

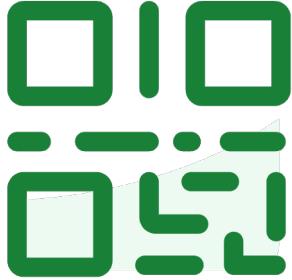
A Glimpse into VR Development

TAN Chek Tien

Associate Professor, 

Director, Centre for **IMMERSIFICATION** 

Chair, **I²M** ACM Chapter



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**How much experience do you have with XR
Devices? (Meta Quest 2/3, Snapchat Specs, Pico 4,
Oculus Rift, Apple Vision Pro, etc.)**

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What we aim to learn today...

The role of **IMMERSIVE** technologies in SIT-DP

Differentiate **VR** and other common **XR** terminologies

Explain immersion through **presence**

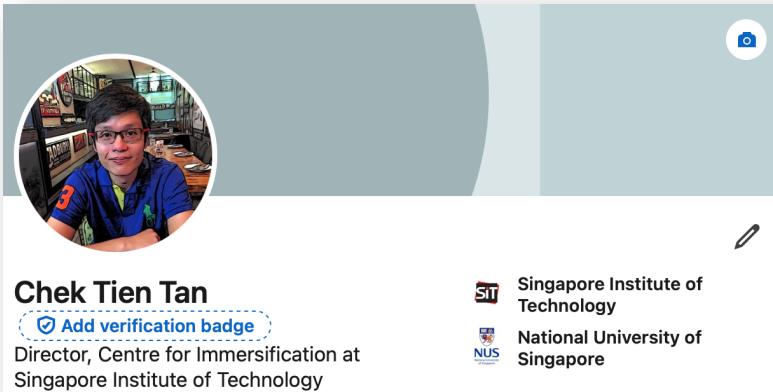
What we aim to learn today...

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Who are the (**IMMERSIVE**) instructors?



Chek Tien Tan Add verification badge

Director, Centre for Immersification at Singapore Institute of Technology

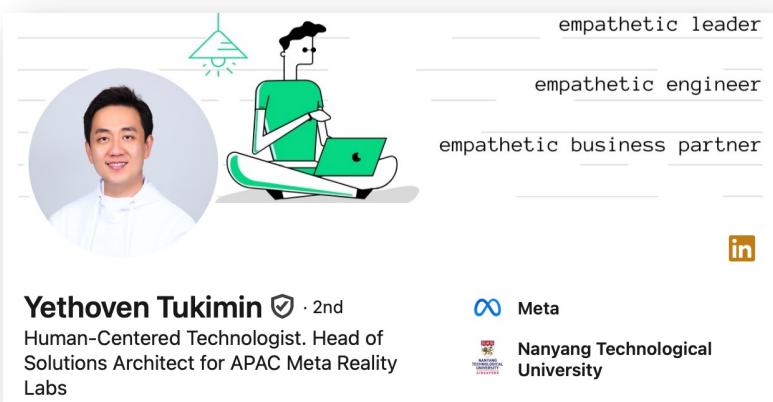
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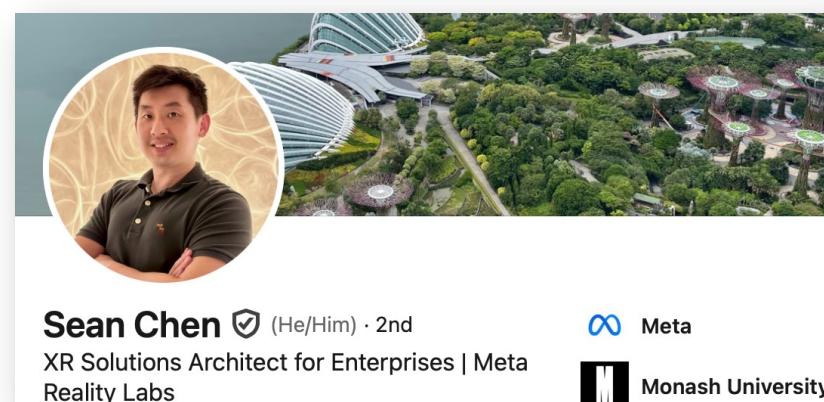


