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Wen Ying

LinkedIn
Portfolio

Ph.D. candidate at the Department of Computer Science, University of Virginia, Charlottesville, Virginia, United States.
My research focuses on **human–computer interaction** in VR, haptic devices, robotics, and multi-user communication.

Research

An Hand Interface for Efficient Bimanual Interactions in Virtual Reality (VR) **Jan 2023 — Now**
- Utilized the hand to create a touch pad that supports efficient and smooth multi-window interactions in VR.
- Enabled multi-touch detection on the bare hand using a machine learning model with 92% accuracy.
- Building a web application for users to do VR knowledge work with bare hands, such as creative and productive tasks.

A Dynamic Shape Display for Enhanced Pen-Based VR Design **Sep 2021 — Nov 2023**
- Created a 3D-printed foldable shape-changing device called VRScroll that can mimic various virtual shapes.
- Compared to sketching in the air, sketching with VRScroll has significantly increased accuracy by 40.5%.
- Built sketching and sculpting applications to demonstrate the shape-changing device in a real-world scenario.

Safe and Efficient Cross-Reality Interactions between VR Users and Bystanders **Aug 2022 — Dec 2023**
- Developed a robotic proxy interface to enable safe and efficient communication between the VR user and bystanders.
- Run a large-scale study (N=80) that simulated real-life, ad-hoc interactions between bystanders and a VR user.
- Compared to traditional static interruption interfaces, which could be easily overlooked, users were more encouraged to communicate with the VR user by attention-grabbing robotic interfaces.

Effects of Different Haptic Feedback on Precise Touch Interaction in VR **Dec 2019 — Sep 2021**
- Compared three types of haptic feedback: no haptic feedback, tactile haptic feedback created by a hand-worn haptic device, and physical haptic feedback that used a physical interaction surface.
- Compared to the other feedback conditions, the physical surface facilitated bimanual interactions and resulted in a 51.2% improvement in selection accuracy; a 20.3% increase in tracing precision, and improved 21.6% stroke smoothness.

Experience

Research Assistant **Sep 2020 — Now**
UVA Ultimate User Interface Lab | With Prof. Seongkook Heo Charlottesville, VA, USA
- System design/prototyping, computer vision, machine learning, signal processing, user studies, data analysis in HCI.

Teaching Assistant **Aug 2021 — Dec 2023**
University of Virginia | Department of Computer Science Charlottesville, VA, USA
- **2021, 2023**: Human Computer Interaction (CS 6501)
- **2022, 2024**: Engineering Interactive Technologies (CS 4501/6501)

Research Assistant **Sep 2019 — Jan 2021**
UVA McIntire School of Commerce | With Prof. Lanfei Shi Charlottesville, VA, USA
- Used deep learning for dating app matching, and data analysis to detect sponsorships in YouTube videos.

Education

University of Virginia, Master/Ph.D., USA GPA: 3.89/4.00 **Sep 2018 — Now**
Zhejiang University, Bachelor, China, GPA: 3.70/4.00 **Sep 2014 — Jun 2018**

Technical Skills

Hardware	Interaction Technologies, Microcontroller Programming, PCB Design, 3D Modeling and Printing
Software	Unity, Meta Oculus, Autodesk Fusion 360, Arduino, OptiTrack, Generative AI tools
Programming	Python, Java, Javascript, C#, R, C/C++

Publications

1. **Ying**, **W.** & Heo, S. Enhancing VR Sketching with a Dynamic Shape Display **(Best Paper Honorable Mention)**. *ACM Symposium on Virtual Reality Software and Technology* (October 9-11, 2024).
2. Zhang, P., **Ying**, **W.**, Riggs, S., *et al.* MoiréTag: A Low-cost Tag for High-precision Tangible Interactions Without Active Components. *ACM Interactive Surfaces and Spaces Conference* (October 27-30, 2024).
3. Hu, E., Grønbæk, J. E. S., **Ying**, **W.**, *et al.* ThingShare: Ad-Hoc Digital Copies of Physical Objects for Sharing Things in Video Meetings. *Proceedings of the CHI Conference on Human Factors in Computing Systems* (April 23-28, 2023).
4. **Ying**, **W.** & Heo, S. VRScroll: A Shape-Changing Device for Precise Sketching in Virtual Reality **(Best Poster)**. *IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops* (March 25-29, 2023).
5. Hildebrandt, C., **Ying**, **W.**, Heo, S., *et al.* Mimicking Real Forces on a Drone Through a Haptic Suit to Enable Cost-Effective Validation. *IEEE International Conference on Robotics and Automation* (May 29-June 2, 2023).