

CSE 190: Virtual Reality Technologies

LECTURE #17: AUGMENTED REALITY DISPLAYS PART 2

Upcoming Deadlines

Sunday, May 30: Project 4 original due date

Monday, May 31: Memorial Day (no discussion)

Sunday, June 6: Project 4 due

June 7+8: Final exam Monday 11:30am – Tuesday 11:30am

- Written exam: Canvas Quiz
- Exam duration: 3 hours
- 24-hour window to take exam in
- Open book, open internet
- No consulting of other people (local or remote)
- No posting or discussing exam questions or answers

App Presentations

Chao Tang

- I Expect You To Die

Diego Gomez

- The Thrill of the Fight

Ronan Konishi

- Bait!

Microsoft HoloLens 2

Released in November 2019

Price: \$3,500

Qualcomm Snapdragon 850 with Adreno 630 GPU

OS: Windows 10 Holographic

Field of view: 52 degrees (diagonal)

Angular resolution: 47 pixels per degree

USB-C connection



HoloLens 2: Video



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

Snap AR Spectacles

Announced May 20,
2021

Waveguide displays

4 microphones

Stereo speakers

Touchpad

Front-facing cameras



Facebook Project Aria

3D mapping with 3 cameras in glasses

- 1 RGB, 2

Eye tracking

7 microphones

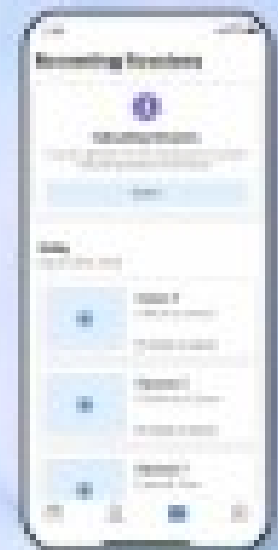
No displays

1.5 hours recording time

Snapdragon CPU

Controlled by phone app

Privacy filter for faces and license plates



Current State of AR

SOLVED PROBLEMS

Inside-out tracking
Low resolution 3D mapping
Fast enough CPUs and GPUs
Simple interaction with hands
Practical form factor
Eye tracking
Angular resolution

UNSOLVED PROBLEMS

High-precision absolute position and orientation in environment, high resolution 3D mapping
Photo-realistic rendering (lighting, shadows, reflections, etc)
Field of view
Occluding pixels
Continuous focal distance
Battery life
User interaction
Precise finger tracking
Fashionable form factor
Must-have (“killer”) apps