

CS 498vr

Lecture 2 - 1/22/18

Lecture 1 Review

- What is the definition of VR?
- What will you be learning in this course?
- What makes a good VR experience?

When did VR start?

When did VR start? Paintings?



When did VR start?



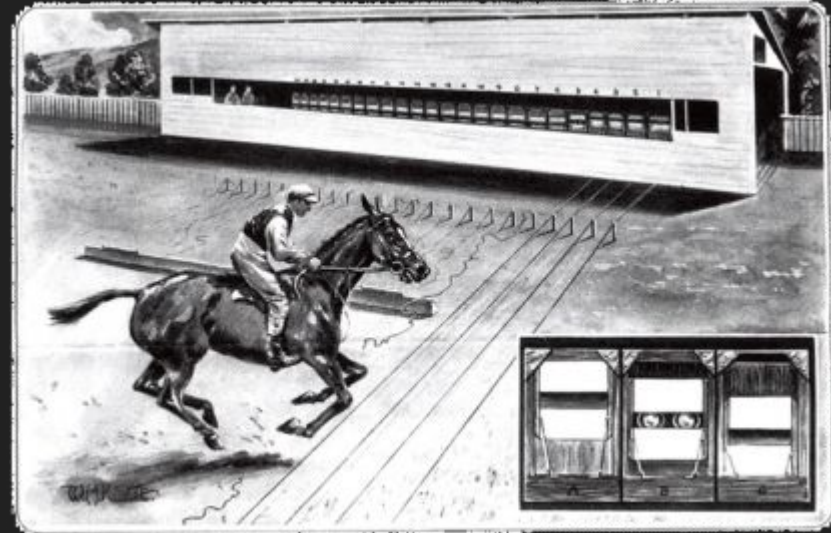
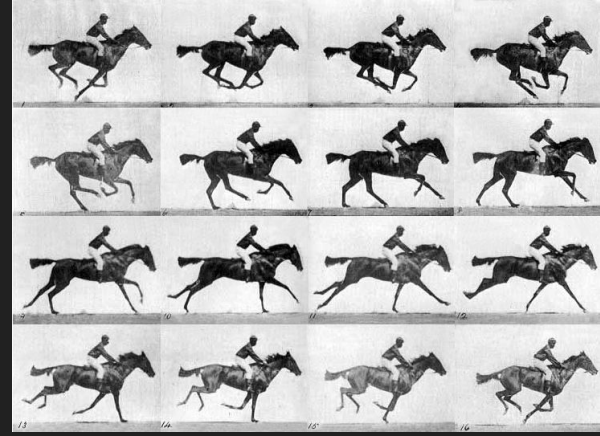
When did VR start?



When did VR start?

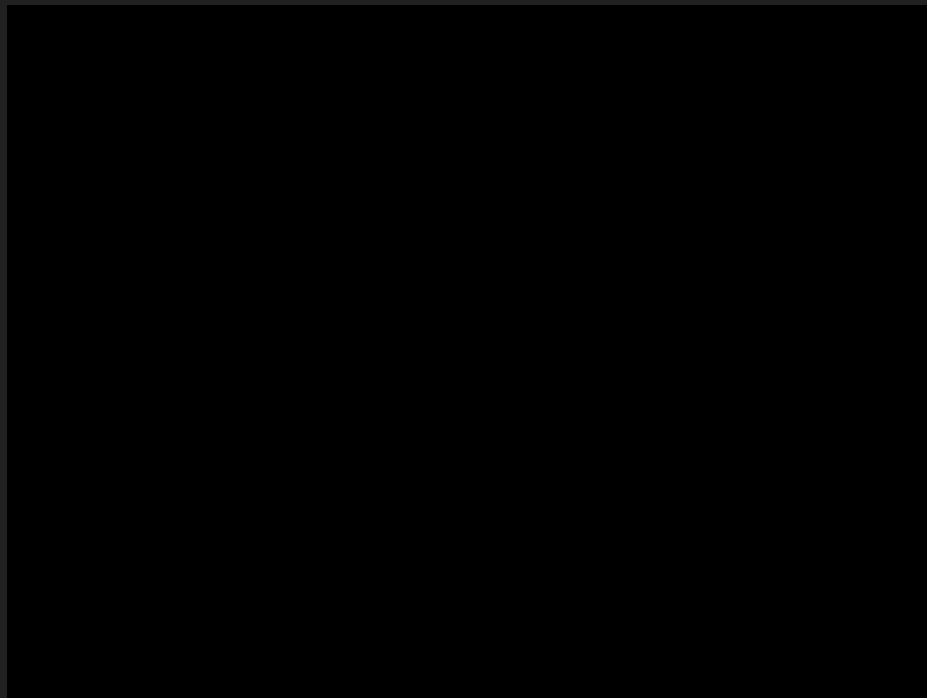


When did VR start? Motion pictures?

