

Oliver Wang

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EDUCATION

- M.S. in Electrical Engineering, University of California, Los Angeles (Expected Jun 2027); GPA 4.00 / 4.00
- B.S. in Electrical Engineering, University of California, Los Angeles (Jun 2026); GPA 3.99 / 4.00, *summa cum laude*

RESEARCH INTERESTS

- Robots and agents that improve through long-term deployment: memory that revises beliefs as environments change, uncertainty under distribution shift, and agents that diagnose and learn from their own failures.

FELLOWSHIPS & AWARDS

- **2026 NSF Graduate Research Fellowship (GRFP) in Engineering - Machine Learning**
- 2025–2026 Kalosworks Scholarship
- 2025–2026 John DeGroat Haller Memorial Fund
- 2023–Present Eta Kappa Nu (HKN) Electrical Engineering Honor Society
- 2022–2026 Dean’s Honors List
- 2023 IEEE Solid-State Circuits Society Arduino Contest 3rd Place
- 2023 All America Micromouse Competition 5th Place
- 2022 UCLA-UCR Research Symposium 3rd Place

RESEARCH EXPERIENCE

Undergraduate / Graduate Student Researcher, Networked and Embedded Systems Laboratory, UCLA, Jan 2024–Present

Advisor: Prof. Mani Srivastava

Long-Term Robot Memory on a Unitree Go2 Quadruped, Sep 2026–Present

- Deployed the routine-aware memory system on a Unitree Go2 quadruped; built memories from 3,000+ robot images and compared five memory designs against a full-context baseline.
- Identified failure modes absent in simulation: inconsistent vision-model descriptions of unchanged scenes, localization errors that corrupted stored observations, and memories that could not represent absence.
- Built an agent that diagnoses robot failures from tool-call and sensor logs, identifying the root causes of most of 19 logged failures.
- Traced localization drift to matching against a stale map, reducing replay pose error from 1.3 m / 20° to 0.04 m / 2.6° in offline evaluation.

Robot Memory and Uncertainty Under Changing Human Routines, Jun 2026–Present

- Led research on robot memory under changing human routines; designed a ten-household object-search benchmark comparing LLM memory updates with statistical and agentic memory baselines.
- Formulated and tested a recurring-routine hypothesis, finding that LLM-generated summaries often fail to reuse learned knowledge when previously encountered human routines happen again.
- Developed a memory-update method that maintains hypotheses about underlying human routines while using a retrieval tool to access raw observations as evidence, improving object-location predictions during distribution shifts (especially recurring routines).
- Evaluated LLM self-reported confidence and ensemble uncertainty after routine changes; though poorly calibrated, LLM confidence kept a ~0.3 correlation with correctness while baselines fell to ~0.

Multimodal Urban Event Detection, with Sandia National Laboratories, Jan 2026–Present

- Leading the research direction within a UCLA–Sandia National Laboratories collaboration, independently defining research questions and conducting experiments.
- Proposed a knowledge-graph-based agent that maintains and revises hypotheses about unfolding urban events as evidence arrives from cameras, sensors, and social media.
- Built dataset quality checks for the multimodal event-detection pipeline.
- Developing a self-improving agent that refines its own memory from detection outcomes.
- Proposed adding a second researcher to the project; recruited and collaborated with a master's student.

Time-Series Skill Benchmark (TS-Skill), Dec 2025–Present

- Built a human-feedback pipeline coordinating 10 annotators who reviewed more than 1,000 questions from a synthetic time-series benchmark.
- Analyzed annotation feedback and collaborated with the lead researcher on improving ambiguous task definitions, questions, and labels in a dataset of more than 10,000 samples.

Spectral Predictability for Time Series Forecasting Model Selection, Jan 2024–Dec 2025

- Formulated a research project to test whether spectral predictability, an existing frequency-based entropy measure, can predict forecasting performance across 51 models and 28 GIFT-Eval datasets.
- Found that spectral predictability correlates with the performance gap between pretrained and statistical forecasters, offering a method for time series model selection based on data statistics and compute budget.

Researcher, Speech Processing and Auditory Perception Laboratory, UCLA, Sep 2026–Present

Advisor: Prof. Abeer Alwan

- Using calibrated confidence and disagreement across multiple speech recognizers as features for Alzheimer's disease detection from picture-description recordings.
- Developing an agentic self-improving method that routes between feature types using clinical knowledge, for Alzheimer's disease classification with very few training samples.

Part-Time Research Intern, Archband Labs, San Jose, CA, Jun 2026–Present

- Reviewing and benchmarking deep learning methods for cuff-less blood pressure and heart rate estimation from PPG signals.
- Assessing the feasibility of these methods for a wearable monitoring device.

