



Lecture: Overview of Virtual Reality technology

*Mikhail Fominykh
Norwegian University of Science and Technology*

Training workshop by VR4VET consortium
<https://vr4vet.eu/>

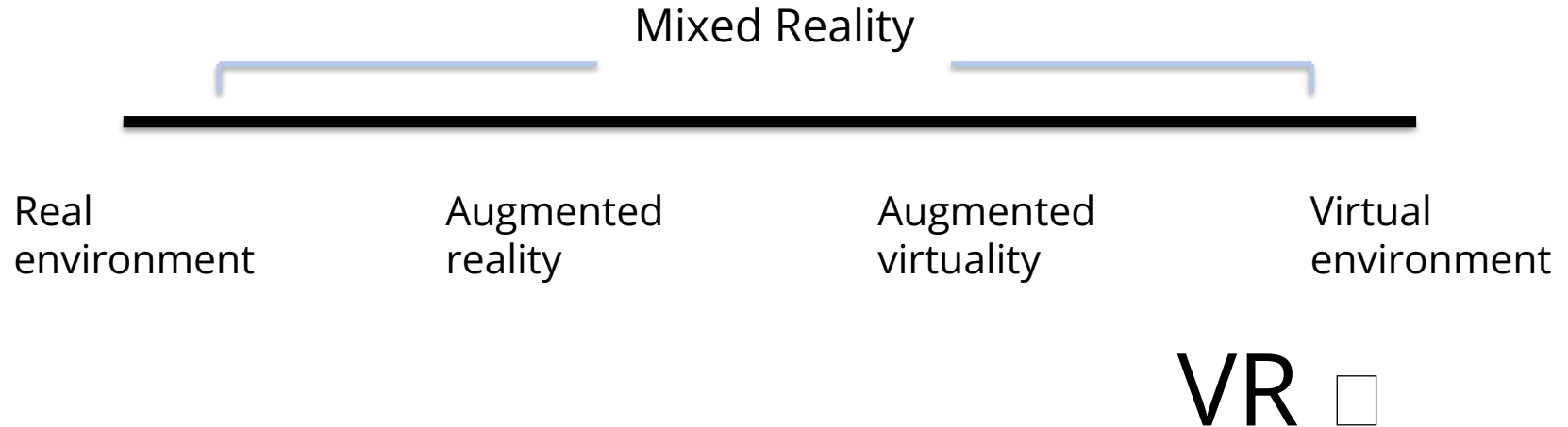
Virtual Reality

= replacing
the real world
with a digital reality



Press TAB to open

Reality-virtuality continuum



Based on: Milgram, Paul, and Fumio Kishino. "A taxonomy of mixed reality visual displays." *IEICE TRANSACTIONS on Information and Systems* 77, no. 12 (1994): 1321-1329.

