Siyou **Pei**

Ph.D. Candidate · Electrical And Computer Engineering

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Research Interests

Human-Computer Interaction (HCI); Embodied Interaction; Extended Reality (XR), Virtual Reality (VR), Augmented Reality (AR); My research goal is to **make XR intuitive and beneficial across users with different backgrounds and expertise**.

Education

University of California, Los Angeles — *3.88/4.00*

M.S./Ph.D. Program in Electrical and Computer Engineering — *Sep. 2019 – Present*

- Advisor: Yang Zhang
- Human-Centered Computing & Intelligent Sensing Lab (HiLab)
- M.S. Degree, Dec. 10, 2021
- **Doctoral Candidacy, Aug. 24, 2022**

Zhejiang University — *3.92/4.00*

B.Eng. in Electronic and Information Engineering (with Honors) — *Aug. 2015 – Jun. 2019*

- Research and Innovation Scholarships (2016-2018)

Publications

C 9. **Siyou Pei**, Feiyu Lu, Cheng Yao Wang, Dr. David Saffo, Fannie Liu, Mengyu Chen, Benjamin Lee, Blair MacIntyre, 2024. WorkBubbles: Dynamic Boundaries on a Large Interactive Display for Mixed-Focus Cross-Reality Collaboration — *In Submission*

C 8. **Siyou Pei**, Alexander Chen, Ronak Kaoshik, Ruofei Du, Yang Zhang, 2024. Arm Robot: AR-Enhanced Embodied Control and Visualization for Intuitive Robot Arm Manipulation — *In Submission*

C 7. Yuxuan Guo, Yang Luo, Roshan Plamthottam, **Siyou Pei**, Chen Wei, Ziqing Han, Jiacheng Fan, Mason Possinger, Kede Liu, Yingke Zhu, Zhangqing Fei, Isabelle Winardi, Hyeonji Hong, Yang Zhang, Lihua Jin, and Qibing Pei., 2024. Haptic Artificial Muscle Skin for Extended Reality. Science Advances, 10(43), eadr1765 (2024) (10 %). — *Science Advances*

C 6. **Siyou Pei**, David Kim, Alex Olwal, Yang Zhang, and Ruofei Du. 2024, May. UI Mobility Control in XR: Switching UI Positionings between Static, Dynamic, and Self Entities. In *Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems* (pp. 1-11) (26.4 %). — *CHI '24, Hawaii*

C 5. William Huang, Sam Ghahremani, **Siyou Pei**, and Yang Zhang. 2024, May. WheelPose: Data Synthesis Techniques to Improve Pose Estimation Performance on Wheelchair Users. In *Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems* (pp. 1-25) (26.4 %). — *CHI '24, Hawaii*

C 4. **Siyou Pei**, Alexander Chen, Chen Chen, Mingzhe "Franklin" Li, Megan Fozzard, Hao-Yun Chi, Nadir Weibel, Patrick Carrington, and Yang Zhang., 2023, October. Embodied Exploration: Facilitating Remote Accessibility Assessment for Wheelchair Users with Virtual Reality. In *Proceedings of the 25th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '23) (30 %)* (pp. 1-17). — *ASSETS '23, New York*

C 3. **Siyou Pei**, Pradyumna Chari, Xue Wang, Xiaoying Yang, Achuta Kadambi, and Yang Zhang, 2022, October. Forcesight: Non-contact force sensing with laser speckle imaging. In *Proceedings of the 35th Annual ACM Symposium on User Interface Software and Technology* (pp. 1-11) (22 %). Best Demo Honorable Mention (5 %) — *UIST '22, Bend*

C 2. **Siyou Pei**, Alexander Chen, Jaewook Lee, and Yang Zhang, 2022, April. Hand interfaces: Using hands to imitate objects in AR/VR for expressive interactions. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems* (pp. 1-16) (24.7 %). Best Demo Honorable Mention (5 %) — *CHI '22, New Orleans*

