

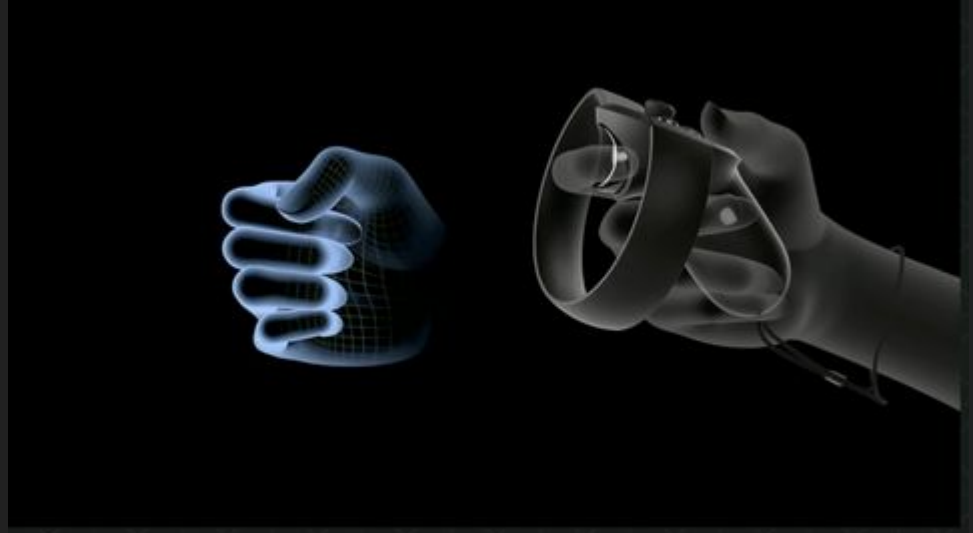
# HW2: VR Classroom

CSE165 - Discussion 3

# Agenda

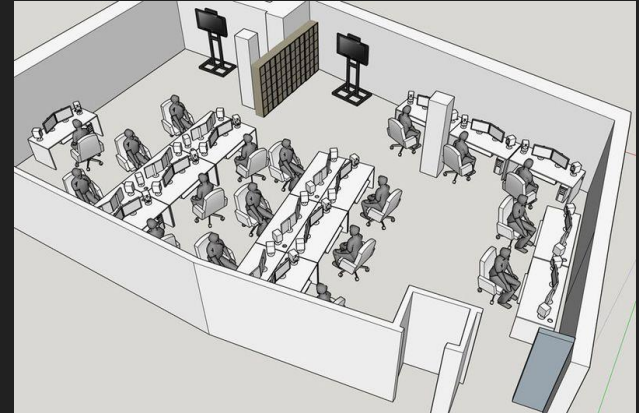
- Homework Intro
- Using Oculus Touch Controllers
- Creating VR Lab
- Instantiating Furniture
- Selecting Furniture
- Manipulating Furniture

And extra credit!

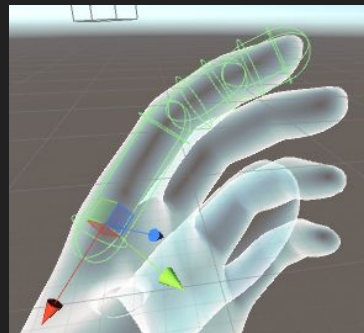


# Homework 2: VR Classroom Design Tool

- Provided with fbx files:
  - Including TV, Chairs, Locker, Whiteboard, etc.
  - Download at <http://ivl.calit2.net/wiki/images/1/12/Vrlab-fbx.zip>
- Create an empty classroom!
  - With colliders so that objects won't fall out from the room



# Oculus Touch Controllers



- Oculus Integration SDK:

- Download: <https://assetstore.unity.com/packages/tools/integration/oculus-integration-82022>
- OVRPlayerController gives you the prefab for Oculus Camera
- LocalAvatar gives you the prefab for Oculus Touch Controller
- Check out sample scripts in the SDK to see how things work!

- FAQs

- Unity crashes when importing the assets?
  - Find out the script that causes the crash and uncheck it when re-importing.
- Where do I put localAvatar?
  - One way is to put it under OVRPlayerController/OVRCameraRig/TrackingSpace
- Errors when importing the SDK from asset store?
  - SDK also available at:  
<https://developer.oculus.com/downloads/package/oculus-utilities-for-unity-5/>