In search of immersion

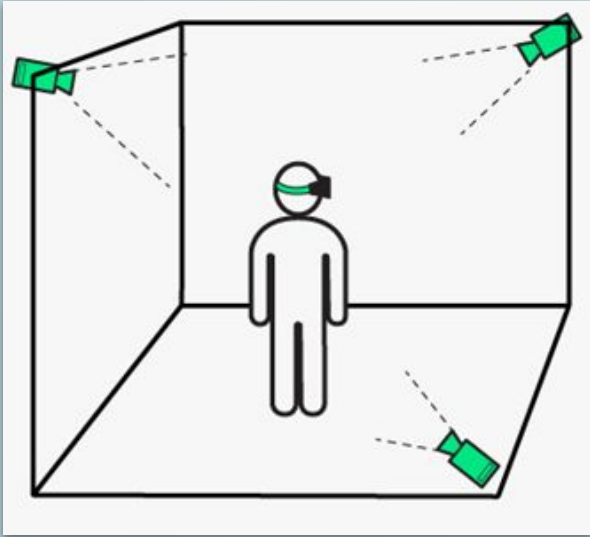


In search of immersion



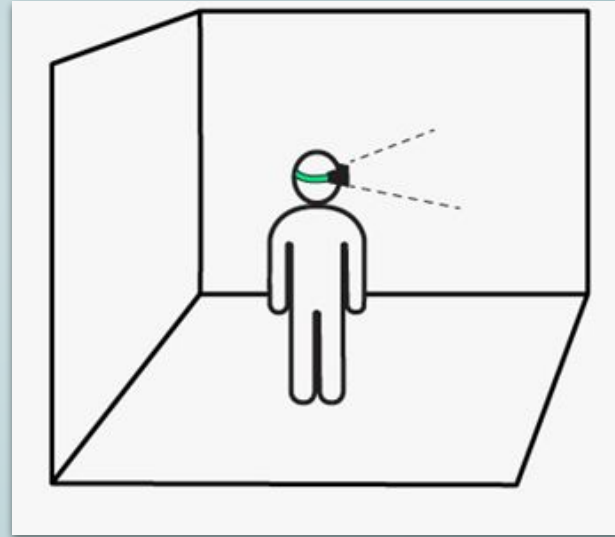
Tracking

Cameras are fixed to the environment



Outside - in

A camera is attached to a user



Inside - out

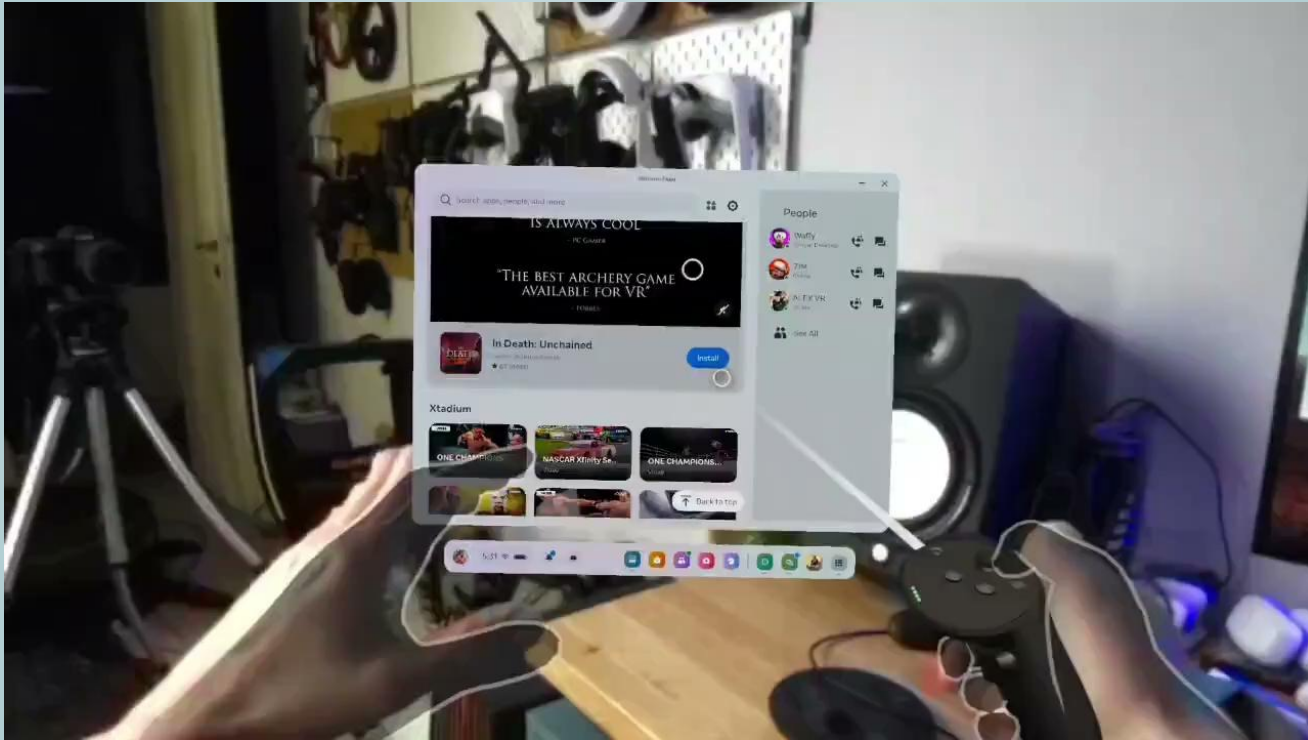
Tracking and Immersion



Illustration:

<https://www.pennmedicine.org/news/news-blog/2020/january/transforming-real-world-medicine-with-virtual-reality>

