

CSE 190: Virtual Reality Technologies

LECTURE #18: MULTI-USER VR SYSTEMS

VR Content Presentations

Ran Tao

Andrew Hwang: Reality Hacker VR

- <https://www.youtube.com/watch?v=r3pXEtpLDLI&t=4s>

Mou Sun

Clark Wu: 360 Google Spotlight Rain Or Shine

- <https://www.youtube.com/watch?v=QXF7uGfopnY>

Garrett Brush

- https://www.youtube.com/watch?v=e5b-l__or0g

Pedro Coutin Portuondo

Announcements

Final Project

- Blog #2 due Monday night
- Presentations next Tuesday 3-6pm
 - Slide shows 3-4pm: Google Slides
 - Even hour teams 4-5pm
 - Odd hour teams 5-6pm
- Last discussion today after class

TA/tutor evaluations

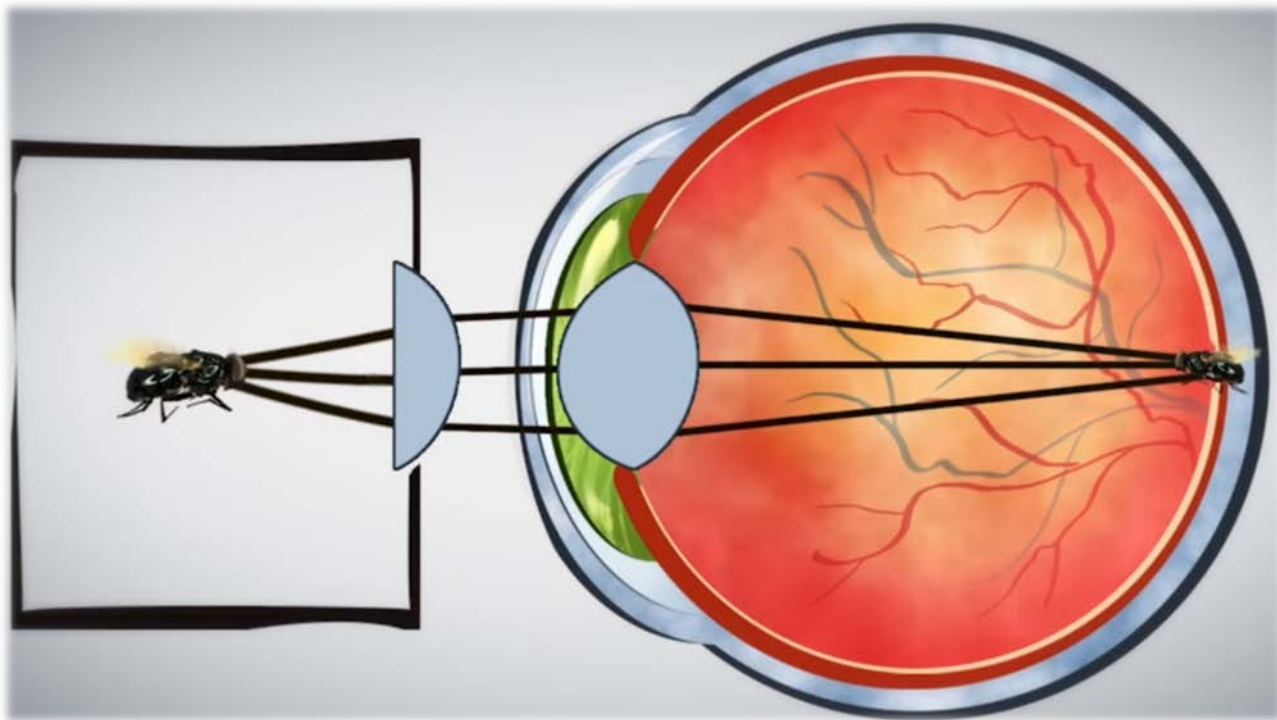
CAPE

Addendum

Lenses for VR HMDs

How lenses for VR HMDs work:

- <https://www.youtube.com/watch?v=NCBEYaC876A>



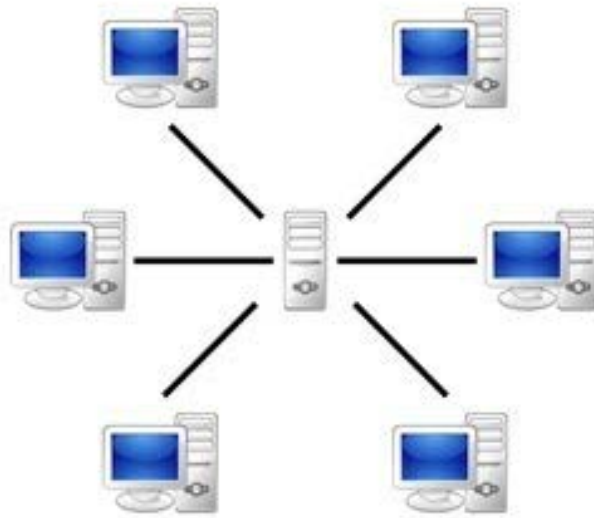
Focal Distance

Apparent distance from eye to where the pixels are in focus.