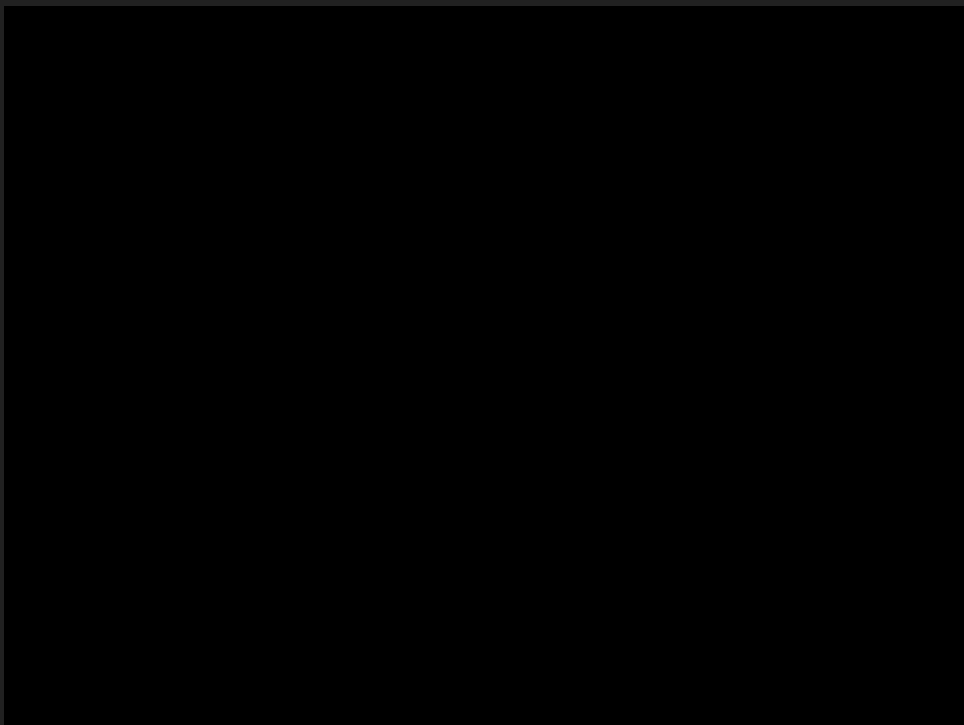


<https://www.youtube.com/watch?v=IEqccPhsqqA>

1878 Muybridge

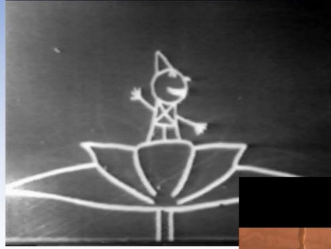


https://www.youtube.com/watch?v=b9MoAQJFn_8



https://youtube.com/watch?v=vKW-Gd_S_xc

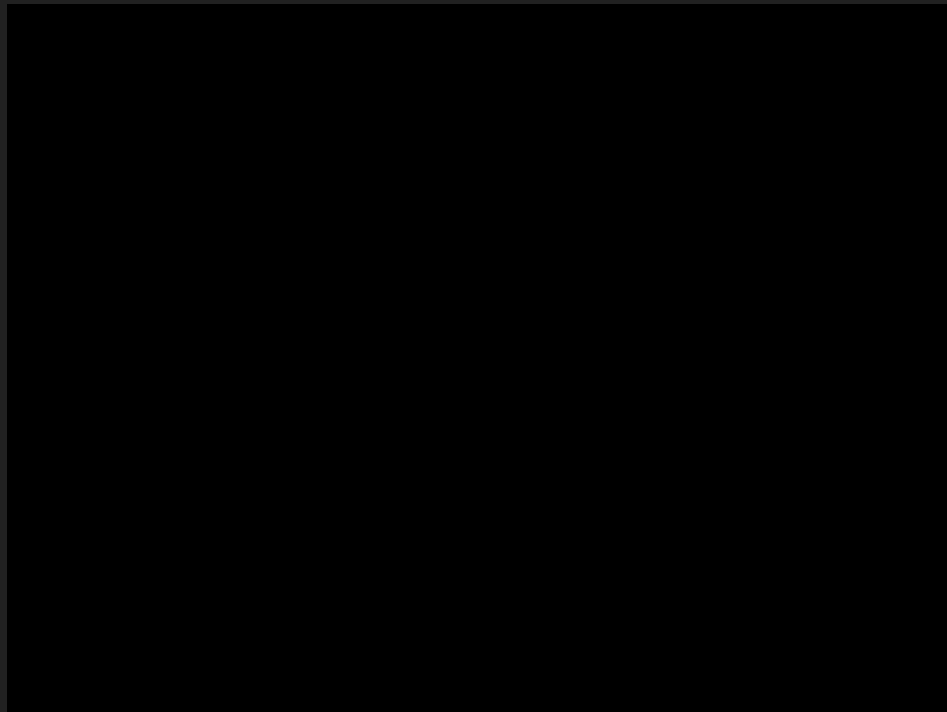
Realism vs Simplicity in Cartoons



Realism vs Lower Cost and Portability



How many FPS are enough?



<https://www.youtube.com/watch?v=-Qk7ZSXujRo>

Evolution of Computer Games



Realism vs Simplicity in Computer Games