Yethoven Tukimin 2nd

Human-Centered Technologist. Head of Solutions Architect for APAC Meta Reality Labs

empathetic leader
empathetic engineer
empathetic business partner

Meta
Nanyang Technological University



Sean Chen (He/Him) 2nd

XR Solutions Architect for Enterprises | Meta Reality Labs

Meta
Monash University



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**How many different organizations
do the (immersive) instructors
come from?**

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Applied Learning @ SIT-DP

A proud entity of the
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Technology

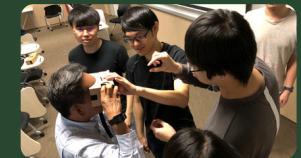


immersification.org

VR



ENHANCING INDUSTRY INTERACTION



LEARNING PLATFORMS & TOOLS



IMMERSIVE COMMUNITY HUB



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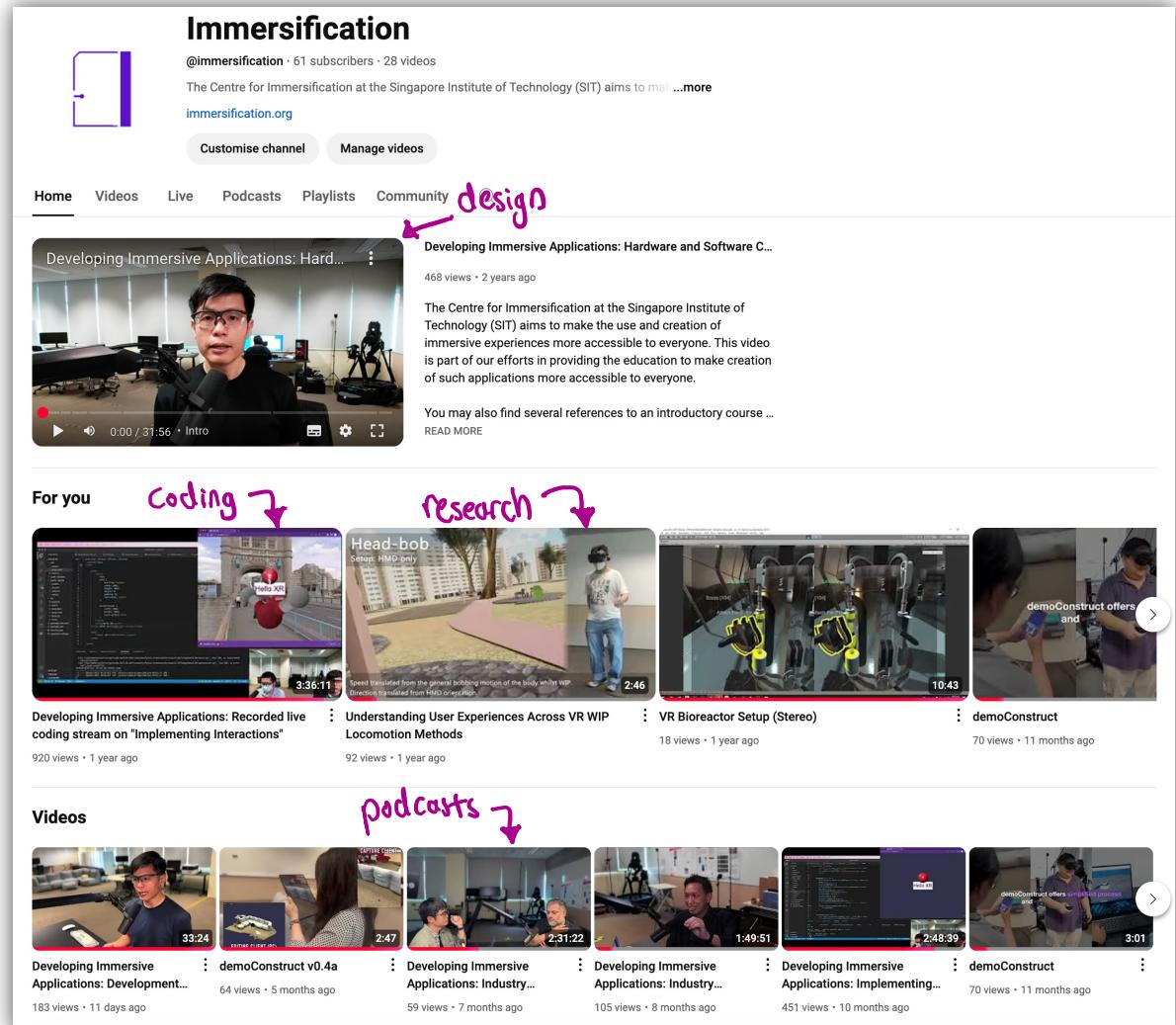