C 1. Swapnil Sayan Saha, Mr. Sandeep Singh Sandha, **Siyou Pei**, Vivek Jain, Mr. Ziqi Wang, Yuchen Li, Ankur Sarker, Mani Srivastava, 2022. Auritus: An Open-source Optimization Toolkit for Training and Development of Human Movement Models and Filters Using Earables. Proceedings of *the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies, 6(2)*, pp.1-34 (26 %). *IMWUT '22, Atlanta*

P 1. Systems and methods of non-contact force sensing, WO2024030827A3. *2024 Patent*

Internship

Google Research *Sep. - Dec. 2022, Jan. - Apr. 2023*

Student Researcher Intern Mentored by Ruofei Du and Alex Olwal

JPMC Immersive Technologies *Jun. - Sep. 2024*

Summer Research Associate Mentored by Feiyu Lu and Blair MacIntyre

Services

Leading Coordinator, Los Angeles Computing Circle (LACC) Summer Camp *2023*

UCLA Computer Science Department and Electrical & Computer Engineering Department

Organized and led the LACC Summer Camp at UCLA, an outreach program in the Computer Science and Electrical & Computer Engineering departments. Coordinated resources and designed the program curriculum, offering incoming 10th-12th graders lectures and hands-on labs in advanced computing and engineering concepts, fostering students' interest in STEM careers.

Program Committee Associate Chair *2024*

Conference Services

Served as the Program Committee Associate Chair (AC) for CHI Late-Breaking Work 2024, contributing to the review process, assessing paper submissions, and coordinating reviewer feedback.

Reviewer *2021-2024*

Conference Services

Reviewed 29 submissions across leading HCI and XR conferences, including ACM CHI (main track and Late-Breaking Work), UIST, TEI, DIS, IEEE VR, and ISMAR. Received **6 Special Recognitions for Outstanding Reviews**.

Skills

Extended Reality	XR Development with Meta Quest, HTC VIVE and Snap Spectacles; Unity
Computer Vision and AI	OpenCV, PyTorch
Programming	C#, Python, JavaScript, C/C++, Verilog, MATLAB, Java, SQL, HTML, VB
Design & Fabrication	Procreate, PS, PR, Blender, 3D Printing, Laser Cutting

Teaching Experience

Co-Instructor *184 students*

designed and conducted lectures about XR Development, Usability, and User Study *Prof. Yang Zhang*

- Engineering Interactive Systems (Spring 2022, Fall 2022, Fall 2023)

Teaching Assistant *548 students*

Designed and conducted weekly discussion sessions and review sessions; Co-designed assignments and exams *2019 – 2024*

- Electrical and Electronic Circuits (Winter 2021, Winter 2022, Winter 2024, 328 students)
- Digital Signal Processing (Spring 2021, 100 students)
- Signals and Systems (Fall 2021, 120 students)

Talks and Presentations

2023	**Cornell Tech**, Expressive Interaction and Sensing for Mixed Reality	*New York*
2024	**Columbia University**, Embodied Interaction for Extended Reality	*New York*
2024	**Northeastern University**, Embodied Interaction for Extended Reality	*Boston*

Mentees

Sourish Saswade (UCLA), Honor Program, SWE Intern @ Apple *2023*

Using machine learning with multi-modal sensor fusion to analyze urban road conditions via e-scooters

Deetshana Parthipan (UCLA), Honor Program, UCLA DevX Developer Intern, BruinAI, IEEE Women In Engineering *2023*

Point cloud dataset visualization

Alexander Chen (UCLA Alumni), published 1 paper at CHI and 1 paper at ASSETS *2021-2024*

Using hand embodiment for expressive XR interaction; Using full-body embodiment for accessibility assessment

William Huang (UCLA), published 1 paper at CHI *2022-2024*

Using full-body embodiment for remote physical education in XR; Synthetic data generation of wheelchair users with embodied avatars for inclusive vision AI

Sam Ghahremani (UC Berkeley), published 1 paper at CHI *2023-2024*

Synthetic data generation of wheelchair users with embodied avatars for inclusive vision AI