Research Using Virtual Reality

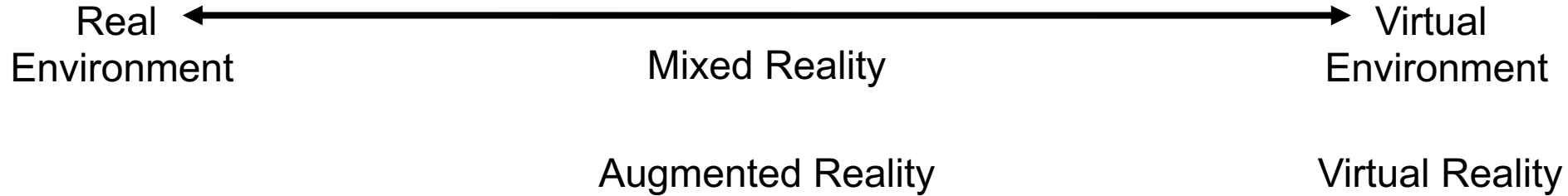## What are the Benefits, Challenges, and Potentials?

M. Sc. Michael Rihs

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

Virtual Reality
What is it?

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

Real
Environment ⟵———————————————————⟶ Virtual
Environment

Mixed Reality

Augmented Reality

Virtual Reality

Virtual Reality
Applications

– Training

Boetje & Ginkel, 2020

Virtual Reality
Applications

– Training

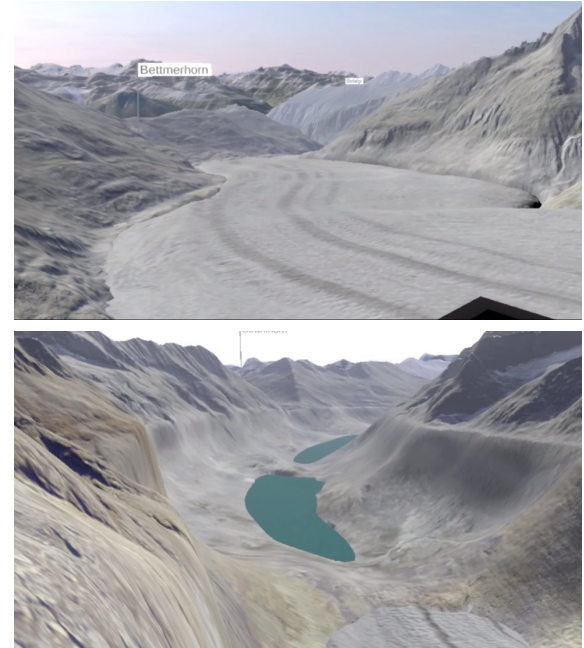– Therapy

Miloff et al., (2016)

Virtual Reality
Applications

- – Training

- – Therapy

- – Education

Ancient Jerusalem in VR

Virtual Reality

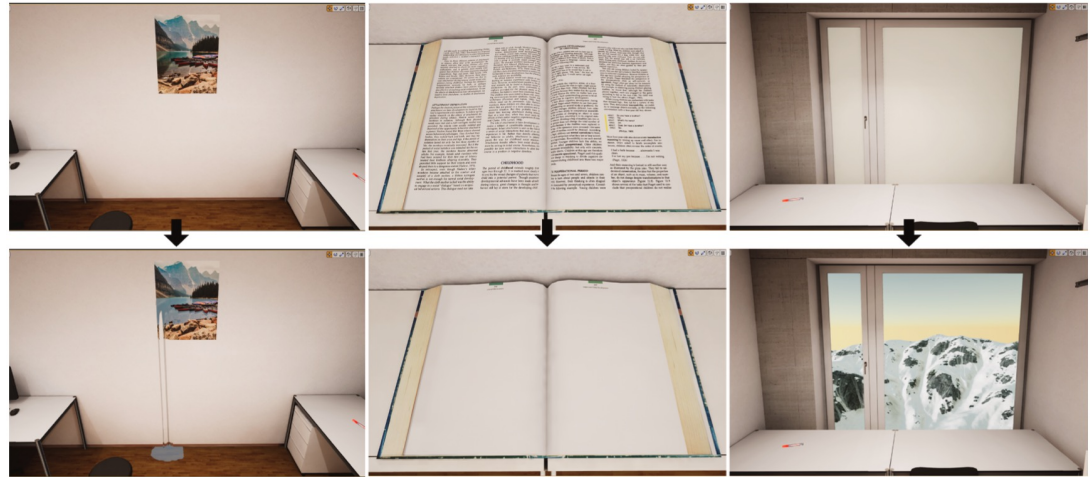## Applications

- – Training

- – Therapy

- – Education

- – Visualizations

Thoma et al., (2021)

Virtual Reality

Applications

- Training

- Therapy

- Education

- Visualizations

- Display of alternative realities

Denzer et al., 2022

Research Using Virtual Reality
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)

Research Using Virtual Reality
Technical Restrictions

– Field of view

– Screen resolution

– Refresh rate

– Field of movement

Research Using Virtual Reality
Challenges

– Requires additional skills

    – 3D-modelling of virtual worlds

    – Game development

– Additional hardware *(Head-mounted display, tracking devices, PC)*

– Space for whole body movements

Research Using Virtual Reality
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
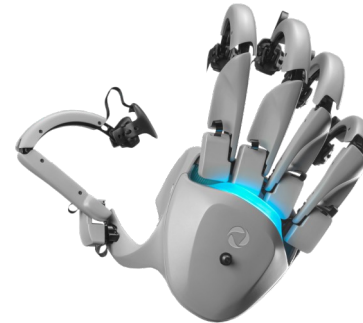
Thank you
For your Attention

M. Sc. Michael Rihs

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