How does Applied Learning occur in modules related to immersive technologies?

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Flipped Learning

- content is vast and free
- we're facilitators, not teachers

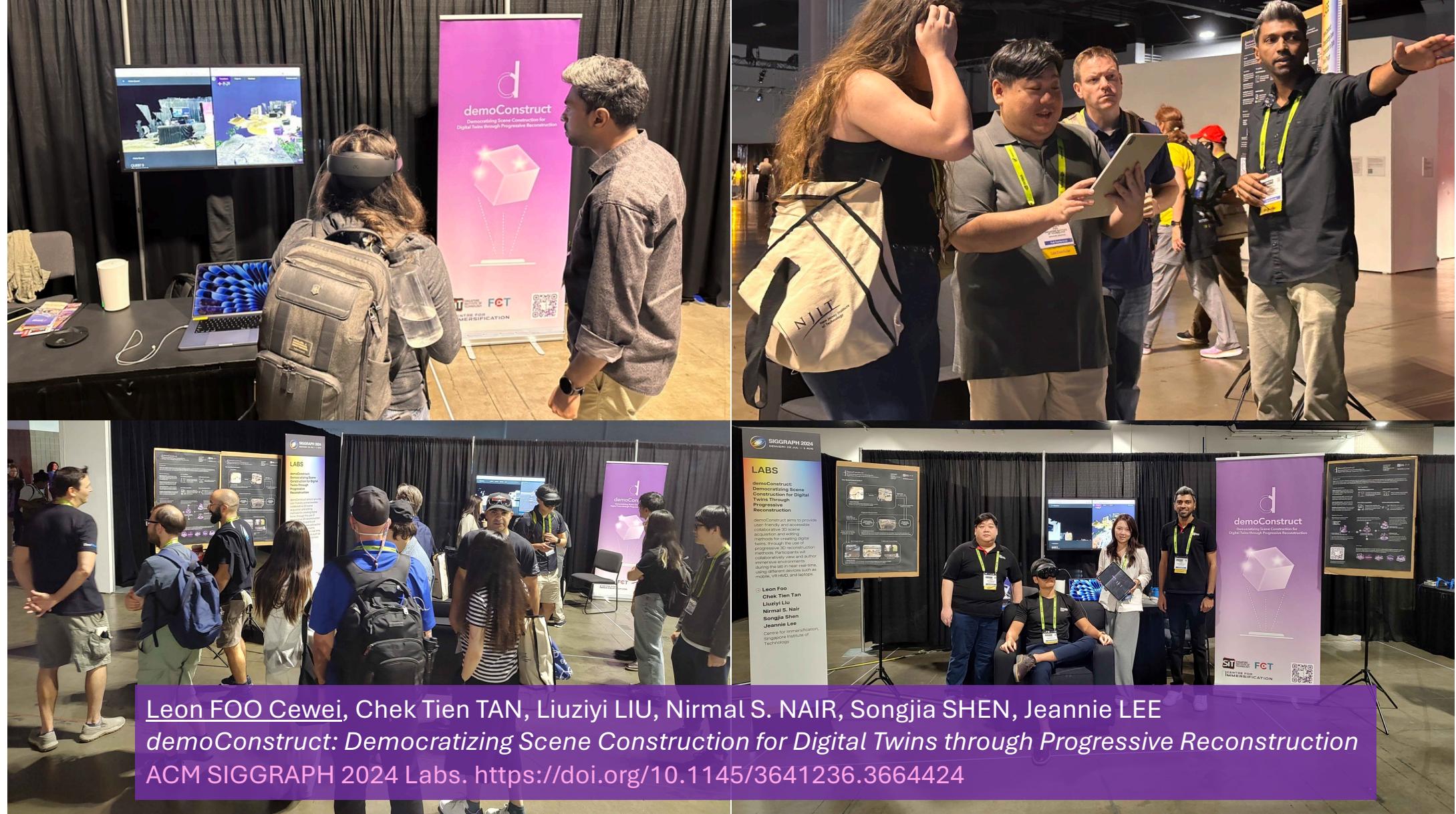


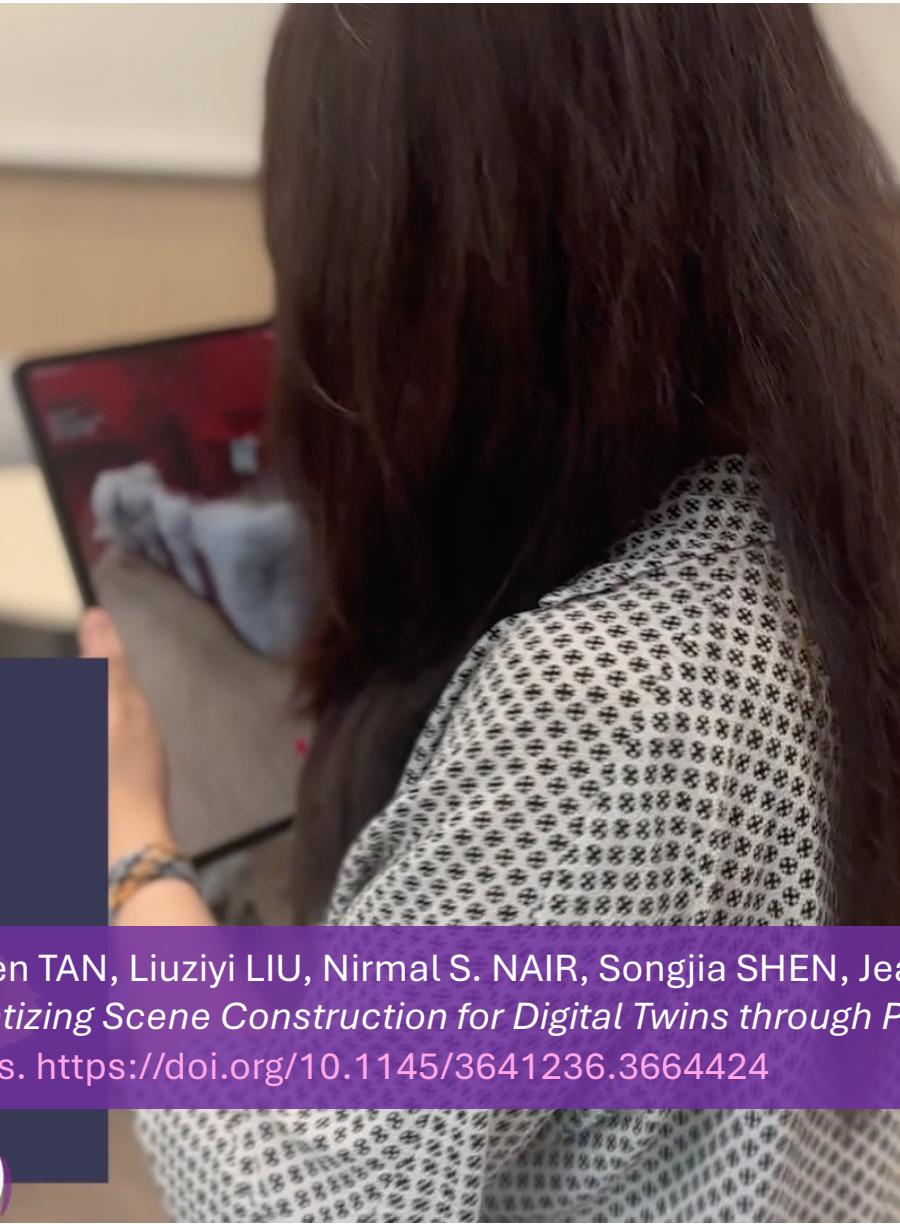
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What can I view from the immersification YouTube channel?