Interaction



Video: <https://x.com/Tyrielwood/status/1758531034830741702>

Navigation



Video: <https://x.com/i/status/1701286084976558500>

Embodiment

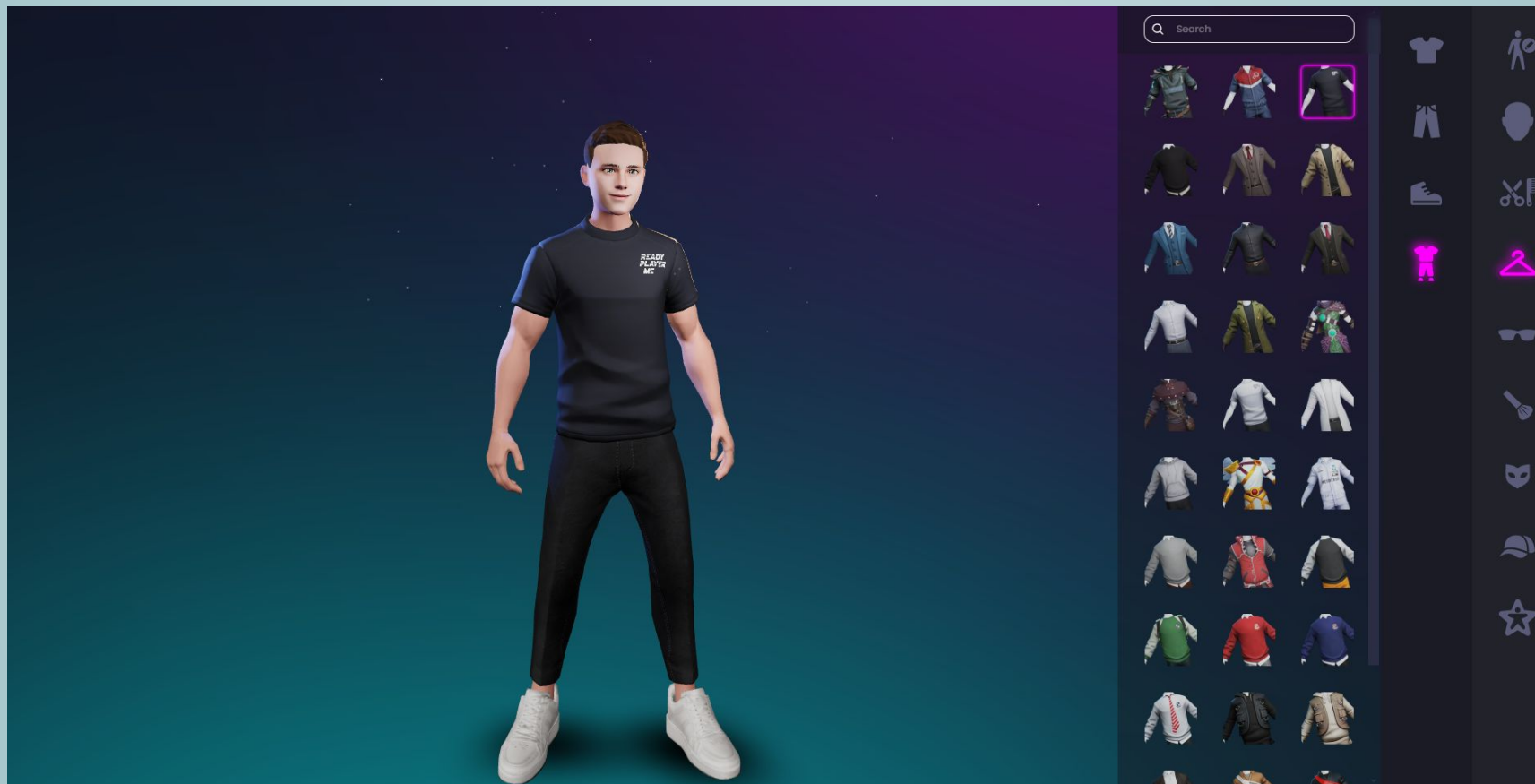


Illustration: <https://readyplayer.me/>

AI and VR



Why Virtual Reality in education?

Authentic learning environments



Live teacher - student interaction + various environments

https://store.steampowered.com/app/566130/Witly__language_tutoring_in_VR/

Authentic learning environments



360 spherical photos + green-screen-filmed narrator

https://store.steampowered.com/app/1012510/Greenland_Melting/

Authentic situations



360 spherical videos + scripted logic

Collaboration



Customizable avatars, hand tracking, voice chat, whiteboard, ++

Collaboration



Simple avatars, voice chat, whiteboard, object manipulation ++

Artificial Intelligence



Virtual Reality + Speech Recognition + Chatbot avatars

Artificial Intelligence



Intelligent, spatially aware, hyper-realistic avatars?

Blade Runner 2049 (2017 film)