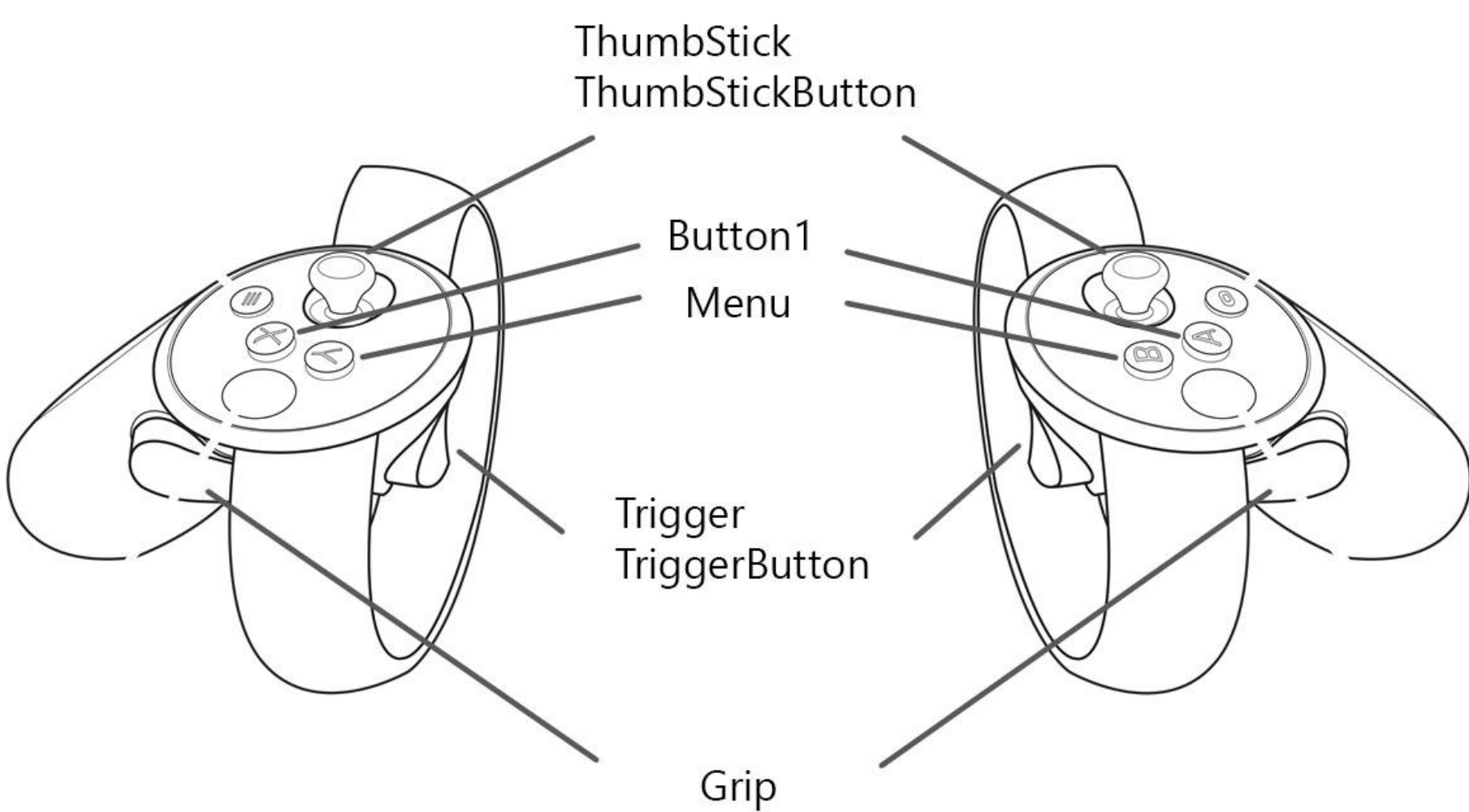
