



SE Seminar #1 Report

Developing a Web-based Metaverse Applications with WebXR

01286391 Seminar in Software Engineering

Software Engineering Program

Faculty of Engineering, KMITL

By

65011277 Chanasorn Howattanakulphong

Introduction

This seminar on the topic, “**Developing a Web-based Metaverse Applications with WebXR**”, was given by Mr.Puchong Poomboontrik. He covered topics about VR/AR/(MR/XR), Metaverse, WebXR technology, and demos of WebXR.

Virtual Reality

Virtual Reality (VR) refers to a computer-generated environment that simulates either a realistic or imaginary world. VR typically involves the use of headsets or goggles that completely immerse users in a virtual setting, isolating them from their physical surroundings. VR is characterized by its immersive media and interactive nature.

Augmented reality

Augmented Reality (AR), on the other hand, overlays digital content onto the real-world environment, enriching the user's perception of the physical world. AR is experienced through devices like smartphones, tablets, smart glasses, or AR headsets, combining immersive media with the real world.

Mixed Reality

Mixed Reality (MR) serves as an encompassing term that includes both Virtual Reality (VR) and Augmented Reality (AR). MR integrates and blends digital and physical realities, allowing users to interact with and experience both environments simultaneously. Essentially, MR is a combination of VR and AR, creating a space where digital and physical elements coexist and interact.

Metaverse

The metaverse is a collective virtual space that merges physical and virtual realities, enabling real-time interaction among users in a computer-generated environment. It expands beyond traditional virtual reality and online platforms to establish a continuous and immersive digital universe.

WebXR

WebXR, short for Web Extended Reality, represents an API empowering developers to craft immersive virtual reality (VR) and augmented reality (AR) encounters directly within web browsers.

The advantages of WebXR:

Instant Deployment: WebXR enables developers to swiftly deploy immersive experiences via web browsers, offering immediate accessibility to users.

Future-Proofing: Designed to adapt alongside advancements in browsers and hardware, WebXR ensures compatibility with evolving technologies.

Community and Ecosystem: Developers benefit from an extensive array of resources, libraries, and frameworks, fostering a supportive and collaborative development environment.

Unified Targeting: With WebXR, experiences can effortlessly target both VR and AR, catering to handheld and head-mounted devices with a single release. Minimal adjustments in code are necessary to support VR and AR simultaneously.

No App Store or Large Downloads: Users can access WebXR experiences without the need for app stores or hefty downloads, simplifying accessibility and usage.

WebXR Frameworks include A-Frame, Babylon.js, Three.js, and Unity. These frameworks offer tools and functionalities that aid developers in creating immersive and interactive XR (extended reality) experiences for the web.

https://www.taunoyen.com/webxr/threejs/examples/webxr_vr_solarsystem.html

Conclusion

In summary, the seminar offered valuable insights into immersive technologies, discussing pivotal concepts like the Metaverse, Virtual Reality (VR), Augmented Reality (AR), Mixed Reality (MR), and WebXR. Specifically, WebXR stands out as a tool empowering developers to design VR and AR experiences directly within web browsers.

WebXR brings forth numerous advantages, notably its capacity for instant deployment and future adaptability to evolving browser and hardware advancements. Furthermore, the seminar highlighted key WebXR frameworks—A-Frame, Babylon.js, Three.js, and Unity—which serve as valuable resources for developers seeking to create immersive and interactive experiences in the realm of extended reality on the web.

What I have learned from this seminar

The seminar by Mr. Puchong Poomboontrik provided an enlightening exploration into the realm of immersive technologies, offering a comprehensive understanding of cutting-edge concepts. I gained insights into the Metaverse, a virtual space uniting physical and digital realms for real-time user interactions, surpassing traditional VR and online platforms to construct an immersive digital universe. Distinguishing between Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR), I grasped how VR engulfs users in computer-generated environments, AR overlays digital content onto reality, while MR seamlessly blends digital and physical worlds.

The seminar's focus on WebXR, an API enabling developers to create VR and AR experiences directly within web browsers, highlighted its advantages: instant deployment, future adaptability, and accessibility without app stores or large downloads. Additionally, I became acquainted with pivotal WebXR frameworks like A-Frame, Babylon.js, Three.js, and Unity, which furnish developers with essential resources to craft immersive and interactive web-based experiences. Ultimately, this seminar expanded my knowledge of immersive technologies and their potential to redefine digital interaction paradigms.