Renate Zhang
Research Assistant | MSc Student in HCI
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Personal Page | GitHub | LinkedIn

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 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 settings.

EDUCATION

MSc Media and Human-Centered Computing *10/2023 - present*
Technical University of Vienna, Austria
- Expected graduation in February 2026, current GPA: 1.24 (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 Sinology *10/2021 - 02/2025*
University of Vienna, Austria
- Completed three years of Chinese language courses (113 ECTs)
- GPA: 1.6 (1 being the best)

BSc Media Informatics and Visual Computing *10/2019 - 08/2023*
Technical University of Vienna, Austria
- Graduated with distinction, GPA: 1.6 (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 (1 being the best)
- Focus on Civil Engineering, with training in geosciences laboratories and industry internships

PUBLICATIONS

[C.1]: *Cost-Aware Bayesian Optimization for Prototyping Interactive Devices*
Thomas Langerak, **Renate Zhang**, Morgan Wang, Per Ola Kristensson and Antti Oulasvirta. 2025. Under Review

[C.2]: *LLM-based Real-Time Multilingual Communication through AR Glasses: Effects of Translation Modalities*
Matteo Bosco, Hugo Brument, **Renate Zhang** and Hannes Kaufmann. 2025. Under Review

[C.3]: *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), *submitted to CHI 2025 (under review)*
- Multi-fidelity Bayesian optimization as a design exploration toolkit for designers, *on-going*

Master's Thesis *10/2024 - 12/2025*
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, *submitted to IEEE VR 2026 (under review).*

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 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

SELECTED PROFESSIONAL EXPERIENCE

AR Lab Technician *03/2025 - 06/2025*
Snap Inc., Vienna, Austria
Advisor: Dr. Kai Zhou and Adrian Schoisengeier

- Collected hand gesture data using motion capture systems integrated with Spectacles AR glasses
- 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)

Software Developer Intern *08/2022 - 07/2023*
Erste Digital GmbH, Vienna, Austria

- Frontend Development of company software Erste Bank
- Created different GUI components using NgRx state management lifecycle, Angular, Typescript, HTML and CSS

Building Information Modeling Intern *07/2021 - 08/2021*
Habau Construction Engineering Group, Vienna, Austria

- Development of JavaScript add-ons for the simplification of internal work processes
- Improved and optimized existing add-ons

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)