

Siyou Pei

PH.D. STUDENT · ELECTRICAL AND COMPUTER ENGINEERING

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Research Interests

Expressive interactions and sensing for Mixed Reality

Education

University of California, Los Angeles

M.S./PH.D. PROGRAM IN ELECTRICAL AND COMPUTER ENGINEERING

3.87/4.00

Sep. 2019 – Present

- Advisor: Yang Zhang
- Human-Centered Computing & Intelligent Sensing Lab ([HiLab](#))

Zhejiang University

B.ENG. IN ELECTRONIC AND INFORMATION ENGINEERING (WITH HONORS)

3.92/4.00

Aug. 2015 – Jun. 2019

National University of Singapore

EXCHANGE STUDENT IN ELECTRONIC AND COMPUTER ENGINEERING

4.00/4.00

Aug. 2017 – Dec. 2017

Research Experience

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

CHI '22, New Orleans, LA

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 which indicated that Hand Interfaces is effective, expressive, and fun to use.

AURITUS: An Open-Source Optimization Toolkit for Training and Development of Human Movement Models and Filters Using Earables

IMWUT '22

SWAPNIL SAYAN SAHA, SANDEEP SINGH SANDHAA, SIYOU PEI, VIVEK JAIN, ZIQI WANG, YUCHEN LI, ANKUR SARKER, MANI SRIVASTAVA

- Developed a head pose recognition system using Earable (sensor-embedded earphones) and OptiTrack System for calibration and data collection.
- Implemented binaural sound (e.g. Doppler effect) with IMU in Earables and in VR headset, with the resolution of around 10°.
- Improved system accuracy and robustness significantly with XGBoost after sufficient comparison and analysis.

Quick Question: Interrupting Users for Microtasks with Reinforcement Learning 📄

ICML 2021 Workshop on HILL

BO-JHANG HO, BHARATHAN BALAJI, MEHMET KOSEGLU, SANDEEP SANDHA, SIYOU PEI, MANI SRIVASTAVA

- Employed a reinforcement learning solution in task allocation to minimize user annoyance about smartphone notifications.
- Designed and optimized a Markov decision process model that effectively allocates tasks based on training from 41 real users data.
- Achieved greater user experience with an RL algorithm A2C and proved better performance over a conventional supervised learning method.

Work Experience

Student Researcher Intern at Google

Sep - Dec 2022 (upcoming)

Skills

Programming	C#, Python, JavaScript, C/C++, Verilog, MATLAB, Java, SQL, HTML, VB
Mixed Reality	Unity, Oculus Quest v1/v2; Lens Studio, Snap Spectacles
Computer Vision	PyTorch, OpenCV; Image segmentation, Classification, Optical flow, Face detection and recognition.
Design & Modeling	Fusion 360, Unity, Procreate, PS, PR, AE, Blender

Teaching Experience

ECE 100 Electrical and Electronic Circuits - Winter 2021

DR. FARID MESGHALI

ECE 113 Digital Signal Processing - Spring 2021

DR. KAMBIZ SHOARINEJAD

ECE 102 Signals and Systems - Fall 2021

PROF. JONATHAN KAO

ECE 100 Electrical and Electronic Circuits - Winter 2022

PROF. YANG ZHANG

ECE 209 Engineering Interactive Systems - Spring 2022

PROF. YANG ZHANG

Courses

2020 – 2021 ACADEMIC YEAR

CS 219 IoT Connectivity and Sensing

2020 – 2021 ACADEMIC YEAR

ECE 231A Information Theory

ECE 211A Digital Image Processing

ECE 209AS Special Topics in Circuits and Embedded Systems: Human-Computer Interaction

ECE M495 Teaching Preparation Seminar: Teaching and Writing Pedagogies for Electrical Engineers

2019 – 2020 ACADEMIC YEAR

ECE 239AS Special Topics in Signals and Systems: Reinforcement Learning Theory and Applications

ECE 233 Wireless Communications System Design, Modeling, and Implementation

ECE 219 Large-Scale Data Mining: Models and Algorithms

ECE C247 Neural Networks and Deep Learning

ECE 205A Matrix Analysis

ECE M202A Embedded Systems

ECE 236A Linear Programming