Ethan Ge

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Education

University of California, Los Angeles (UCLA) — Los Angeles, CA
Sep. 2023 – Present

B.S. in Electrical Engineering, expected June 2027

- GPA: 3.64/4.00

Research Interests

Signal processing and machine learning; wireless communication and multimodal sensing; experimental and networked systems.

Research Experience

Undergraduate Researcher, WirelessLab@UCLA — Jun. 2024 – Present
Los Angeles, CA

University of California, Los Angeles; advisor: Prof. Ian Roberts

Learning-Based Beam Refinement

- Developed a limited-budget beam-refinement method for full-duplex base stations: a transformer neural process predicts sum spectral efficiency across unmeasured transmit/receive beam pairs and sequentially selects which self-interference probe to take next.
- Added a learned stopping head that adapts the probe budget per user pair (10.1 measurements on average out of 625 candidates), outperforming STEER+, Bayesian optimization, and Gaussian-process baselines on 1,000 held-out neighborhoods of measured 28 GHz self-interference data.
- First author on an accepted paper at the 2026 Asilomar Conference on Signals, Systems, and Computers.

RemoteRF remoterf.net

- Develop and maintain RemoteRF, an open-source Python platform for remote SDR experimentation used in UCLA coursework and wireless research; the platform has supported 250+ users, 7,200+ reservations, and 3,800+ reserved hours.
- Grew it from a few radios on a USB hub into infrastructure that has run continuously for two years and is now part of every offering of UCLA's undergraduate and graduate communications courses.
- Implemented client-server interfaces and distributed host-node support, enabling local Python workflows to control centrally managed SDRs over network connections; released the client through PyPI.
- Deployed and operated Linux-based SDR infrastructure, including device provisioning and network configuration; benchmarked control paths across local USB, direct-server, and distributed Raspberry Pi configurations.

Student Researcher, COSMOS Research Program — Mar. 2021 – Apr. 2022
Riverside, CA

University of California, Riverside; advisor: Prof. Hung-Wei Tseng

Computer Vision for Remote Telemedicine

- Built a real-time 3D human-pose analysis pipeline that processed camera and video input with a TensorFlow Lite model, extracting 19 body keypoints for remote patient monitoring.
- Implemented image preprocessing, heatmap and offset decoding, temporal calibration, and 2D/3D angle estimation for the shoulders, elbows, hips, and knees.

Publications & Manuscripts

[1] **Ethan Y. Ge** and Ian P. Roberts, "RemoteRF: An Open-Source Platform to Democratize Access to Software-Defined Radios in Wireless Research and Education," manuscript under major revision at *IEEE Wireless Communications Magazine*, 2026. Preprint: arXiv:2606.22161.

[2] **Ethan Y. Ge** and Ian P. Roberts, "Limited Budget Beam Refinement for Full-Duplex Wireless Communication Systems," in *Proceedings of the 2026 Asilomar Conference on Signals, Systems, and Computers*, accepted; to appear Oct. 2026.

[3] **Ethan Y. Ge** and Ian P. Roberts, "RemoteRF: An Open-Source, Shared Global Testbed for Wireless Sensing and Communication," in *Proceedings of the 2026 Asilomar Conference on Signals, Systems, and Computers*, accepted; to appear Oct. 2026.

Teaching Experience

COSMOS Undergraduate Instructor / Assistant Jul. 2025 – Aug. 2025
University of California, Los Angeles *Los Angeles, CA*

- Taught information coding and wireless communications laboratory sessions to 28 high school students in UCLA's four-week residential STEM program.
- Guided students through hands-on exercises in modulation, coding, signal processing, and software-defined radio (SDR) systems.
- Developed and revised laboratory materials and provided technical mentorship for student projects.

Awards, Funding & Recognition

Internet Research Initiative Prize, UCLA 2025–2026
One of nine undergraduates selected; $7,000 stipend to pursue RemoteRF independently.

Anita and Julius L. Zelman Scholar, UCLA 2023–2027
Up to four recipients annually; four-year scholarship totaling $40,000.

UCLA ECE Fast Track to Success Program Class of 2027
Selective ECE honors program with advanced coursework and early research opportunities.

UCLA Educational Innovation Grants 2025
$20,000 across two grants to scale RemoteRF, including one of only three awarded to engineering in the inaugural round; PI: Ian Roberts.

Selected Poster Presenter, Marconi Society Academic Forum Nov. 2025
Presented RemoteRF at the 2025 Student Poster Showcase.

Featured in UCLA Samueli Newsroom May 2026
Student research profile highlighting RemoteRF's impact on wireless research and education.

Additional Technical Experience

Lead Graphics/Systems Engineer — Segment Games (Co-Founder) Nov. 2023 – Sep. 2026

- Built real-time rendering, shaders, terrain, 3D modeling, and iconography in Unity and Blender.
- Led advanced graphics optimization for PC and mobile platforms, and maintained release workflows for Steam, iOS, and Android, including CPU/GPU profiling, packaging, platform-specific debugging, and deployment.
- Produced trailers and designed marketing assets.
- **Contributed heavily to:** *Iron Inc.* (Steam, 10k+ wishlists); *Pocket Panzers* (iOS/Android, 50k+ downloads globally)

IEEE Micromouse, UCLA Sep. 2023 – May 2024

- Contributed to PCB design, embedded software, and hardware–software integration for an autonomous maze-solving robot.

Technical Skills

Programming	Python, C/C++, C#, MATLAB
Signal Processing / ML	NumPy, SciPy, PyTorch, TensorFlow, OpenCV
RF Systems	SDR, USRP, GNU Radio, libiio, phased arrays, beamforming, over-the-air experimentation
Research Computing	Linux, TCP/IP networking, client-server systems, server infrastructure, Git
Graphics Systems	CUDA, HLSL/ShaderLab, Unity, Blender, GPU profiling
Design & Media	Figma, Adobe Premiere Pro
Hardware Design	Altium Designer, PCB layout, Fusion 360

Selected Coursework

Graduate Special Topics in Signals & Systems (ECE 239AS) · Communication Systems · Digital Signal Processing · Probability & Statistics · Speech & Image Processing · Feedback Control