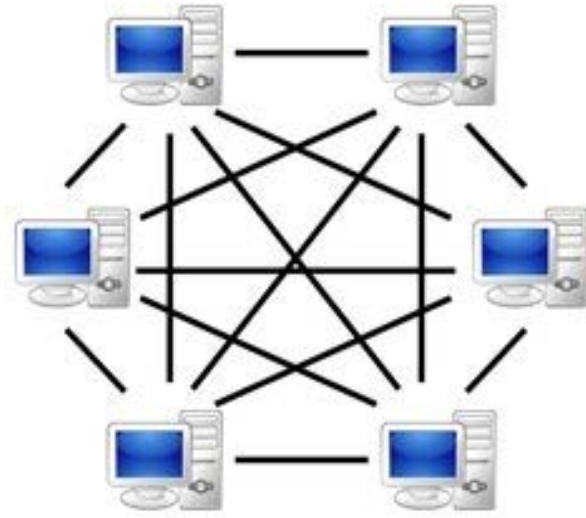
HMD	Focal Distance
Oculus DK1	Infinity
Oculus DK2	1.4 meters
Oculus CV1	2 meters
HTC Vive	Infinity? 1.3 meters?

Multi-User VR Systems

Network Architecture



Server-based



P2P-network

Differences

Client/Server

- 1) Server has to control ability while client's don't
- 2) Higher cabling cost
- 3) It is used in small and large networks
- 4) Easy to manage
- 5) Install software only in the server while the clients share the software
- 6) One powerful computer acting as server

Peer-to-Peer

- 1) All computers have equal ability
- 2) Cheaper cabling cost
- 3) Normally used in small networks with less than 10 computers
- 4) Hard to manage
- 5) Install software to every computer
- 6) No server is needed

Client-Server Communication

Client-Server Computing



- Client initiates communications
- Client issues request to a server
- Server replies or performs some service

Peer-to-Peer Computing



- Any participant can initiate communication
- Any device can generate a request
- Any device may provide a response

Multi-User Scenarios

Presentation

- One presenter, many viewers
- Presenter may or may not see viewers
- Viewers may or may not see each other

Spectator VR

- One or more players/users/actors, many observers
- Actors likely don't see observers
- Observers don't see each other