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Leon FOO Cewei, Chek Tien TAN, Liuziyi LIU, Nirmal S. NAIR, Songjia SHEN, Jeannie LEE
demoConstruct: Democratizing Scene Construction for Digital Twins through Progressive Reconstruction
ACM SIGGRAPH 2024 Labs. <https://doi.org/10.1145/3641236.3664424>

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What are key research goals at the Centre for Immersification?

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WHAT R ?



VR



AR



MR

XR?



extended reality definition



All

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News

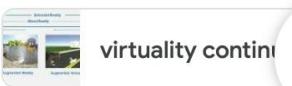
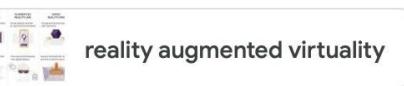
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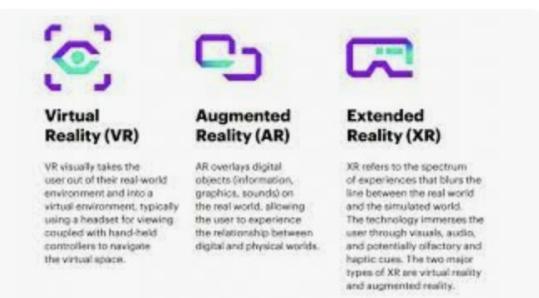
FourWeekMBA

Extended Reality: Definition, Use Cases ...



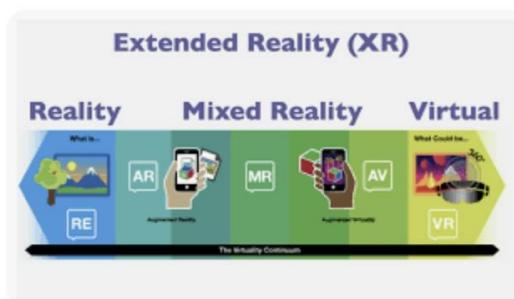
SaM Solutions

XR (Extended Reality) and Its Use Cases ...



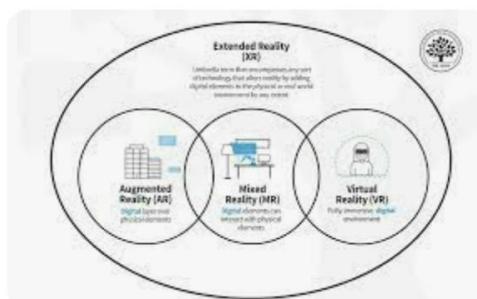
Accenture

The wonders of Extended Reality ...



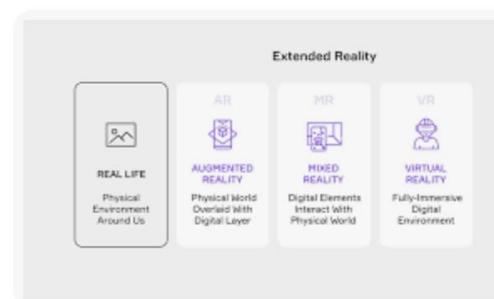
XR PEDAGOGY

XR PEDAGOGY - What is XR?