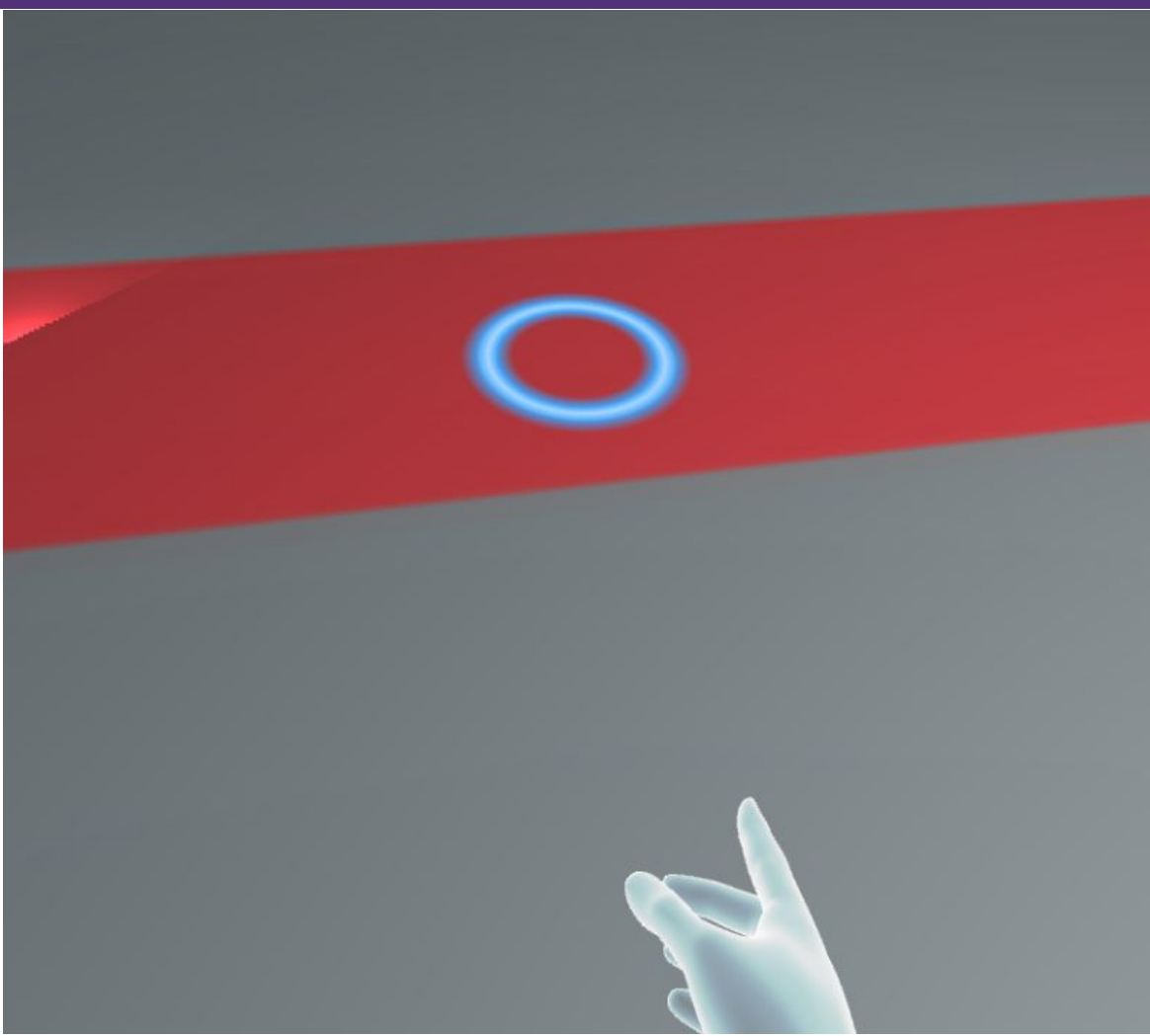