Collaboration

- Multiple equally privileged players/users
- Everybody sees everybody

Altspace VR

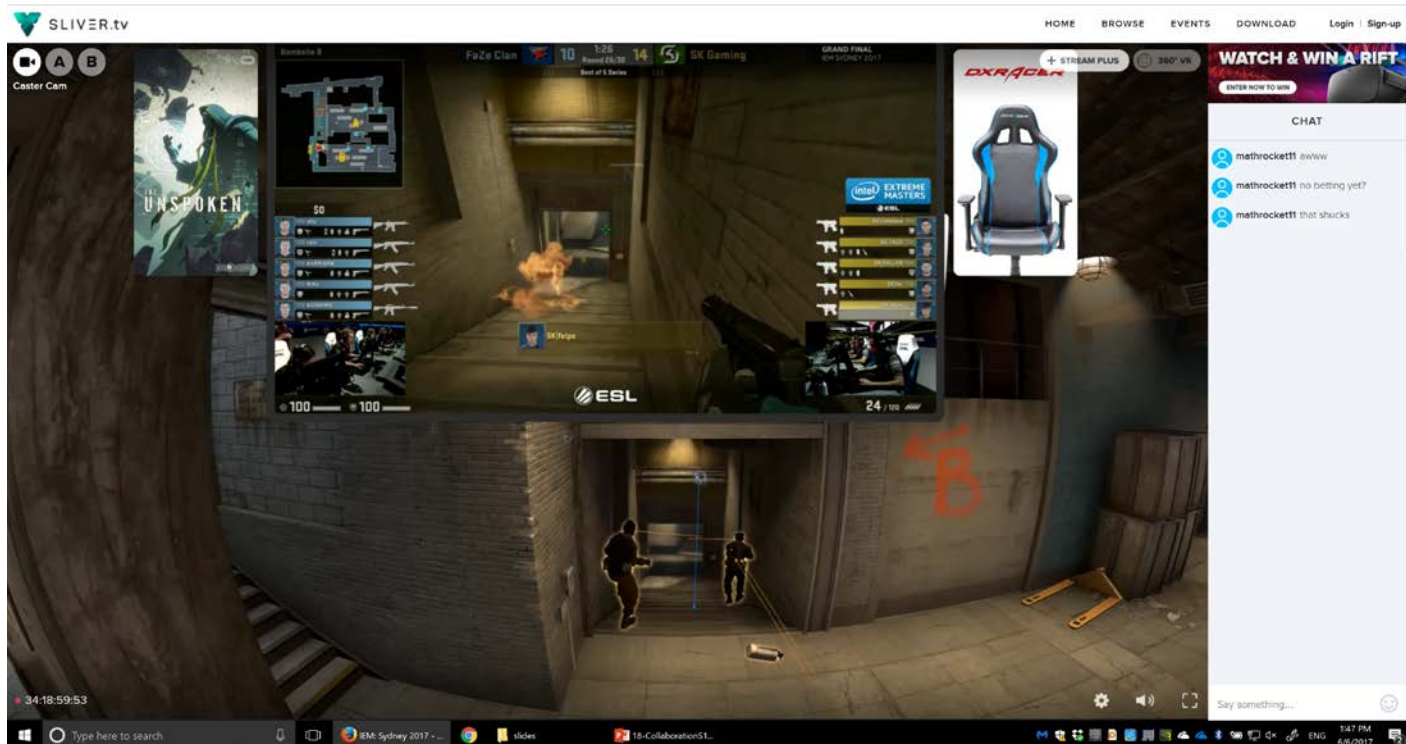
Multi-user mode: Presentation, Collaboration



SLIVER.TV

<https://www.sliver.tv/>

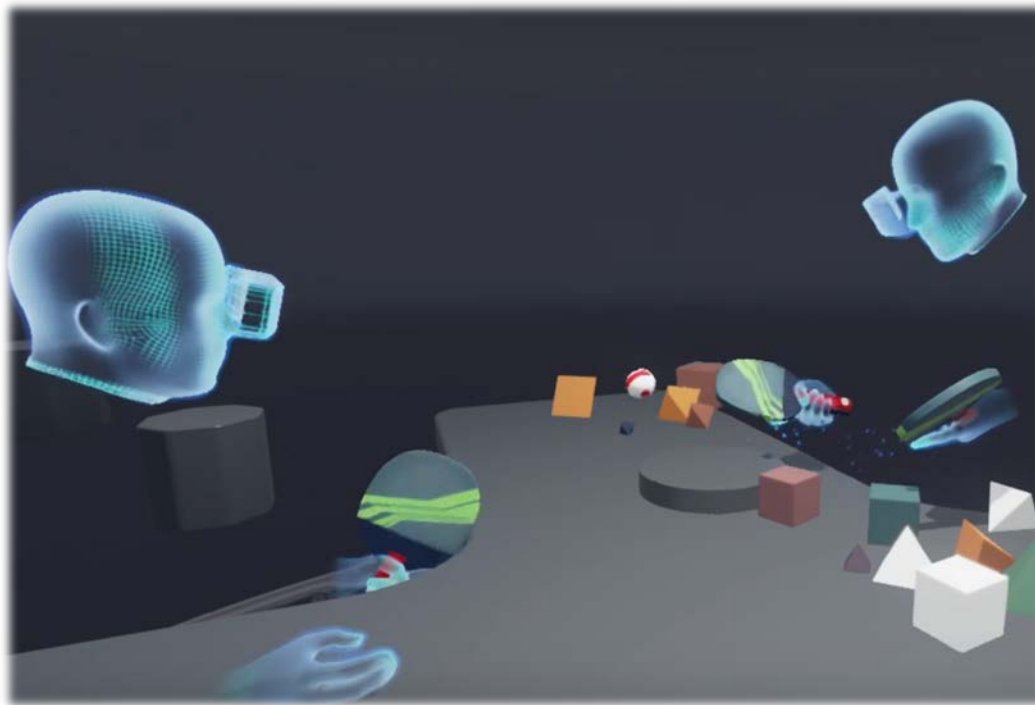
Multi-user mode: Spectator VR



Oculus Toy Box

<https://www.youtube.com/watch?v=iFEMiyGMa58>

Multi-user mode: collaboration



Facebook Spaces



<https://www.youtube.com/watch?v=PVf3m7e7OKU>

Multi-user mode: collaboration

