CSE 190: Virtual Reality Technologies

LECTURE #8: HEAD-MOUNTED DISPLAYS

Announcements

Homework project 1 late deadline Sunday, April 16th at 11:59pm

Monday: Discussion homework project 2

Cloud Macs now ready for this course
- cloudlabs.ucsd.edu

Project 2 is on-line
- Mandatory to get it working on your VR headset
- Submit by uploading video of your app, recorded off your VR headset

Today's VR app presentations:
- Charles Li: Within VR
- Andrew Yeh: Space Stalker VR
- Gregory Sabado: Big Bang AR

Head-Mounted Displays (HMDs)

Head Mounted Displays

Head-worn displays with special optics in front of the eyes

Provide a stereoscopic view that is updated with the user's head motion

VR HMDs occlude the real world

AR HMDs can be translucent

Oculus Rift

Microsoft Hololens 2

High-End Example: Pimax 8K

HMD with one 4k screen (3840x2160 pixels) for each eye

200 degree FOV

Kickstarter project, funded in December 2019 with $4M

~$1000 including controllers

HMDs – Advantages

Provide an immersive experience by allowing a 360 degree FOR

Easy to transport and to set up

Do not restrict user from moving around in the real world

Inexpensive

High quality stereo without ghosting

Only one computer needed, some are stand-alone

HMDs – Disadvantages

Limited resolution and field of view (FOV)

Do not take advantage of peripheral vision

Can be heavy and uncomfortable, cumbersome to put on

Isolating, collaboration best done virtually (users in same room can't see each other)

Risks related to not seeing the real world (e.g., stumbling)