Siyou **Pei**

Ph.D. Candidate · Electrical And Computer Engineering

54-148 Eng. IV, 580 Portola Plaza, UCLA, Los Angeles, CA 90095-1596

sypei@g.ucla.edu | www.sypei.com | sypei | @SiyouPei | Google Scholar

Research Interests

Human-Computer Interaction (HCI); Embodied Interaction; Extended Reality (XR), Virtual Reality (VR), Augmented Reality (AR);

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)

Research & Presentation

UI Mobility Control in XR: Switching UI Positionings between Static, Dynamic, and Self Entities (during internship at Google)

CHI '24, Hawaii

Siyou Pei, David Kim, Alex Olwal, Yang Zhang, Ruofei Du

- Conducted a need-finding study to distill three types of UI positionings: affixed to a static entity, a dynamic entity, or a self entity.
- Performed a survey of 113 commercial apps to understand the lack of existing techniques for 3D UI mobility control
- Presented key findings on user perception on UI mobility control with Finger Switches as probing technique

Embodied Exploration: Facilitating Remote Accessibility Assessment for Wheelchair Users with Virtual Reality

ASSETS '23, New York, NY

Siyou Pei, Alexander Chen, Chen Chen, Franklin Mingzhe Li, Megan Fozzard, Hao-Yun Chi, Nadir Weibel, Patrick Carrington, Yang Zhang

- Conducted a user-centered iterative design to finalize interaction techniques for wheelchair users to evaluate accessibility remotely
- Validated the efficacy of Embodied Exploration against photo galleries and virtual tours through user studies
- Presented key findings on user perception and usability, leading to design guidelines for future accessibility assessment tools

ForceSight: Non-Contact Force Sensing with Laser Speckle Imaging

UIST '22, Bend, OR

Award winning

Siyou Pei, Pradyumna Chari, Xue Wang, Xiaoying Yang, Achuta Kadambi, Yang Zhang

- Developed a non-contact force sensing approach that leverages discernable laser speckle shifts caused by deformation at an applied force
- Evaluated the validity of the technologies with a set of materials and demonstrated example applications, e.g. projection-based Augmented Reality
- To promote its scalability, discussed the effect of various materials and summarized guidelines on how to calibrate the sensor for various surfaces

Hand Interfaces: Using Hands to Imitate Objects in AR/VR for Expressive Interactions

CHI '22, New Orleans, LA

Award winning

Siyou Pei, Alexander Chen, Jaewook Lee, Yang Zhang

- Proposed the idea of using hands to imitate virtual objects for expressive interactions in AR/VR
- Created a wide array of interaction designs around this idea to demonstrate its applicability in object retrieval and interactivity
- Collected quantitative and qualitative feedback that shows Hand Interfaces are effective, expressive, and fun to use

Publications

C 1.	**Pei, S.**, Kim, D., Olwal, A., Zhang, Y., Du, R. 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). **Oral Presentation** on May 12, 2024	*Hawaii*
C 2.	Huang, W., Ghahremani, S., **Pei, S.**, Zhang, Y. 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).	*Hawaii*
C 3.	**Pei, S.**, Chen, A., Chen, C., Li, F.M., Fozzard, M., Chi, H.Y., Weibel, N., Carrington, P. and Zhang, Y., 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* (pp. 1-17). **Oral Presentation** on Oct. 25, 2023	*New York*
C 4.	**Pei, S.**, Chari, P., Wang, X., Yang, X., Kadambi, A. and Zhang, Y., 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). **Oral Presentation** on Oct. 30, 2022	*Bend, OR*
C 5.	**Pei, S.**, Chen, A., Lee, J. and Zhang, Y., 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). **Oral Presentation** on May 2, 2022	*New Orleans, LA*
C 6.	Saha, S.S., Sandha, S.S., **Pei, S.**, Jain, V., Wang, Z., Li, Y., Sarker, A. and Srivastava, M., 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.	*Atlanta, GA*

Internship

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

Student Researcher Intern Mentored by Ruofei Du

JPMC Immersive Technologies *Jun. - Sep. 2024*

Summer Research Associate Mentored by Feiyu Lu

Services

Los Angeles Computing Circle (LACC) High School Students Summer Camp *2023*

Leading Coordinator of the 13^{th} LACC at UCLA in Summer 2023

The Los Angeles Computing Circle is an outreach program organized, supervised, and mentored by faculty members and graduate student volunteers from UCLA's Computer Science Department and Electrical & Computer Engineering Department. To engage and mentor younger students for careers in computing and engineering, LACC provides incoming Grade 10-12 students an opportunity to learn advanced concepts in computing via lectures and hands-on design and programming laboratories.

Conference Services *2021-2024*

Program Committee Associate Chair and Reviewer

- Program Committee Associate Chair (AC) for CHI Late-Breaking Work 2024
- Reviewer for the ACM CHI Conference on Human Factors in Computing Systems (CHI) Late-Breaking Work 2021, 2022, 2023, 2024
- Reviewer for the ACM CHI Conference on Human Factors in Computing Systems (CHI) in 2022, 2023, 2024
- Reviewer for the ACM Symposium on User Interface Software and Technology (UIST) in 2022, 2023,2024
- Reviewer for TEI in 2024
- Reviewer for IEEE VR in 2024
- Reviewer for Designing Interactive Systems Conference (DIS) in 2023
- Reviewer for ISMAR in 2023

Skills

Programming	C#, Python, JavaScript, C/C++, Verilog, MATLAB, Java, SQL, HTML, VB
Mixed Reality	Unity, Quest 1/2/3/Pro, HTC VIVE; Lens Studio, Snap Spectacles
Computer Vision	PyTorch, OpenCV
Design & Modeling	Fusion 360, Procreate, PS, PR, AE, Blender

Teaching Experience

ECE 100 Electrical and Electronic Circuits - Winter 2021 — *120 students*

Designed and conducted discussions and review sessions — *Dr. Farid Mesghali*

ECE 113 Digital Signal Processing - Spring 2021 — *100 students*

Designed and conducted discussions and review sessions — *Dr. Kambiz Shoarinejad*

ECE 102 Signals and Systems - Fall 2021 — *120 students*

Designed assignments and exams. Designed and conducted discussions and review sessions — *Prof. Jonathan Kao*

ECE 100 Electrical and Electronic Circuits - Winter 2022 — *100 students*

Designed assignments and exams. Designed and conducted discussions and review sessions — *Prof. Yang Zhang*

ECE 209 Engineering Interactive Systems - Spring 2022 — *60 students*

Designed and conducted a 2-hour VR development workshop. Gave a guest lecture discussions and review sessions — *Prof. Yang Zhang*

ECE 188 Engineering Interactive Systems - Fall 2022 — *60 students*

Designed and conducted a 2-hour VR development workshop. Gave a guest lecture discussions and review sessions — *Prof. Yang Zhang*

ECE 10 Circuit Theory - Winter 2024 — *104 students*

Designed and conducted discussions and review sessions — *Prof. Yang Zhang*

ECE 209 Engineering Interactive Systems - Fall 2023 — *60 students*

Designed and conducted a 2-hour VR development workshop. Gave a guest lecture discussions and review sessions — *Prof. Yang Zhang*