Hardware & Software Components

Notes for the SIT-DP module: **Developing Immersive Applications**

Created by: Chek Tien TAN

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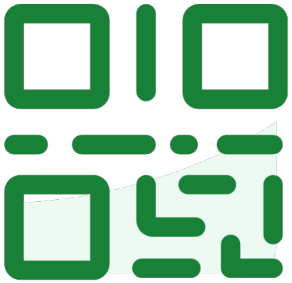

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So... did you watch the pre-class video this time? (again, no penalties here)

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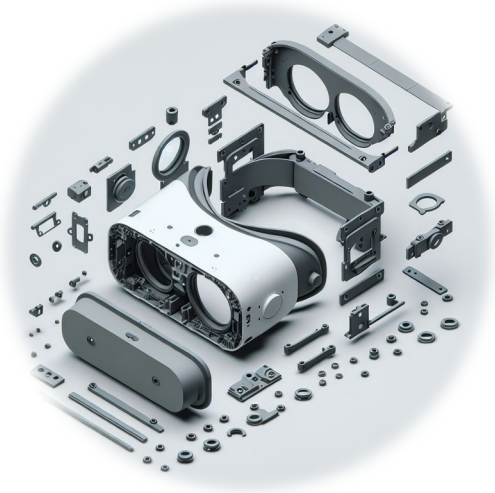
Learning Objectives:

- describe common hardware components in XR devices
- explain the image formation process in typical XR HMDs
- describe common software components in immersive applications
- describe the architecture of a typical WebXR application



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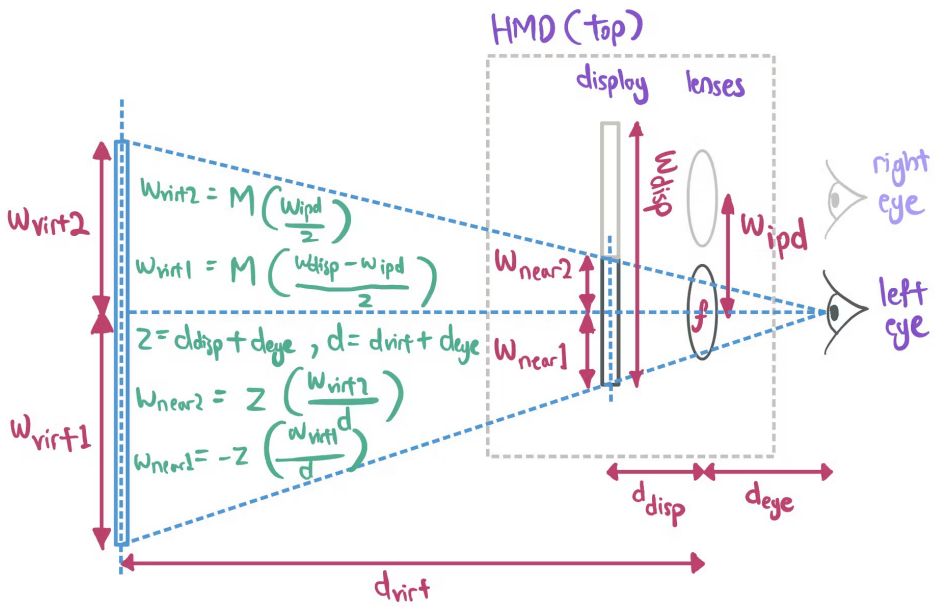

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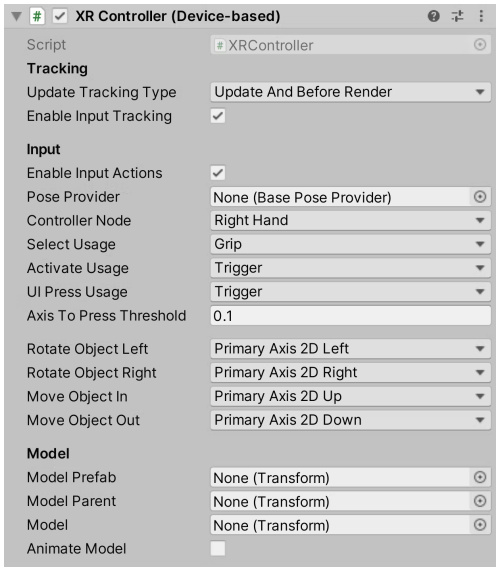

https://docs.unity3d.com/Packages/com.unity.xr.interaction.toolkit@2.3/manual/xr-controller-device-based.html

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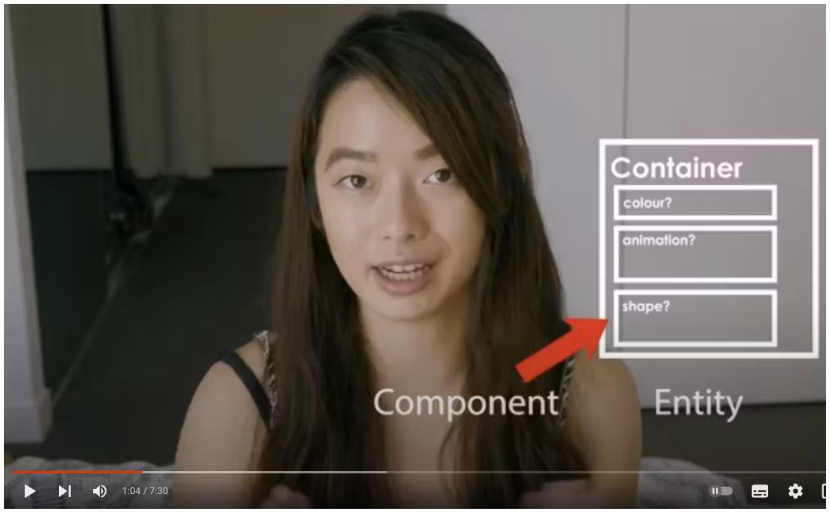

Aframe Webvr - VR Development Tutorial Series

Aframe Webvr - VR Development Part 3 - ECS Architecture

https://youtu.be/qB8Ejh_QdpE

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What is the main difference between the hardware in a modern smartphone and a HMD?

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Stereo Rendering for HMDs

All Current-generation VR HMDs are "Simple Magnifiers"

Head Mounted Display Optics I

Gordon Wetzstein
Stanford University

EE 267 Virtual Reality

Lecture 7

stanford.edu/class/ee267/

https://stanford.edu/class/ee267/lectures/lecture7.pdf

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In the schematic HMD diagram, where is the "eye relief"?

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In the schematic HMD diagram, where is the width of the virtual image?

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In HMDs, what effect will changing the focal length of the lens have?

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The perspective matrix for rendering in HMDs is the same for both eyes.

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The view matrix for rendering in HMDs is the same for both eyes.

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What is a valid property of the view frustum generated by typical HMDs?

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What is a result of reducing the eye relief?

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Which object is easier for the user to reach out and grab with his/her hands?

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https://dementia.org.sg/2022/03/30/experience-dementia-in-singapore/

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Which software component is the least important in the XR application described?

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What is your top reason for using ECS over straightforward OOP in your game app architecture.

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Audience Q&A

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