Researcher, Ozcan Research Group, UCLA, Mar 2023–Sep 2024; Sep 2026–Present

- Calibrated a compact glucose-sensing imager using phosphorescence lifetime imaging.
- Built image segmentation and CNN models that detected sensor misalignment with 100% accuracy on 672 blind-test measurements from sensors unseen in training, enabling 88.8% glucose-level classification accuracy (at most 70% on misaligned readings).
- Developing statistical quality-control methods that use replicate and control spots to flag faulty readings and defective sensor arrays for a multiplexed cardiac biomarker assay.

Research Intern, Cross Labs, Kyoto, Japan, Jun 2023–Sep 2023

- Developed an LLM-based pipeline to scrape written recipes online and convert them to robot motor commands.
- Delivered R&D feasibility reports on communication interfaces to industry clients.

WORKSHOP PAPERS

- **O. Wang**, M. Srivastava, “How Should a Home Robot Update Its Memories When Human Routines Change?,” CoRL 2026 Workshop on Memory for Robot Foundation Models (RoboMem), accepted (non-archival). Companion versions also accepted at the CoRL 2026 workshops on Modeling Uncertainty in Robotic World Models and on Continually Self-Improving Robots (non-archival).
- **O. Wang**, P. Quan, K. Yang, M. Srivastava, “[Spectral Predictability as a Fast Reliability Indicator for Time Series Forecasting Model Selection](#),” AAAI 2026 Workshop on AI for Time Series (AI4TS), oral presentation.

JOURNAL PUBLICATIONS

- **O. Wang**, G. Cheng, L. Caspar, A. Yokota, M. Khosravy, O. Witkowski, “[Robots Reading Recipes: Large Language Models as Translators Between Humans and Machines](#),” Artificial Life and Robotics, 30(3), 2025. Presented at the Artificial Life and Robotics Conference, 2024.
- A. Goncharov, Z. Gorocs, R. Pradhan, B. Ko, A. Ajmal, A. Rodriguez, D. Baum, M. Veszpremi, X. Yang, M. Pindrys, T. Zheng, **O. Wang**, J. C. Ramella-Roman, M. J. McShane, A. Ozcan, “[An Insertable Glucose Sensor Using a Compact and Cost-Effective Phosphorescence Lifetime Imager and Machine Learning](#),” ACS Nano, 18(34), 2024.
- **O. Wang**, C. Dovrolis, J. Lee, “[LSOP: Layer-Scaled One-shot Pruning](#),” Journal of Student Research, 11(1), 2022.

TALKS & PRESENTATIONS

- Oral presentation, AAAI 2026 Workshop on AI for Time Series (AI4TS), Singapore, Jan 2026
- Artificial Life and Robotics Conference (ALR), 2024
- UCLA-UCR Research Symposium, 2022 (3rd place)

PROJECT EXPERIENCE

Machine Learning Lead, UCLA IEEE Digital Audio Visualizer, Sep 2024–Jun 2025

- Led a team building a real-time audio visualizer.
- Developed and evaluated a 12-class instrument classifier in Python (70% accuracy).
- Deployed the classifier on a Xilinx FPGA.

Team Member, UCLA IEEE Micromouse, Sep 2022–Jun 2023

- Built an autonomous maze-solving robot with a custom PCB and IR sensors.
- Implemented the flood-fill solver and embedded firmware.

LEADERSHIP & COMMUNITY SERVICE

Volunteer Teaching Assistant, UCLA COSMOS, Jun 2026–Aug 2026

- Taught high school students computer vision, speech processing, signal processing, and AI.

Managing Editor, Undergraduate Science Journal at UCLA, Dec 2022–Jun 2026

- Progressed from reviewer to assistant editor and managing editor; led 25 reviewers handling more than 20 submissions per quarter.
- Redesigned reviewer training around actionable feedback, studying strong papers and successful revisions alongside rejected submissions.

Events Director / Advisor, ACM AI at UCLA, Jan 2023–Present

- Organized technical talks, research fairs, and outreach workshops; some events drew more than 300 attendees.

Mentor, IEEE Student Branch, Sep 2023–Present

- Tutored circuits, embedded systems, and ML; helped organize hackathons and school outreach. Built an Arduino keyboard to teach binary encoding.

Clarinetist, UCLA Solid Gold Sound Marching Band, Sep 2022–Jun 2026

SKILLS

- Selected coursework: Neural Networks and Deep Learning, Bayesian Estimation, Digital Signal Processing, Speech Processing, Information Theory, Control Systems
- Software: Python, PyTorch, TensorFlow, Hugging Face, CUDA, C/C++, MATLAB, SystemVerilog, Linux, Git, Docker, Weights & Biases, vLLM, Ollama, OpenAI and Anthropic APIs
- Hardware: Unitree Go2, NVIDIA Jetson, STM32, Raspberry Pi, Arduino, Xilinx FPGA, Eagle CAD