

# Siyou Pei

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## Software Engineer

*Full-stack Development | Mobile Applications | Applied AI/ML | Extended Reality*

Recent ECE Ph.D. graduate with strong software engineering fundamentals and hands-on experience building full-stack systems, mobile applications, applied AI/ML solutions, and Extended Reality. Passionate about developing consumer-facing products that impact millions of users. Self-motivated, collaborative quick learner.

## Skills

**Languages:** Python, C#, SQL, JavaScript/TypeScript, C/C++, Go

**Tools:** PyTorch, OpenCV, LLM, RL, Node.js, Unity, Git, Docker, AWS, CI/CD, React, Next.js, HTML, CSS

## Education

Ph.D. in Electrical and Computer Engineering University of California, Los Angeles | GPA 3.88 | 2019-2025

B. Eng. in Electrical and Computer Engineering (Honors) Zhejiang University | GPA 3.92 | 2015-2019

## Work Experience

**Software Engineering Intern** | Google | Sep. - Dec. 2022, Jan. - Apr. 2023 | San Francisco

*Building multi-modal model for gaze- and gesture-based control of virtual objects in Extended Reality*

- Optimized performance from 5fps to 30fps (**6x improvement**) on a standalone XR device through proximity-aware gesture recognition activation
- Reduced memory usage by **60+%** (from 16GB to 6GB) through LOD (Level of Detail) implementation for 3D texture and mesh rendering in Unity
- Transitioned research to product impact by sharing findings **cross-functionally** and to XR community (**26K** views on [X](#)), providing actionable insights on AI-enhanced interactions with XR devices

**Software Engineering Intern** | JPMorgan Chase | Jun. - Sep. 2024 | New York City

*Building networked Extended Reality systems that support multi-user collaboration from distributed devices*

- Built **distributed architecture** that interconnects AR headsets, motion trackers, input devices, and public displays with TCP/IP via Colyseus over AWS EC2 using JavaScript/TypeScript, Node.js and C#
- Achieved **real-time** performance with less than **50ms latency** (vs. 70-80ms multiplayer gaming standard) through (1) event dictionary encoding to minimize network traffic, (2) threaded communication for reliable delivery, and (3) selective layer rendering to reduce memory usage
- Successfully **deployed** beta production system across teams for real estate and crisis response, through collaboration with 9 business stakeholders, improving their collaborative workflows

## Research Experience

**Research Assistant** | UCLA | Sep. 2019 - Jun. 2025 | Los Angeles | [Publication Record](#) | [Portfolio](#)

*Developing AI-enhanced HW/SW solutions for Mixed Reality interaction*

- Led system design and implementation across **7** research projects combining **AI/ML, XR/sensing and user studies**, mentoring **12** students and published **7** papers in top-tier peer-reviewed venues
- Architected an end-to-end **robot arm teleoperation system** where the operator is able to control robots with natural body movement in 6DoF. The system allows users to effectively adjust hand-gripper correspondence, freeze/resume teleoperation, and mirror their motion by intuitive mid-air manipulation in **Augmented Reality**
- Developed **real-time computer vision** algorithms via **PyTorch** and **OpenCV** to enable vision-based force detection. Achieved **120fps** on a **mobile** device with less than **0.3N** error (**patented**, *Best Demo Award*)
- Built **Hand Interfaces**, a gesture recognition system for AR/VR interactions using **C#/Python**, gaining community impact (**53K** views on [X](#)) and adoption in **Meta SDK** (*Best Paper Honorable Mention*)
- Architected **reusable** frameworks connecting backend **AI/ML algorithms** (including MobileNet, MediaPipe, LLM, RL) to **Unity** applications, **IoT** devices and **robot** arms, actively used by current lab members

## Leadership & Teaching

Program Committee Associate Chair | CHI Late-Breaking Work 2024, 2025

Conference Reviewer | 2021 - 2024 | Reviewed 43 submissions for CS conferences

Leading Coordinator | 2023 | Non-Profit UCLA Summer Camp in STEM for local high school students

Teaching Assistant | 2021 - 2024 | Digital Signal Processing, Signals and Systems, Electronic Circuits