

Research Using Virtual Reality

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What are the Benefits, Challenges, and Potentials?

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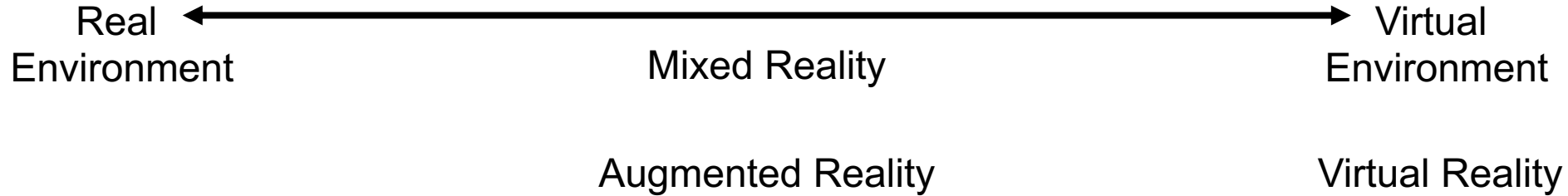
6th of September 2022, 17th Conference of the Swiss Psychological Society



Virtual Reality

What is it?

- Reality-virtuality-continuum (Milgram et al, 1994)



Virtual Reality Applications

- Training



Boetje & Ginkel, 2020

Virtual Reality Applications

- Training
- Therapy



Miloff et al., (2016)

Virtual Reality Applications

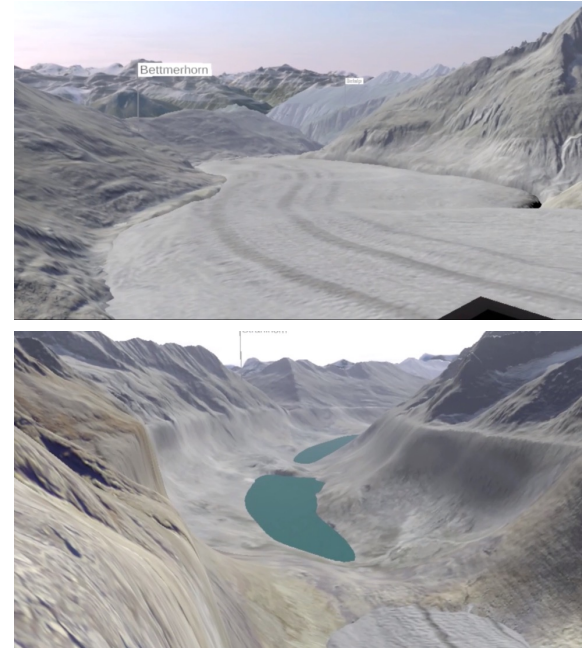
- Training
- Therapy
- Education



Ancient Jerusalem in VR

Virtual Reality Applications

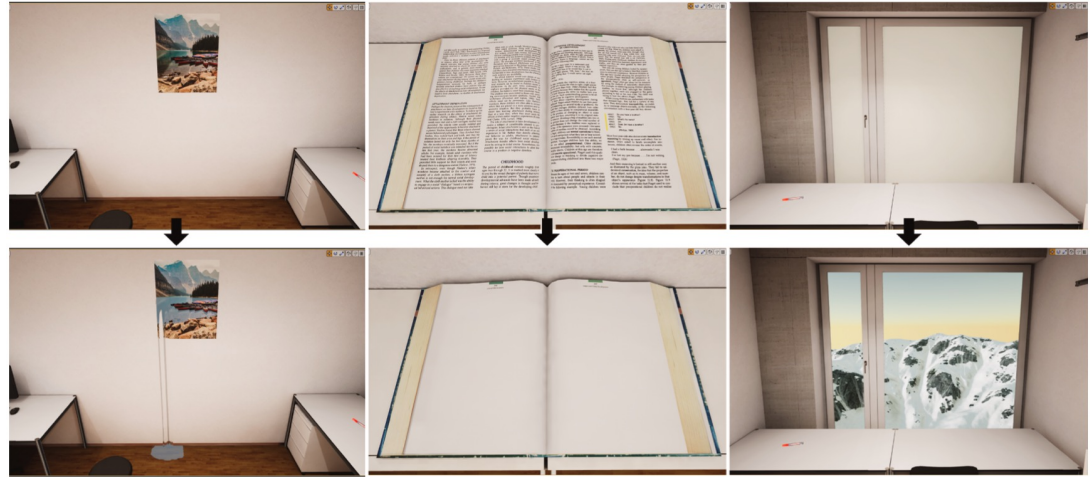
- Training
- Therapy
- Education
- Visualizations



Thoma et al., (2021)

Virtual Reality Applications

- Training
- Therapy
- Education
- Visualizations
- Display of alternative realities



Denzer et al., 2022

Benefits

- Presentation of visual stimuli
- Standardization of social interactions (*e.g., using avatars*)
- Display of fictive scenarios
- New measurements (*e.g., position tracking*)
- Combination with existing measurements (*e.g., Eye-Tracking, EEG*)
- Presentation of real-life scenarios (*e.g., recorded with a 360° camera*)

➤ Virtual Reality **simulates** reality

(Slater & Sanchez-Vives, 2016)

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Technical Restrictions

- Field of view
- Screen resolution
- Refresh rate
- Field of movement

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Challenges

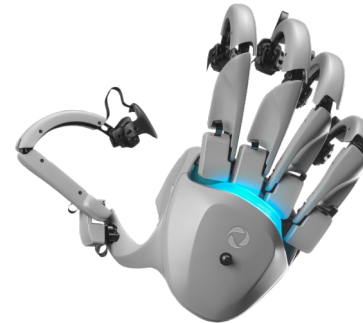
- Requires additional skills
 - 3D-modelling of virtual worlds
 - Game development
- Additional hardware (*Head-mounted display, tracking devices, PC*)
- Space for whole body movements



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Potentials

- Increasing locomotion (*e.g., omnidirectional treadmills*)
- Haptic feedback (*e.g., using haptic gloves*)
- Social interactions (*e.g., metaverse*)
- Display improvements (*e.g., higher resolution, larger field of view*)
- Eye tracking
- Face expression recognition
- Augmented reality



Thank you

For your Attention

M. Sc. Michael Rihs

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