History of VR

Introducing . . .

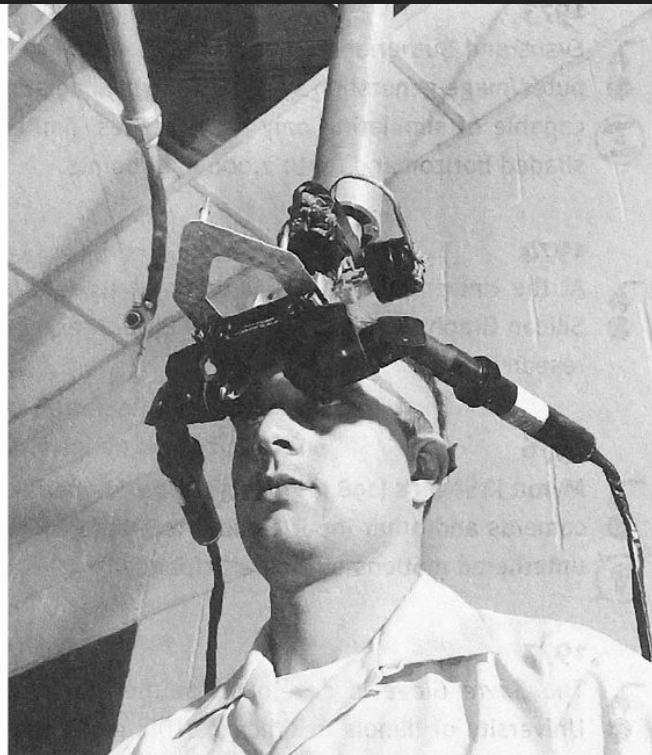
sensorama

The Revolutionary Motion Picture System
that takes you into another world
with

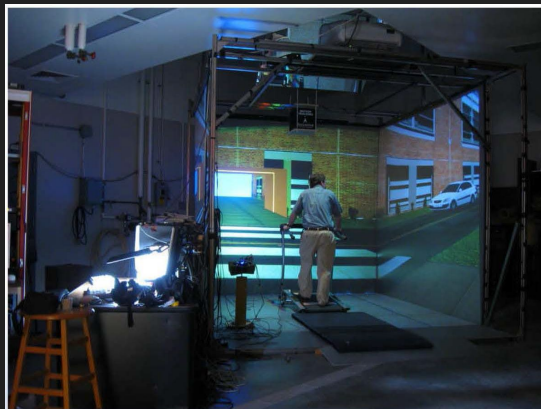
- 3-D
- WIDE VISION
- MOTION
- COLOR
- STEREO-SOUND
- AROMAS
- WIND
- VIBRATIONS



SENSORAMA, INC., 855 GALLOWAY ST., PACIFIC PALISADES, CALIF. 90272
TEL. (213) 459-2162



Headsets vs Cave



Birds-Eye View: Hardware

Displays (Rendering):

- Visual:
- Audio:
- Touch:
- Smell? Taste? Vestibular?