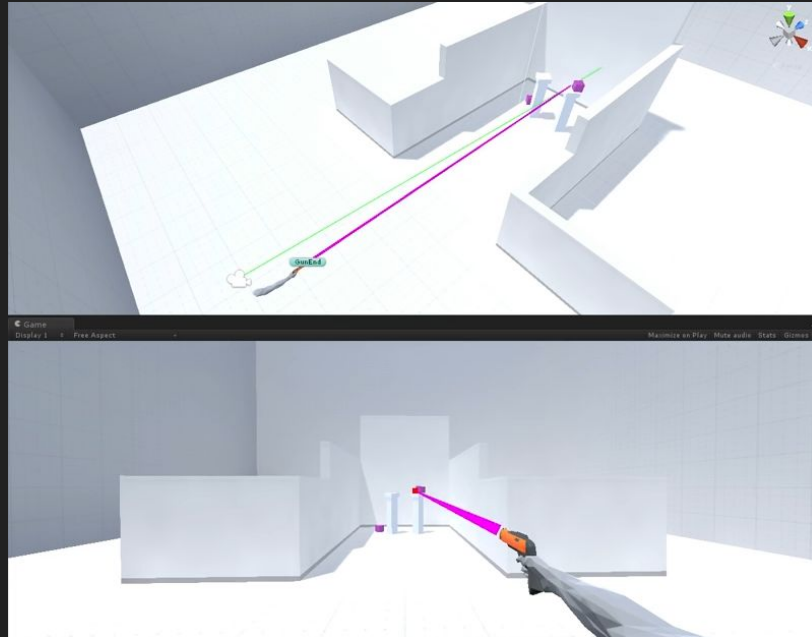
# Downloading and Creating VR Lab

- Extract the folder, and drag it into the Asset window
- The scale of certain objects, like the chair, is way off
  - Select the model, and you should see Import Settings in the Inspector Panel.
  - Change the Scale Factor to realistic values
- You will need to add colliders manually
  - Simply using Mesh Colliders would be too slow
- Once you have set up an object to your liking, make it a Prefab!



# Render a ray casted from your controller

- Just like laser pointer
- The ray should be long enough to reach all of the walls of the lab.



# Instantiating + Placing Furniture

- Be able to place CHAIR and DESK
- When to instantiate?
  - When use press the corresponding buttons
- Where to instantiate?
  - At a fixed distance from the controller along the ray
- How to instantiate
  - `GameObject.Instantiate()` and `Physics.Raycast()` for lots of your interaction
- Key questions:
  - How will the user choose where to place the furniture? No overlap allowed!
  - How can you make sure the furniture is upright when created?

# Selecting & Manipulating Furniture

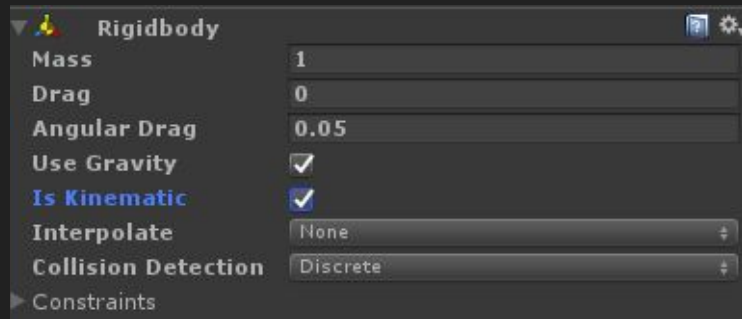
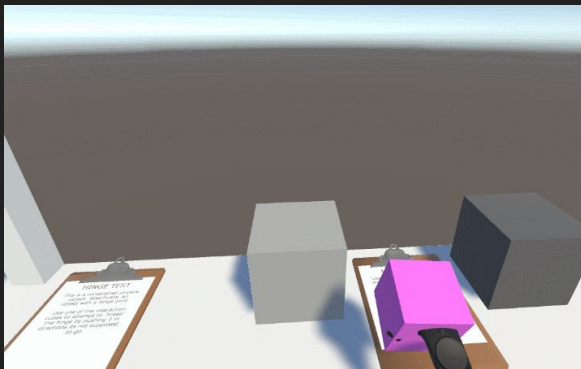
- You need to also implement raycast selection
- When a furniture is being pointed to, it should be highlighted.
- When to enable the selection?
  - When the user pull the trigger
- How to manipulate furniture?
  - The furniture will stay at the fixed distance to your controller
  - Acts like you have skewered the furniture on a stick





# Manipulating Furniture

- Users should be able to move and rotate furniture objects.
  - Checking `isKinematic` helps you temporarily get rid of gravity.
- Interesting questions to think about
  - How to use this interaction method to
    - Move object?
    - Rotate object around its own center?
  - How will the object you are manipulating interact with other objects?



# Extra Credit: Menu

- Use a menu to select type of furniture to place, instead of using A/B (X/Y)
- You need to be able to spawn all the other furnitures in the zip file, not only Chair and Desk.
- Where do we put the menu?
- What is the menu interface? What do you show on the menu?
- How to you interact with the menu?



# Extra Credit: Two handed scaling

- Use Grasp Buttons on two controllers to scale the whole world
- Scale factor depends on the delta distance between your two hands
- Ability to reset the scale factor to 1
- Questions:
  - Where are you (as player) after the scaling?
  - How should you spawn/manipulate the existing object after the scaling?



# DEMO

CSE 165 Project 2 Winter 2018  
(NOT EXACTLY THE SAME AS THIS TIME)

# Questions?

Feel free to ask on Piazza!

*(Making your questions public is helpful to everyone!)*