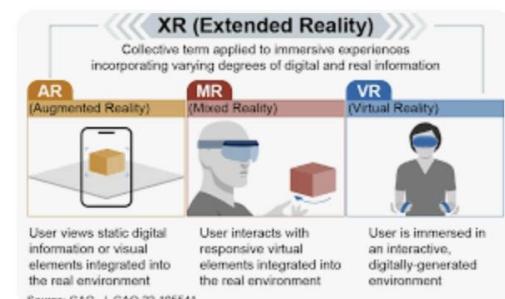
Interaction Design Foundation

What is Extended Reality (XR)? | IxDF



Sensorium

What Is Extended Reality - XR Explained



Government Accountability Office

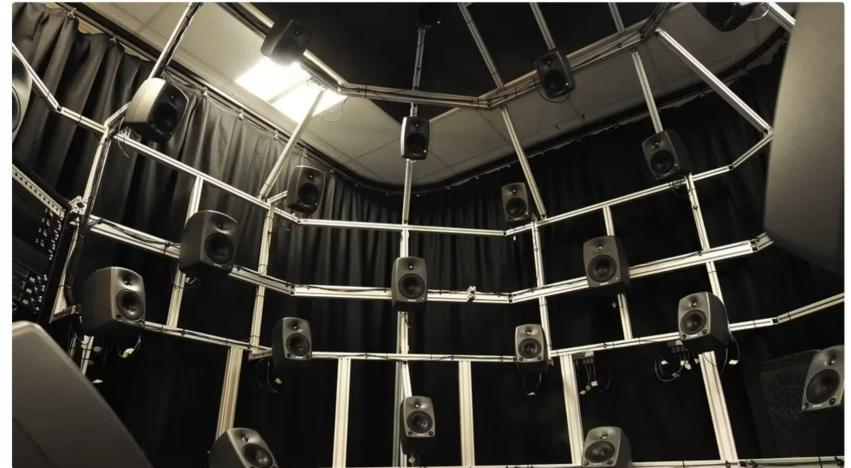
Extended Reality Technologies ...

So what is XR again?

- means to communicate
- convergence of consumer devices
- BUT there is much more to immersive experiences...

New Technique Could Enhance Films for Visually Impaired

News Published: November 2, 2021 | [Original story from the University of York](#)



The Immersive Audio Dome at the University of York Audiolab is key to developing the 3D audio strategy. Credit: University of York/Department of Theatre, Film, Television and Interactive Media

Immersification – a fresh dimension to learning design

Many online courses can benefit from immersive technologies to enhance student learning experiences. Here Chek Tien Tan and May Lim outline their innovative method for ensuring that the technology chosen supports the desired learning outcomes

[Edtech](#)[Course design and delivery](#)[Asia](#)[Feature article](#)**Chek Tien Tan, May Lim**

Singapore Institute of Technology

🕒 23 Dec 2020



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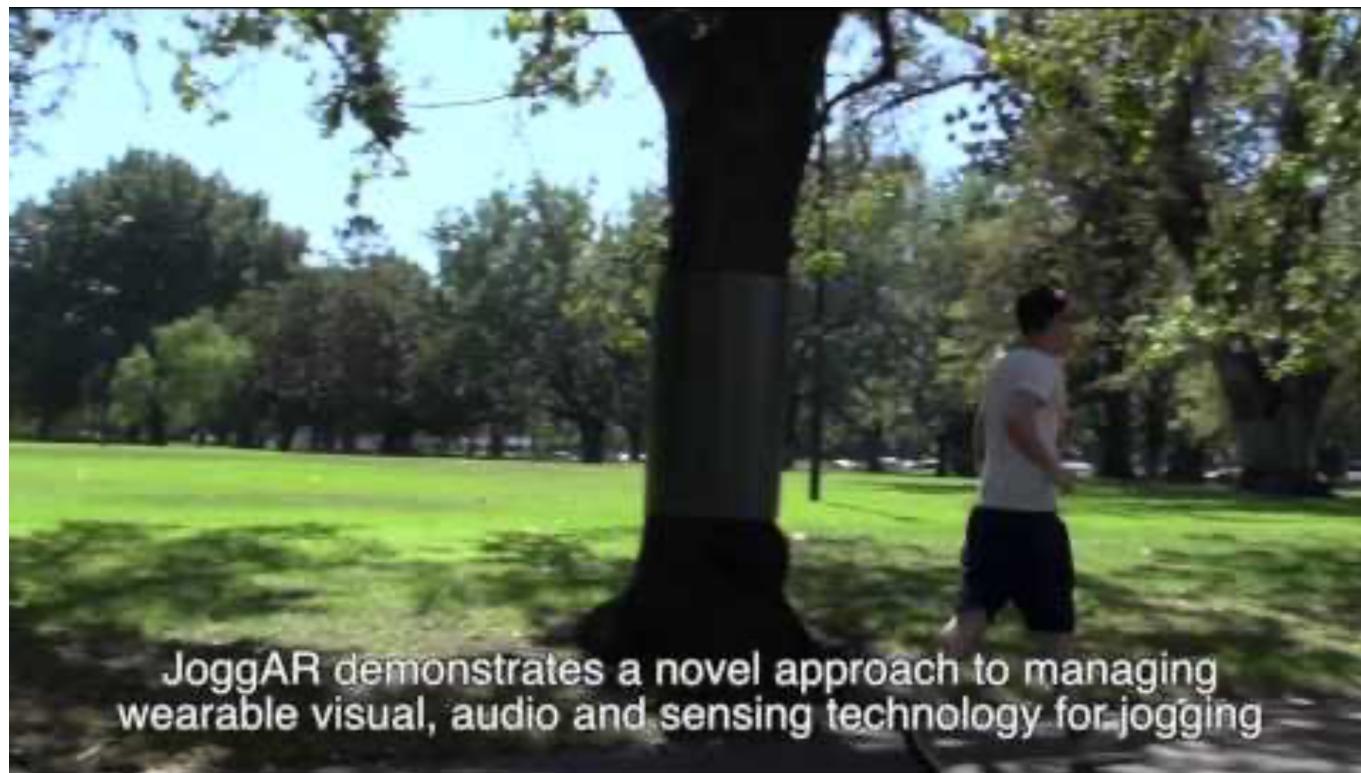
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Different requirements \Rightarrow different implementations