Key Features

- Punching Motions:
 - Jabs
 - Hooks
 - Uppercuts
- Paths for Guidance that allow the user to emulate a punch
- The physics of the punching bags that were added for user interactivity
- Boris animations for quick transition between punches
- Easter Egg: punch Boris in the head enough times

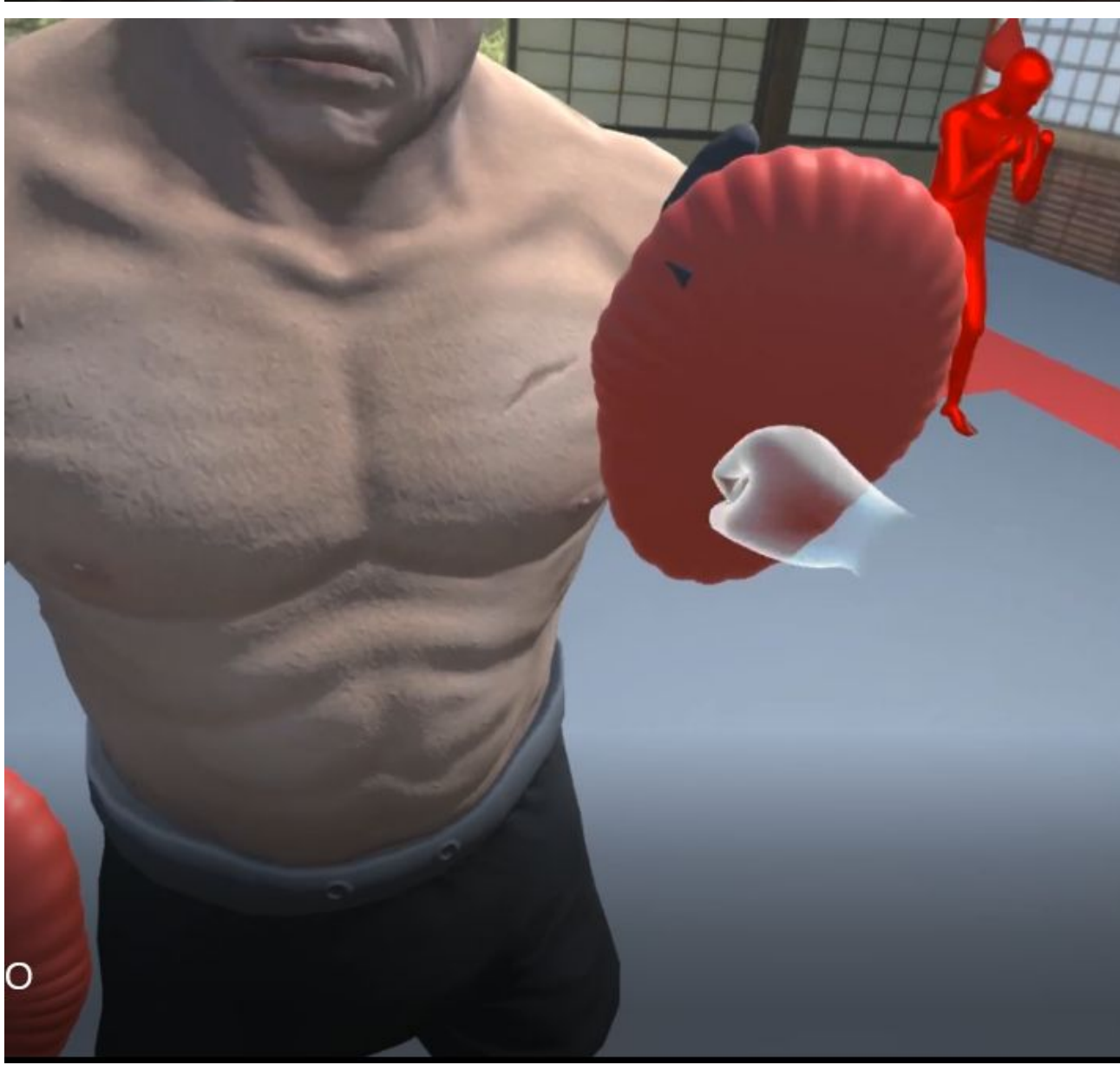
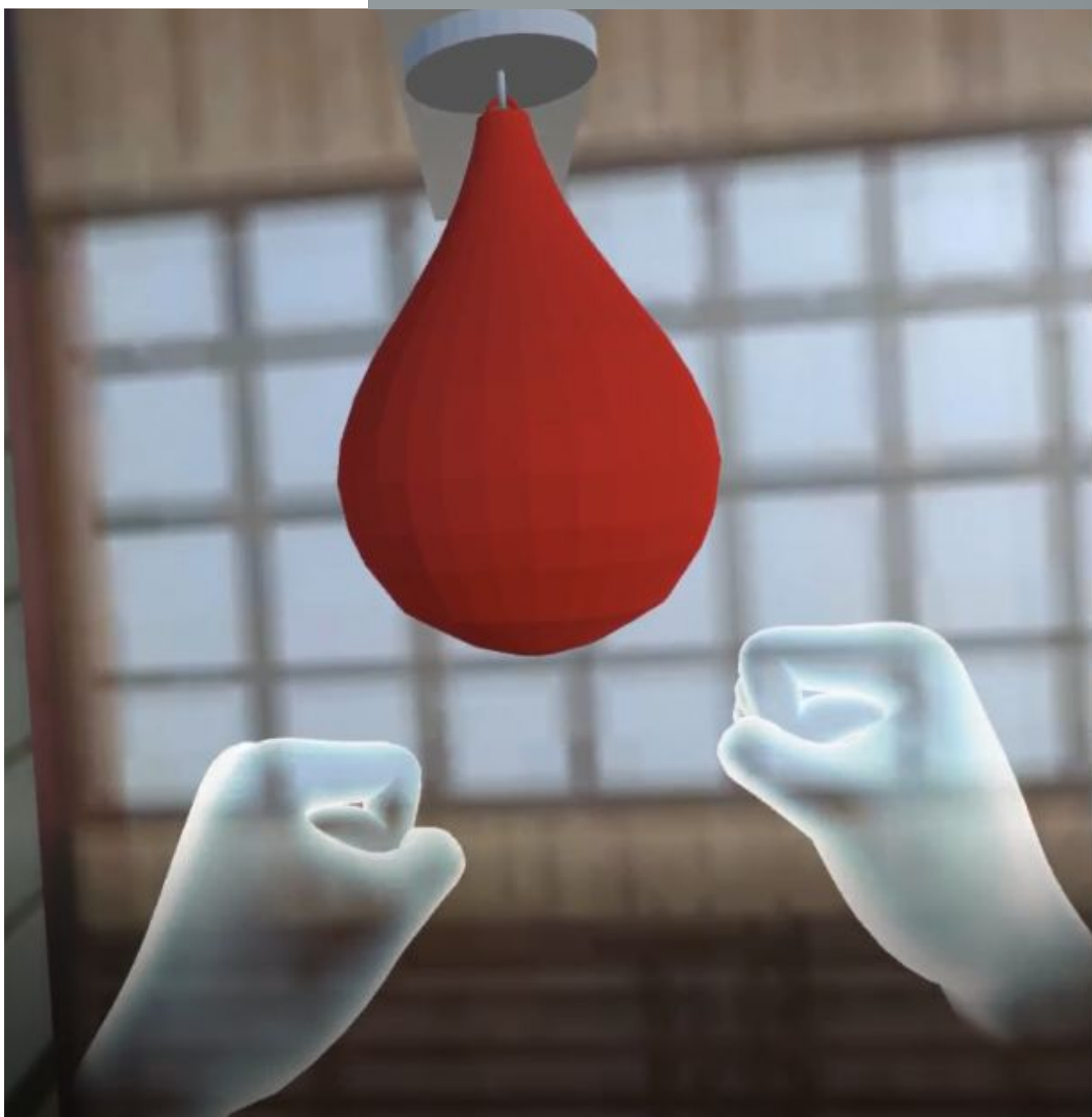
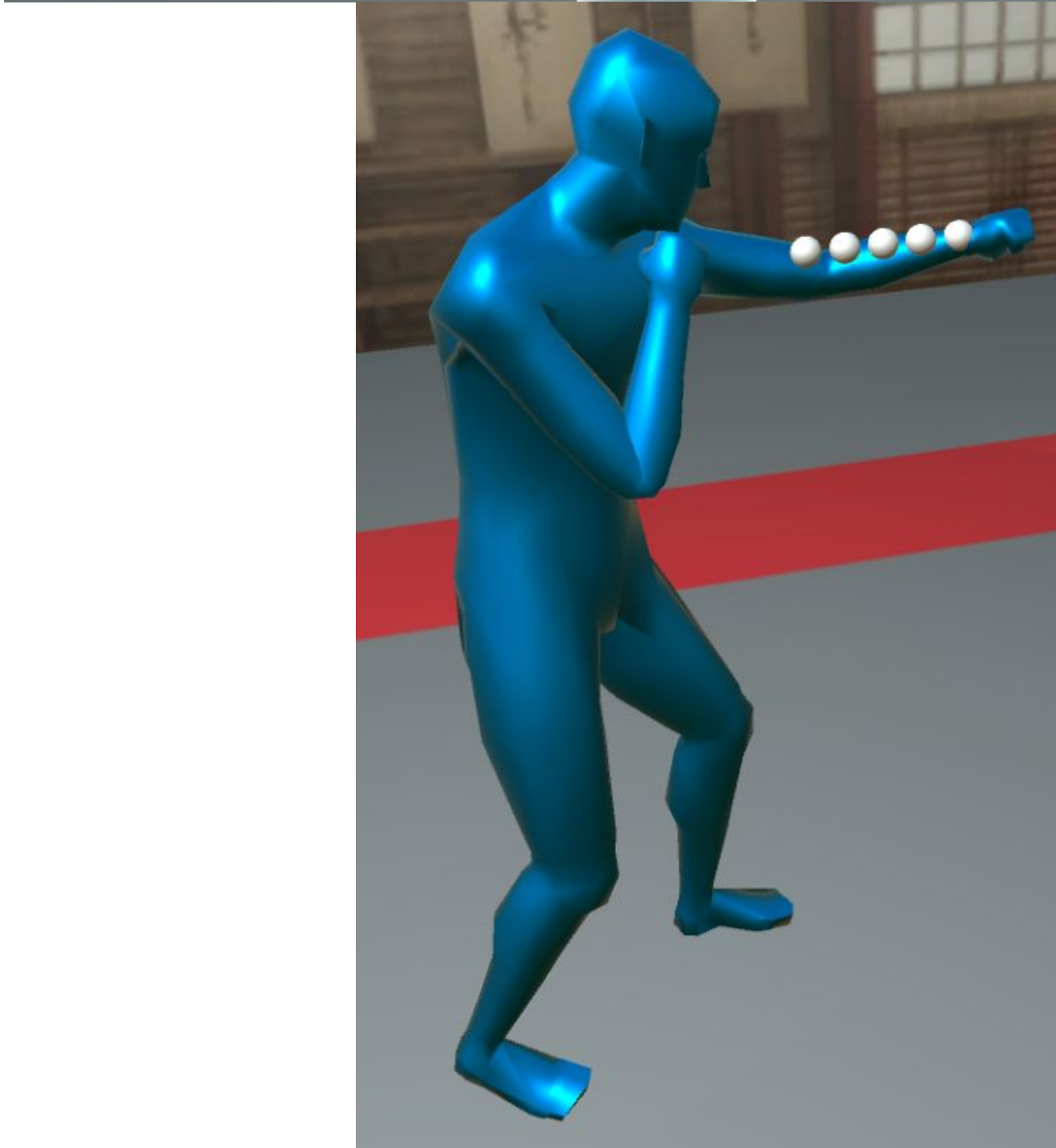
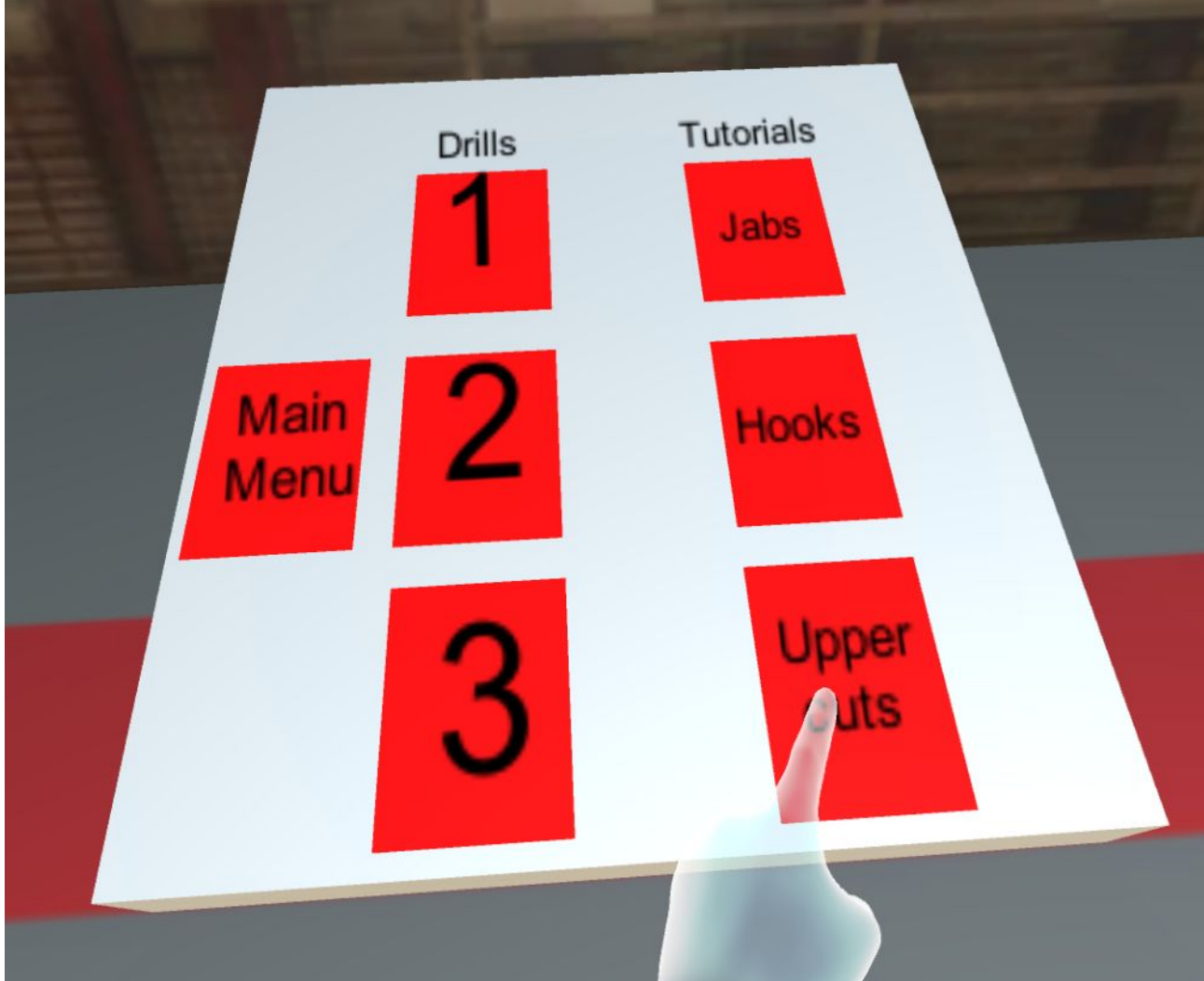
Controls