Tracking Hardware Components:

- IMU's:
- Magnetometers:
- Cameras

Controllers:

-

Lens:

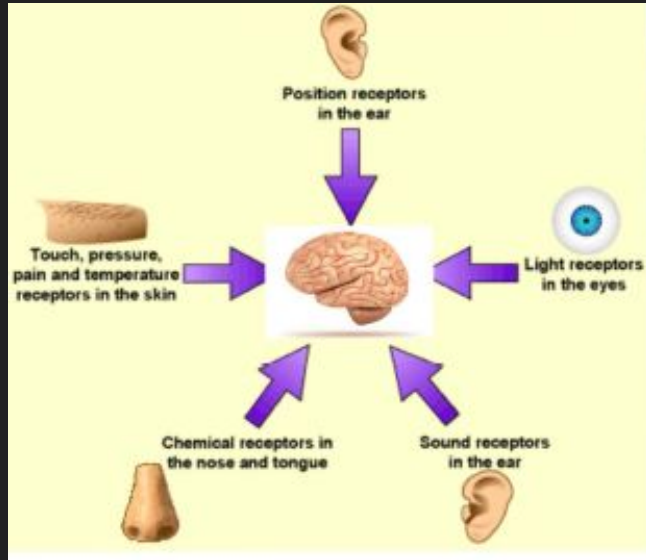
Computer:

- CPU:
- GPU:

Definition of VR

Inducing targeted behavior in an organism by using artificial sensory stimulation, while the organism has little or no awareness of the interference

Hardware: Senses vs Sensors



A sensor is a transducer that transforms the physical world energy into a signal

Sensors vs Physical World

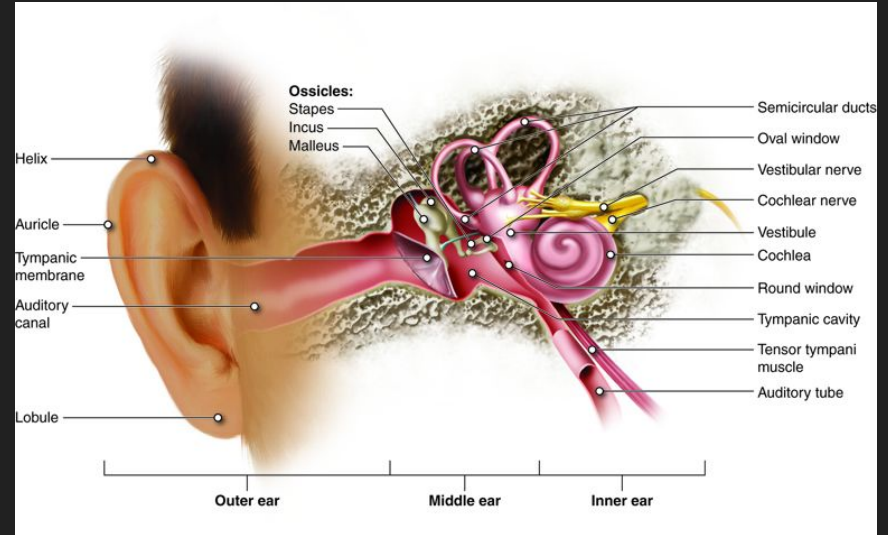
Each sensor moves through space or changes in some way.

These changes:

- Are controlled by the brain
- Form a space of configurations

In how many different ways can the world move with respect to these sense organs?

