CSE 190: Virtual Reality Technologies

LECTURE #15: FUTURE OUTLOOK

Announcements

Final Project

- Due June 11th at 3pm
- Videos 3-4pm
- Presentations 4-6pm in two sessions

Two blog updates needed

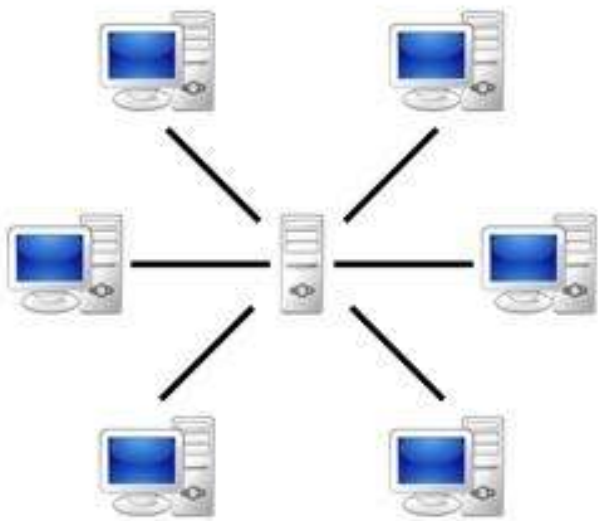
- 2nd update due **Monday at 12 noon**

Video due **Tuesday at 3pm**

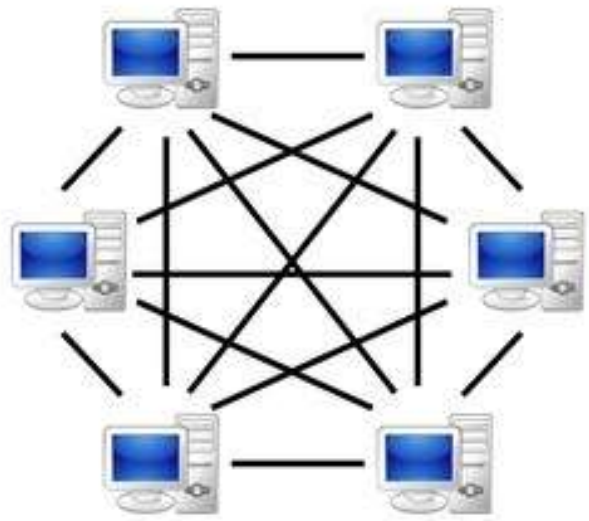
- Has to be 2-3 minutes long
- Need to add to Youtube playlist

Multi-User VR Systems

Network Architecture



Server-based



P2P-network

Network Architectures

SERVER-BASED = CLIENT/SERVER	PEER-TO-PEER (P2P)
Server has control ability while clients don't	All computers have equal ability
Used in small and large networks	Normally used in small networks with <10 computers
Higher cabling cost	Lower cabling cost
Easy to manage	Hard to manage: no central point
Different software for server and clients with different capabilities	Same software needs to be installed on every computer
One powerful computer acting as server	No server needed

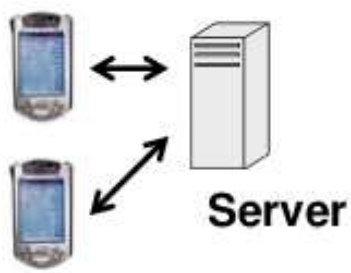
Client-Server Communication

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

Multi-User VR

Altspace VR

Multi-user mode: Presentation, Collaboration

https://www.youtube.com/watch?v=RtjDk8I3nE4

Facebook Spaces

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

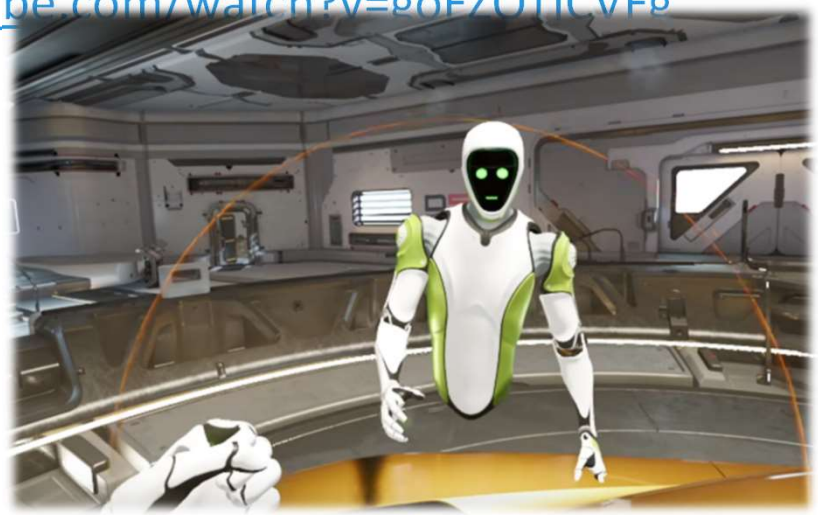
Multi-user mode: collaboration

Nvidia Holodeck

Presented May 2017

NVIDIA Holodeck™ is a virtual reality (VR) innovation platform that brings designers, peers, and stakeholders together from anywhere in the world to build and explore creations in a highly realistic, collaborative, and physically simulated VR environment.

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



TechViz

Founded 2004, headquarter: Paris

TechViz Collaborative, or VR teleconferencing, enables 3D real-time collaboration between co-workers in different locations, working on any 3D application (Solidworks, Navisworks, Creo, Catia…) and on any immersive system (Immersive Room, HMD, Powerwall…)

https://www.youtube.com/watch?v=2wnLrkNTj1w

TechViz

Instant VR & Collaboration Software

Multi-User AR

AR at WWDC 2019

ARKit 3

- Multiple face tracking
- Full body motion tracking
- Depth tracking for people
- Collaborative session building
- Coaching UI for on-boarding

2-player arcade game:

- https://www.cnet.com/videos/apples-new-two-player-ar-arcade-game-at-wwdc-is-crazy/

What is next?