- How to move:
 - Gaze Teleportation
 - Hold down “B” button (right controller)
 - Look where you want to go
 - Pull the Trigger button (right controller)
 - Left ThumbStick for moving
 - Right ThumbStick for head rotating
- How to look around:
 - Move your head around
- How to make a fist:
 - Hold down Trigger + Grip
 - Place thumb on either:
 - ThumbStick or
 - any button(do not press)



User Experience

- The user will begin in a room with a Main Menu where they can select between Tutorials or Drills.
 - They can pick Jab, hook, or upperCut Tutorials
 - For Drills, there are three preset Drills for selection
- In the Tutorial scene, the user:
 - Can observe a fighting model performing the punching motion
 - Can experiment on the hanging and standing punching bags in the corners of the room
 - Can perform the punch on Boris and he will continuously alternate pads until the user selects otherwise
- In the Drill scene:
 - The user will be in front of Boris
 - Boris will give voice commands as to what punch to throw
 - The punch path will be displayed
 - The user cannot move or teleport in Drill scenes
- All of the different scenes have a Console with all the menu options so the user can easily switch between scenes.



Implementation

The table below shows All the scripts (**bold**) that are attached to objects in our VR experience, with a short description.

Boris		Punch Bag	
Drill1 : logic for Drill 1		RecoveryBag : Applies physics to punching bag (tutorial)	
Drill2 : logic for Drill 2			
Drill3 : logic for Drill 3			
Punch Mitts		Speed Bag	
ChangeToLeft : Triggers specified left hand animation (tutorial)		BagLimit : Prevents bag from going too high (tutorial)	
ChangeToRight : Triggers specified right hand animation (tutorial)			
Spheres		Control Panel Buttons	
DisableUponCollision Left : Disables spheres when user punches with left controller		SceneChange : Uses the name of the parent to change the scenes	
DisableUponCollisionRight : Disables spheres when user punches with right controller			
Controller		Path	
Teleport : Allows user to look where they want to teleport		DisableAllExceptFirst : Disables all colliders except the one of the first sphere	

Resources

What We Made:

Punching Bag, logic for Drills, Scene switching

Boris' Punching Pads, Boris animations

Punching Paths, Dojo environment design

Assets We Did Not Make:

Boris the CageFighter: <https://goo.gl/rwdPAK>

Fighting Motions Vol. 1: <https://goo.gl/4hc27U>

OVR Utilities/Platform/Avatar: <https://goo.gl/JNCKUu>

Ceiling Design: <https://goo.gl/dtuqjV>

Scroll Wall Design: <https://goo.gl/cKxb7r>

Courtyard Wall Design: <https://goo.gl/7azMLa>