Example : Ear



Example: Eye



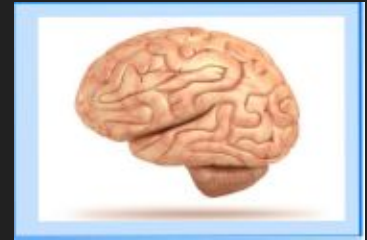
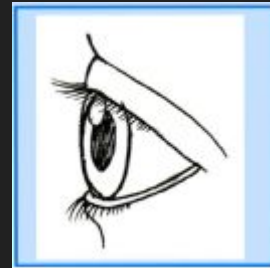
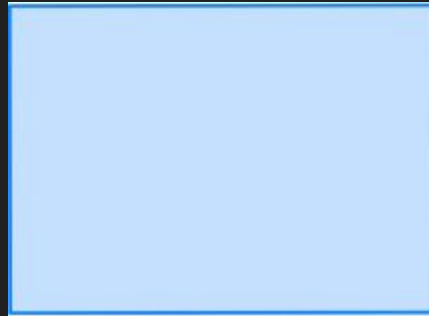
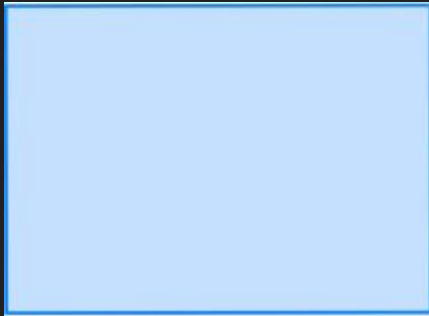
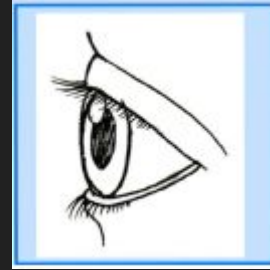
VR System: Hardware, Software & Perceptual Psychology



Sensors in Physical World: Reality



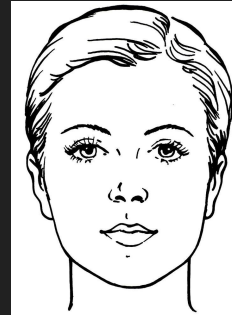
Sensors in Physical World: Virtual Reality



Audio Displays



Two Familiar Settings:

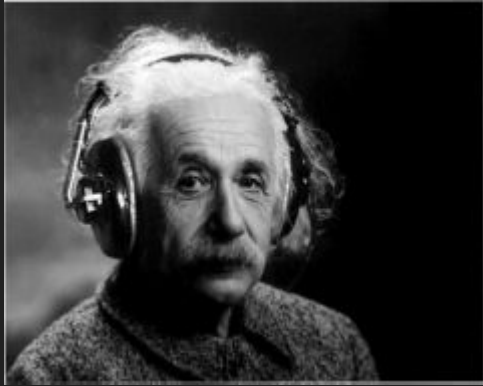


Visual Displays

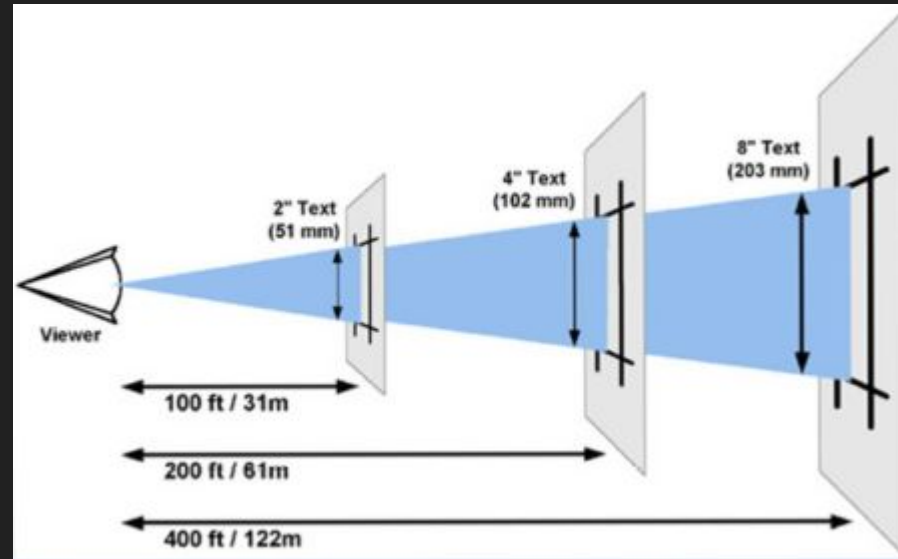
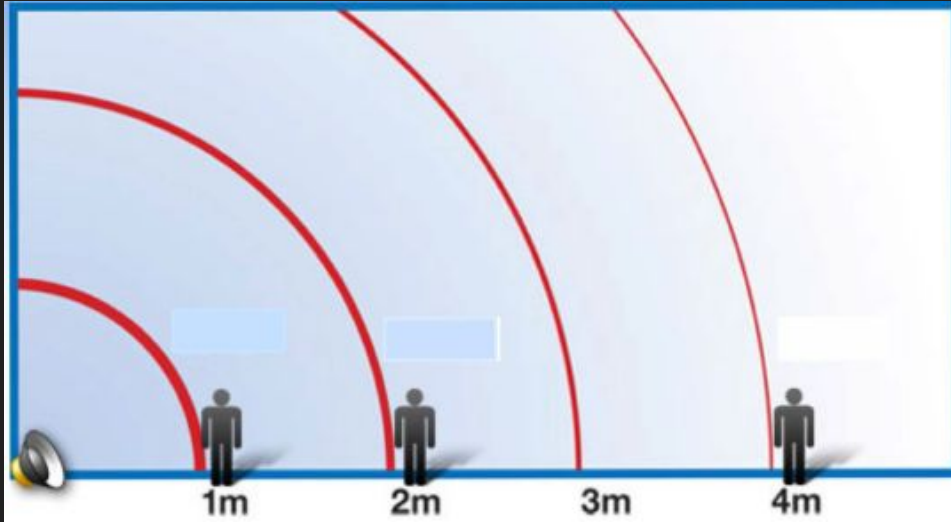
Two Settings:



HMDs vs Headphones



Distance to Displays



Birds-Eye View: Hardware

Displays:

- Visual:
- Audio:
- Touch:
- Smell? Taste? Vestibular?

Tracking Hardware Components:

- IMU's:
- Magnetometers:
- Cameras:

Controllers:

-

Lens:

Computer:

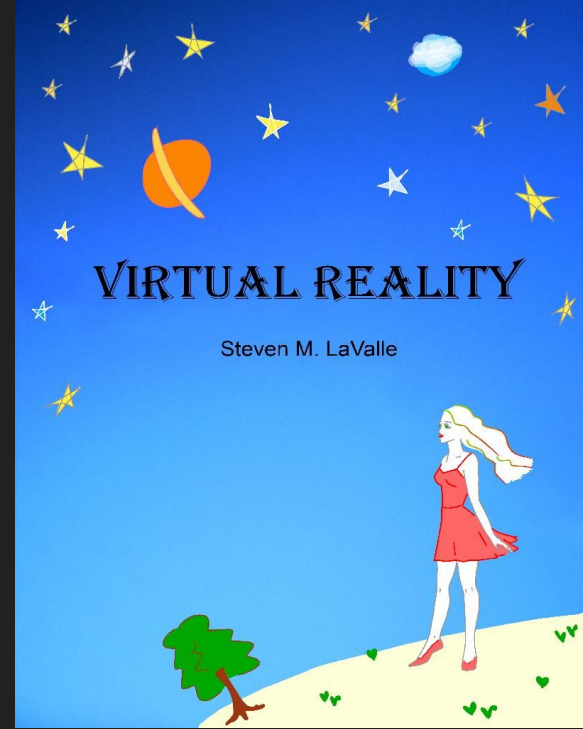
- CPU:
- GPU:

Review

- What is the definition of VR?
- What is a sensor?
- What are the benefits of realism in VR world graphics?
- What about cartoons/fantasy?

Homework

- Chapter 2.1 of Steve LaValle's VR online book VR Hardware
- Machine Problem 1 - Not yet (Waiting for the lab)



Following slides were not used because the lab has technical issues

First Homework Assignment!

- Machine Problem (MP) 1 will be released in the next few days!
- See course website under Assignments tab.
- You must work with a partner; find a buddy on Piazza
- MP's are submitted on Compass. Only one of the partners should submit the zip file to us. Be sure to name it with both NetID's so we know who it's for.
- Other policies to know regarding assignments are on the course website (late submissions, etc)

Reminder about homework & expectations

- Lectures will be recorded, but why not come to class?
- Read the book! It's free and explains things well
- Check Piazza often - updates about class, deadlines, etc
- MP's are to be done in pairs, class projects are in groups of 3 to 5
- There are only 20 computers and 200 students, so start on your MP's early or you might have trouble getting on a computer!

Note..

You do not need to be a CS major to do well in this course!

- For MP's, work with someone who codes
- Talk to the TA's, they're super helpful

Class Projects

- Coolest part of this course → you get to create a real VR experience!
- Projects are large part of your final grade & give you chance to boost it if you struggle with the MP's or exams
- Check Piazza for opportunities to work with professors on campus
- Look up the VRProjectMania Facebook page to see what students have done in past semesters
- Don't make another first person shooter, escape room, or maze... use this opportunity to see what has already been developed and create the killer app!