Jonathan Ouyang

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EDUCATION

University of California, Los Angeles (UCLA) Los Angeles, CA
B.S. in Computer Science Expected Grad: Jun 2027
Relevant Coursework: AI in Robotics (Graduate Level), Linear Algebra, Discrete Structures, Data Structures

ACCOMPLISHMENTS

Grand Prize Winner, 2024 Google Gemini API Developer Competition | Demo Video Nov 2024

- Awarded Grand Prize of a custom electric DeLorean valued at over $300K USD as the top project among 4,500+ finalists drawn from 45,500+ developers across 119 countries, earning recognition from Google executives
- Engineered an autonomous computer agent that executes complex tasks by integrating LLM and VLM-based reasoning with real-time visual feedback for closed-loop control of applications and web environments

RESEARCH EXPERIENCE

Stanford University, Intelligent and Interactive Autonomous Systems Group Jan 2025 – Present
Visiting Researcher (advised by Prof. Dorsa Sadigh, Stanford & Google DeepMind)

- Collaborating with Toyota Research Institute (TRI) to develop shared autonomy algorithms using zone of proximal development (ZPD), and supporting validation through CARLA Python simulation with user studies
- Built a two-phase NMPC expert agent for parallel parking in CARLA, achieving 96% success by blending expert and user control, refined through iterative user study feedback and trajectory analysis using NumPy/Pandas

UCLA, Robot Intelligence Lab Sep 2024 – Present
Undergraduate Researcher (advised by Prof. Yuchen Cui)

- Adapted the Action Chunking Transformer (ACT) to a custom ALOHA setup on lab hardware, achieving 90% success on bimanual manipulation by reengineering core PyTorch code for hardware compatibility and precision control
- Fused Meta Aria glasses gaze data with LLMs for real-time intent prediction by building gaze streaming and VLM infrastructure, boosting task speed by 250%, reducing teleoperation, and enhancing robotic control in shared tasks
- Led project in collaboration with OpenAI to apply generative AI to athletic training for automated feedback

San Jose State University (SJSU), AI/DL FPGA/DSP Lab
Visiting Researcher (advised by Prof. Chang Choo) Jun 2023 – Feb 2025

- Led a team of 3 researchers to develop and deploy CMU OpenPose and YOLOv7 pose estimation pipelines combined with CNN and MLP models using TensorFlow for swimmer action recognition and automated technique feedback
- Enhanced AI model accuracy and performance by 30% on swimmers through the development of a preprocessing algorithm that aligns swimmers perpendicular to camera frame, as presented at a conference in New Mexico
- Developed Python scripts to preprocess over 13 hours of underwater swimming footage from SJSU's D1 swim team, producing a cleaned and labeled dataset facilitating rapid training of deep learning models for swim stroke classification

Graduate Research Advisor Jun 2023 – Dec 2024

- Advised M.S. graduate thesis on Generative Adversarial Networks for pose estimation-based action recognition
- Collaborated with the graduate student in troubleshooting technical challenges encountered during model development, training, and evaluation, ensuring the successful execution of the thesis project

Laboratory Intern Feb 2023 – Jun 2023

- Co-authored master's thesis comparing NVIDIA GeForce GPU, Jetson Nano, and AMD Kria, performance on over 20 deep learning models, finding that NVIDIA GPUs achieved 5% higher accuracy on average compared to AMD FPGAs
- Developed and implemented standardized testing procedures and scripts to ensure consistent and reproducible benchmarking results across various hardware architectures and deep learning frameworks
- Implemented data augmentation techniques to enhance the diversity and robustness of the training dataset for pose recognition models, contributing to improved model generalization and performance

PUBLICATIONS

- T. Tay, X. Yan*, **J. Ouyang***, W. Jiang, D. Wu, J. Cao, Y. Cui, "Gaze Assisted Manipulation for Modular Autonomy (GAMMA)," Robotics: Science and Systems (RSS), 2025
- **J. Ouyang**, D. Trinh and C. C. Choo, "Optimization of Swim Pose Estimation and Recognition with Data Augmentation," 2024 IEEE Southwest Symposium on Image Analysis and Interpretation (SSIAI), Santa Fe, NM, USA, 2024, pp. 101-104.
- D. Trinh, **J. Ouyang** and C. C. Choo, "Design and Analysis of an FPGA-based CNN for Exercise Recognition," 2023 TRON Symposium (TRONSHOW), Tokyo, Japan, 2023, pp. 1-8.

WORK EXPERIENCE

Amazon, Studios Team Jun 2025 – Sep 2025
Incoming Software Engineer Intern
- Built and deployed a Java catalog compiler that automated ingest for 7M+ titles/day, replacing manual validation and cutting catalog ingestion errors by 90% for Amazon Studios Export team
- Automated schema validation and metadata transformation across the Prime Video catalog using AWS S3 + Athena, streamlining workflows and eliminating repetitive manual QA
- Authored the integration design and aligned requirements with partner teams at Apple/Google/Samsung and internal stakeholders to unblock production rollout

UCLA Daily Bruin Oct 2024 – Present
Software Engineer
- Optimized backend infrastructure of the UCLA Daily Bruin newspaper's main website using ReactJS, reducing server load and improving website response time during peak traffic, facilitating support for 60,000+ concurrent users
- Conceived, pitched, and built 'Olivier' in a single quarter, a RAG chatbot with a React frontend and Redis + Pinecone + OpenAI-powered backend—now under internal testing and stress-tested by tens of Daily Bruin employees

Sighthound, Inc. Jun 2024 – Oct 2024
Computer Vision Intern
- Built a Python tool automating object detection/classification with Google PaliGemma & OWL, speeding up data labeling efficiency by 50% and reducing manual effort from annotation team
- Resolved critical cross-platform compatibility bugs (Python, shell scripts, Docker) enabling seamless MacOS and Windows functionality, improving software reliability for annotation and computer vision development teams
- Designed and implemented an image augmentation pipeline, resulting in a 6x increase in dataset size (500% expansion) and directly contributing to a measurable 5% increase in accuracy of company neural network models

PROJECTS

Project Montgomery (CalHacks 2024) Oct 2024
- Created a full-stack website using Next.js and Chakra UI on the frontend, connected to a Gemini model in the backend using FastAPI in order to generate math and physics animations through natural language prompting automatically

Berry Tongue Chrome Extension (Cerebral Beach Hacks 2024) Oct 2024
- Developed an AI chrome extension to teach users different languages using any source material of choice, using Python on backend and Javascript and HTML/CSS for frontend, connected with Flask

eBay 2024 University ML Competition Aug 2024 – Nov 2024
- Fine-tuned Microsoft's Phi-3 LLM using novel techniques such as Buffered Self Training and Cumulative Self Training, resulting in a 10% increase in the model's precision and recall score on eBay's competition dataset
- Performed model quantization to account for limited resources such as GPU memory and cache

ADDITIONAL

Technical Skills: Python, Java, JavaScript, C++, Swift, HTML/CSS, React, Vue, Data Structures & Algorithms, Machine Learning, Computer Vision, Data Analysis, Git, Linux, Docker, OOP, Pandas, Numpy, PyTorch, Tensorflow, Keras, Selenium