

HW2: VR Classroom

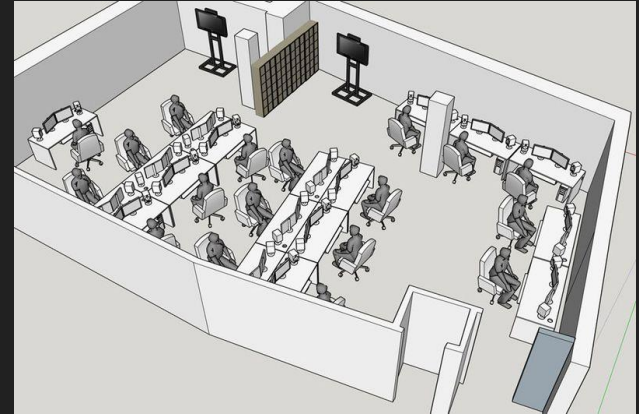
CSE165 - Discussion 4

Agenda

- Announcements
- Homework Overview
- Teleport
- Switch Mode
- Walking
- Extra Credit

Homework 2: VR Classroom Design Tool

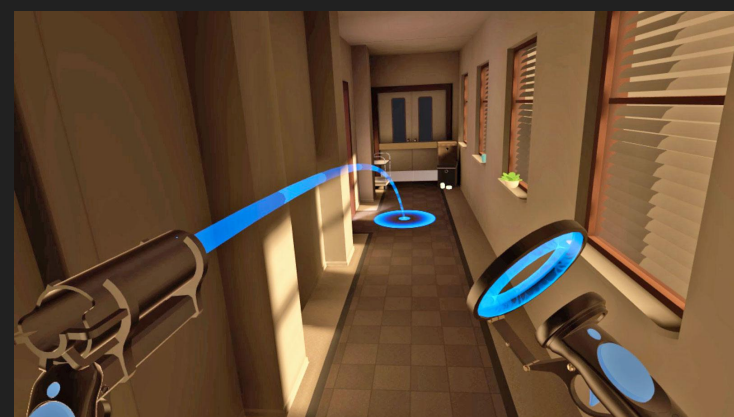
- This homework will focus on travel methods
- Due this Friday at 3PM!



Teleport

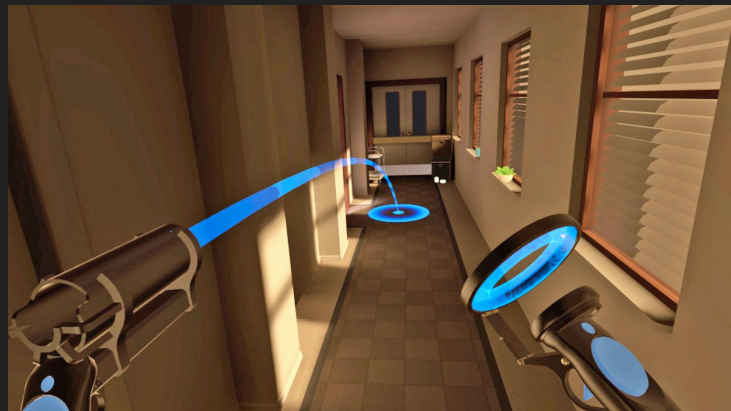
- How can you use raycast to move around a space?
- Before, users point at furnitures to interact with them
- How will the teleport be triggered?
- Can you use the existing raycast interaction system to implement teleport?

(Arc-shaped lines in the images are for extra credit)



Teleport

- A ray and a destination indicator at the intersection point
 - Quad, or other highlight methods
- Use dominant hand trigger to trigger teleport
 - PrimaryHandTrigger
- Only change position but not orientation



Switch Mode

- Use non-dominant hand to switch modes
- Visual display of current mode:
 - Button
 - Text
 - Image
 - etc

Walking

- Continuous movement
 - Small amount of relative movement per frame
 - For both position and orientation
- Constraint:
 - Always on the floor
 - Always up (Only rotation along world space y-axis is allowed)

Walking

- Start of walking:
 - Store initial position and initial orientation of controller.
- Update per frame:
 - Calculate the delta between current transform and initial transform
 - Apply the delta * multiplier onto player's transform
 - Remember to constrain player's height and pitch/roll rotation

Extra Credit: Teleport with arc-shaped line

- You are allowed to do it in different ways.
- One way would be:
- Do physics simulation per frame
 - Throwing something out from the controller along forward direction.
 - Sample the path
 - Update line renderer's vertices position
 - (You can also use adaptive vertices count)



Extra Credit: Flying

- You are allowed to do it in different ways.
- Just like “walking” but without any constraint
 - $\text{deltaQ} = \text{currQ} * \text{initQ}^{-1}$
 - Quaternion.Slerp() / Quaternion.SlerpUnclamped() for multiplier
- Display the world space up vector as visual wayfinding aid



Demo Time

Questions?

Feel free to ask on Piazza!

(Making your questions public is helpful to everyone!)