What type of experience is this?



<https://youtu.be/d3wx3VGtFjo>

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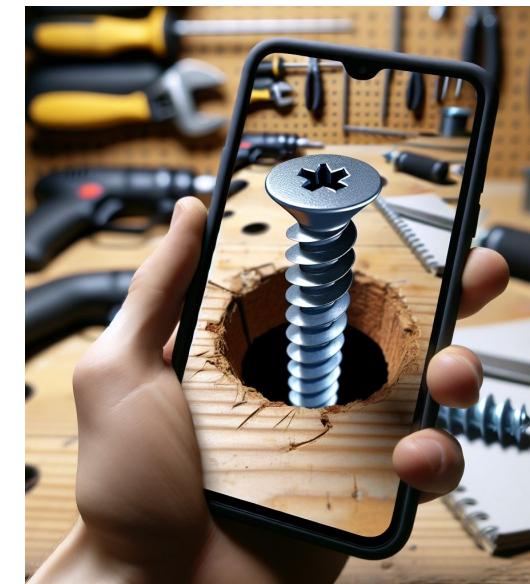
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What type of experience is this?

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What type of experience are these?



<https://youtu.be/d3wx3VGtFjo>

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**What type of experience are
these?**

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What is the commonly perceived difference AR and MR (as made popular with Hololens)?

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Explain immersion through **presence**

The Concept of Presence

- Place illusion
 - “I am in another place...”
- Plausibility illusion
 - “this (event) is really happening...”

 frontiers | Frontiers in Virtual Reality

REVIEW
published: 27 June 2022
doi: 10.3389/fvir.2022.914392



A Separate Reality: An Update on Place Illusion and Plausibility in Virtual Reality

Mel Slater^{1,2*}, Domna Banakou^{1,2}, Alejandro Beacco¹, Jaime Gallego¹, Francisco Macia-Varela¹ and Ramon Oliva¹

¹Event Lab, Faculty of Psychology, Universitat de Barcelona, Barcelona, Spain, ²Institute of Neurosciences of the University of Barcelona, Barcelona, Spain

We review the concept of presence in virtual reality, normally thought of as the sense of “being there” in the virtual world. We argued in a 2009 paper that presence consists of two orthogonal illusions that we refer to as Place Illusion (Pi, the illusion of being in the place depicted by the VR) and Plausibility (Psi, the illusion that the virtual situations and events are really happening). Both are with the proviso that the participant in the virtual reality knows for sure that these are illusions. Presence (Pi and Psi) together with the illusion of ownership over the virtual body that self-represents the participant, are the three key illusions of virtual reality. Copresence, togetherness with others in the virtual world, can be a consequence in the context of interaction between remotely located participants in the same shared virtual environments, or between participants and virtual humans. We then review several different methods of measuring presence: questionnaires, physiological and behavioural measures, breaks in presence, and a psychophysics method based on transitions between different system configurations. Presence is not the only way to assess the responses of people to virtual reality experiences, and we present methods that rely solely on participant preferences, including the use of sentiment analysis that allows participants to express their experience in their own words rather than be required to adopt

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<https://doi.org/10.3389/fvir.2022.914392>

Let's PLAY

Imagine you are the player and answer the following questions...

