

Tyler Yu

CONTACT INFORMATION

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RESEARCH INTERESTS

Robotic Perception, Optical Flow, Vision Transformers

EDUCATION

Stanford University Stanford, CA
M.S., Computer Science

University of California, Irvine (UCI) Irvine, CA
B.S., Computer Science, 2021-2025 — GPA: 4.0

RESEARCH EXPERIENCE

Won Lab — Computer Vision and Heat Transfer Irvine, CA
Advisors: Professor Yoonjin Won and Youngjoon Suh Jan. 2025 - Oct. 2025

- Designed an **unsupervised optical flow** architecture based on GMFlow for domain-specific fine-tuning on **two-phase boiling** to improve motion estimation of bubble dynamics for heat flux approximation.
- Re-implemented techniques from Computer Vision publications including unsupervised loss functions, bilinear interpolation image warping, and optical flow models.

PROFESSIONAL EXPERIENCE

Amazon Web Services (AWS) - Ground Station Denver, CO
Software Engineer - Aerospace Edge Solutions Nov. 2025 - Present

- Developing custom computer networking protocols—based on Forward-Error Correction, UDP, and Reed-Solomon algorithm—in **Rust** for high-throughput data transfer with **low-earth orbit satellites** through **AWS Ground Station**, Amazon’s global network of satellite antennas.

NASA Jet Propulsion Laboratory (JPL) Pasadena, CA
Machine Learning Intern Jun. 2025 - Sep. 2025

- Released an **open-source MCP server** for the NASA Planetary Data System (PDS) enabling agentic data discovery for the whole Planetary Research community.
- Explored several approaches including **Agentic Graph-RAG** (built on AWS Bedrock Knowledge Bases, Bedrock Agents, AWS Neptune) and **FastMCP**.
- Received **internship extension** achieving projected 2027 R&D goals **two years ahead of schedule**

Pacific Life Insurance Co. Newport Beach, CA
Software Engineer Intern Aug. 2022 - Mar. 2024

- Reduced costs by **\$250K** annually, replacing previous SaaS subscription by developing an **OCR** pipeline with **AWS** Textract, S3, API Gateway, DocumentDB, Lambda, and Terraform to automate form processing.
- Prototyped a real-time task-locking system using WebSockets and React, enabling multi-user coordination for **400+** Operations employees; presented to senior leadership (**CIO, SVP, VP**), securing **\$100K** in funding.

PUBLICATIONS	Thomas Y. Yeh, Karena Tran*, Ge Gao*, Tyler Yu* , Wai On Fong, and Tzu-Yi Chen. 2025. Bridging Novice Programmers and LLMs with Interactivity. In Proceedings of the 56th ACM Technical Symposium on Computer Science Education V. 1 (SIGCSETS 2025). Association for Computing Machinery, New York, NY, USA, 1295–1301. https://doi.org/10.1145/3641554.3701867
PROJECTS	<p>Medium Blog - ML Models from Scratch Apr. 2025 - Present</p> <ul style="list-style-type: none"> • Technical blog where I re-implement Machine Learning papers from "scratch" using only PyTorch primitives (CNNs, Vision Transformer, FlowNet). <p>Transformer Ensemble for Chest X-ray (CXR) Diagnosis Sep. 2023 - Dec. 2023</p> <ul style="list-style-type: none"> • Conducted a research study fine-tuning a ViT-SWIN Transformer ensemble on the Stanford CheXpert dataset and synthetic CXR images generated with DCGANs.
ACTIVITIES AND SOCIETIES	<p>AWS Student Ambassador Jul. 2024 - Jun. 2025</p> <ul style="list-style-type: none"> • Technical Consultant/Speaker for UCI ODIT; partnered with AWS and UCI CS organizations to present workshops promoting AWS services, certifications, and UCI's AWS Credits Portal. <p>ICSSC Projects Committee Nov. 2023 - Mar. 2025</p> <ul style="list-style-type: none"> • Project Lead for a 50+ student developer organization building university apps (course planners, grade distribution tools, dining menu trackers) and serving 5K–15K+ weekly active users. Led AWS migration and created JWT Lambda authorizer for API security. <p>Hack at UCI Apr. 2023 - Mar. 2024</p> <ul style="list-style-type: none"> • Tech/Marketing Lead; full-stack development and marketing for our 500+ attendee hackathons.
TECHNICAL SKILLS	<ul style="list-style-type: none"> • Languages: Python, Javascript, C++, Rust • Frameworks: Next.js, React, Amazon Web Services (AWS), Model Context Protocol (MCP) • Machine Learning: PyTorch, HPC SLURM clusters, Pandas, NumPy, Matplotlib • Certifications: AWS Certified Developer Associate
HONORS AND AWARDS	UCI: graduated Summa Cum Laude, ICS Honors, Phi Beta Kappa, 2025