

RESEARCH INTEREST

My research focuses on designing interaction systems for Augmented and Virtual Reality (AR/VR) environments. I have investigated how people interact with the system and with each other in AR/VR through empirical methods. In my future research, I aim to incorporate machine learning approaches to better understand, model and predict human behavior in immersive, collaborative settings.

EDUCATION

PhD in Human-Computer Interaction

starting August 2026

Aarhus University, Denmark

Advisor: Prof. Jens Emil Sloth Grønbæk

- Contribute to the ERC project [BRIDGE](#) Project
- Focus on Distributed Creativity, Virtual Collaboration, Mixed Reality

MSc Media and Human-Centered Computing

10/2023 - present

Technical University of Vienna, Austria

- Expected graduation in June 2026, current GPA: 1.24 / 5.0 (1 being the best)
- Focus on HCI, Interactive Media, Virtual and Augmented Reality

Exchange Student in MSc Computer Science

02/2024 - 06/2024

Beijing Institute of Technology, China

- Semester Exchange to Beijing Institute of Technology
- Focus on Logic and Digital Design

BSc Media Informatics and Visual Computing

10/2019 - 08/2023

Technical University of Vienna, Austria

- Graduated with distinction, GPA: 1.6 / 5.0 (1 being the best)
- Focus on HCI and Multimedia

BHS-Matura (A-Levels Plus Vocational Diploma), Construction Engineering

09/2014 - 06/2019

Higher Technical Education Institute, HTL Linz Bau & Design, Austria

- Graduated with distinction, GPA: 1.1 / 5.0 (1 being the best)
 - Focus on Civil Engineering, with training in geosciences laboratories and industry internships
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PUBLICATIONS

[C.1]: *Cost-Aware Bayesian Optimization for Prototyping Interactive Devices*

Thomas Langerak, **Renate Zhang**, Morgan Wang, Per Ola Kristensson and Antti Oulasvirta. 2025. Proceedings of the 2026 CHI Conference on Human Factors in Computing Systems. **Honorable Mention**

[C.2]: *Influence of Virtual Reality Setup on Locomotion Technique Usage during Navigation with Walking, Steering and Teleportation*

Hugo Brument, **Renate Zhang** and Hannes Kaufmann. 2024. In S. Hasegawa, N. Sakata, & V. Sundstedt (Eds.), Virtual Environments 2024: ICAT - EGVE - 34th International Conference on Artificial Reality and Telexistence. 29th Eurographics Symposium on Virtual Environments. Eurographics Association.

RESEARCH EXPERIENCE

Research Assistant

07/2025 - 12/2025

Computational Behavior Lab, Aalto University, Helsinki, Finland

Advisor: Prof. Antti Oulasvirta and Dr. Thomas Langerak

- Aalto Science Institute International Summer Research Programme
- One of 50+ interns selected from over 7,200 applicants (< 1% acceptance rate)
- Generalizable Bayesian optimization method for physical-virtual co-optimization using a novel cost-aware approach (Python, ML)
- *Published as a conference paper to CHI 2026* (Honorable Mention)
- Continued as multi-fidelity Bayesian optimization as a design exploration toolkit for prototyping, *on-going*

Master's Thesis

10/2024 - 06/2026

Immersive Real-Time Language Translator for Augmented Reality

Virtual & Augmented Reality Research Unit, Technical University of Vienna, Austria

Advisor: Prof. Hannes Kaufmann and Matteo Bosco

- Implementation of a language translation framework for AR glasses (Spectacles)
- Enabling real-time cross-language communication between multiple users
- Conducted user study with 24 participants, with-in subject study design
- Integration of Automatic Speech Recognition, Text-to-Speech technologies and Large Language Models

Bachelor's Thesis

07/2022 - 08/2023

User Navigation Using Different Locomotion Techniques in VR

Virtual & Augmented Reality Research Unit, Technical University of Vienna, Austria

Advisor: Prof. Hannes Kaufmann and Dr. Hugo Brument

- Exploration of different locomotion techniques, walking, steering and teleportation
- Development and evaluation of experimental platform in Unity with pilot study
- *Published as a conference paper to ICAT-EGVE 2024*

SELECTED PROFESSIONAL EXPERIENCE

AR Lab Technician

03/2025 - present

Snap Inc., Vienna, Austria

Advisor: Dr. Kai Zhou and Adrian Schoisengeier

- Collected hand gesture data using motion capture systems integrated with Spectacles AR glasses
- Guided participants through data collection sessions
- Processed and analyzed motion capture datasets for AR interaction modeling

Teaching Assistant

10/2024 - 01/2025

Master's Course "Foundations of Ubiquitous Computing and IoT"

Technical University of Vienna, Austria

Instructor: Prof. Florian Michahelles and Dr. Khaled Kassem

- Mentored students through the design and implementation of "digital companion" projects
 - Tutored students in microcontroller programming (MicroPython) and fabrication techniques (laser cutting, 3D printing)
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SELECTED ACADEMIC WORKS

Virtual and Augmented Reality: Advanced Topics, Printorial 02/2025 - 06/2025

Virtual & Augmented Reality Research Unit, Technical University of Vienna, Austria

Advisor: Dr. Peter Kan

- Implementation of an interactive handheld AR application
- Immersive beginner tutorial on how to use 3D printer in UnrealEngine (Blueprints)

Virtual and Augmented Reality, Riddle Retreat 10/2023 - 02/2024

Virtual & Augmented Reality Research Unit, Technical University of Vienna, Austria

Advisor: Prof. Hannes Kaufmann and Dr. Hugo Brument

- Implementation of a collaborative VR application for 2 players (HTC Vive)
- Collaborative puzzle solving game in Unity (OpenXR, C#)

Beyond the Desktop, Rise-n-Fly 02/2023 - 06/2023

Artifact-based Computing & User Research, Technical University of Vienna, Austria

Advisor: Prof. Florian Michahelles, Dr. Florian Wolling and Dr. Khaled Kassem

- Development of a wearable device project, using MicroPython for microcontrollers
- Unobtrusive device for measuring jump height using Activity Recognition

EXTRACURRICULAR EXPERIENCE

Hackathon Junction 2025, AR Challenge Track: Wizards of the Arts 11/2025

Junction Hackathon, Espoo, Finland

- Developed a multimodal AR experience combining hand-gesture interactions, AI-generated assets and real-time visual effects.
- Built an functioning prototype under 48 hours, responsible for AR interaction design, asset integration and system logic.

AWARDS

Merit Scholarship Grant, Vienna University of Technology 2023

Foundation Grants, Vienna University of Technology 2023

Merit Scholarship Grant, Vienna University of Technology 2022

Merit Scholarship Grant, University of Vienna 2022

Foundation Grants, Vienna University of Technology 2022

Matura (A-Levels), Graduated with distinction, HTL1 Bau und Design Linz 2019

Civil Engineering Award, 2nd Place, HTL1 Bau und Design Linz 2019

OTHER

Languages

German (Native), English (Fluent), Mandarin (B2), Spanish (A1)