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**Please think-aloud on how
real/fake the events in the
experience feels.**

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“The objects in the (virtual) room feels like they are really here. I even bumped into the wall in my real room because I lost track of my actual surroundings.”

This response is referring to...

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“The objects in the (virtual) room feels like they are really here. I even bumped into the wall in my real room because I lost track of my actual surroundings.”

This response is referring to...

Place illusion

0%

Plausibility illusion

0%

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“I immediately duck as it really felt like I was in danger when the enemies attacked me, even though I knew it was just a game. I mean the graphics aren't even realistic.”

This response is referring to...

- ① Start presenting to display the poll results on this slide.

"I immediately duck as it really felt like I was in danger when the enemies attacked me, even though I knew it was just a game. I mean the graphics aren't even realistic."

This response is referring to...

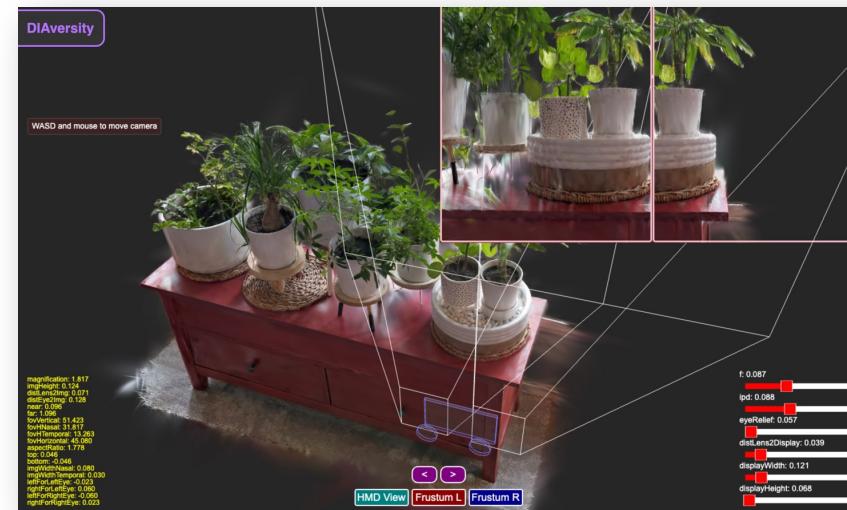
Place illusion



Plausibility illusion



Other things we do...



<https://github.com/i2metaverse/hmd>

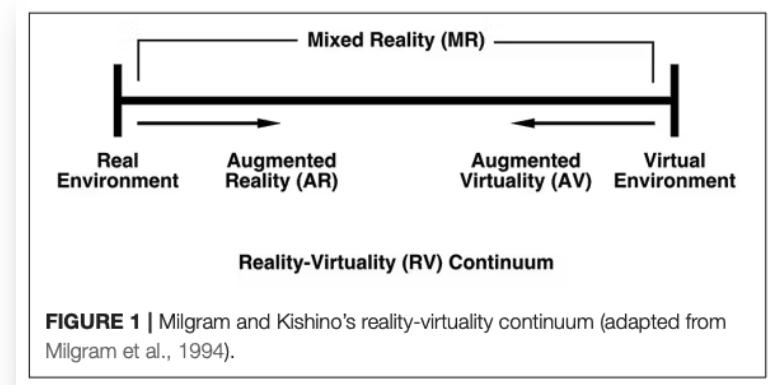


FIGURE 1 | Milgram and Kishino's reality-virtuality continuum (adapted from Milgram et al., 1994).

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Audience Q&A

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