Evan Chou

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EDUCATION

University of California San Diego **Expected Grad: June 2027**
B.S. Electrical Engineering (Machine Learning & Controls) *La Jolla, CA*

- Coursework: Probability and Statistics, Control Theory, Circuit Systems, Analog/Digital Design

WORK EXPERIENCE

NASA Jet Propulsion Laboratory | *Machine Learning Research Intern* **June 2025 – Present**

- Explored **computer vision** and **image segmentation transformers** for geological **feature identification** on Venus, using **Mask2Former, SegFormer,** and **UNet** with **ResNet 34,** yielding metrics ranging around **60-80%** for mean IOU, precision, recall, and f1 scores.
- Optimized **ensemble methods** to combine outputs through Sequential Least Squares Programming, improving benchmarks by **~10%**.
- Utilized **hyperparameter tuning** for different loss functions and K-Fold **cross validation** methods, improving accuracies by **20%.**

NASA Jet Propulsion Laboratory | *AI/ML Engineer Intern* **February 2025 – June 2025**

- Prototyped **AI agent systems** for **adaptive anomaly detection** in Deep Space Network antenna subsystems and transmitter telemetry.
- Delivered a data extraction package for large transmitter datasets, parsing data entries and accelerating DSN maintenance operations by **~40%.**
- Experimented with **deep learning** (**LSTM, GAN, Time Series Transformer**) for multivariate detection, yielding accuracies of **50-70%**.
- Integrated **multimodal** signal data processing modules into Deep Space Network (DSN) operations workflows and production systems.

IEEE Student Branch at UCSD | *RoboCup AI Engineer* **October 2025 – Present**

- Developing intelligent soccer-playing robots using **multi-agent reinforcement learning** in **simulative environments** for complex AI systems.
- Formulating RL loops and reward systems for multiple robots and communication-based cooperation between agents.
- Integrating AI systems with **embedded control**, including sensor fusion, motor control, and decision-making for **autonomous robotic agents**.

Triton AI | *Robotics Perception Engineer* **November 2025 – Present**

- Training **perception** systems for **autonomous vehicles** and navigation using **LiDAR** and embedded hardware systems for **object localization**.
- Built **ROS 2** middleware for real-time LiDAR 3D point cloud clustering, cutting processing time by **40%** and supporting **1k+** points per scan.
- Integrating LiDAR and camera localization methods through **sensor fusion** techniques, improving autonomous path planning and execution.
- Exploring the integration of **large vision foundation models** for object detection, contributing to **embodied AI** research on campus.

PUBLICATIONS

Chou, E., Locke, L., & Soldan, H. (2025). **Automating the Deep Space Network Data Systems – A Case Study in Adaptive Anomaly Detection through Agentic AI**. *arXiv preprint arXiv:2508.21111*. NASA Jet Propulsion Laboratory.

Chou, E., Hernandez, L., Hasnain, Z., Smrekar, S., et al. (2025) **Automated Mapping of Wrinkle Ridge Faults on Venus using Machine Learning**. Abstract *P23G-2731* presented at the *American Geophysical Union (AGU) 2025 Meeting*, NASA Jet Propulsion Laboratory.

PROJECT

Multi-Agent Reinforcement Learning for Coordinated Bipedal Robotics **June 2025 – Present**

- Simulating and training multiple autonomous bipedal robots with NVIDIA Isaac Sim/Lab, Robot Operating System, and foundation models.
- Coordinating **large-scale reinforcement learning** and multi-agent extensions to enable adaptive behaviors in simulative environments.
- Exploring **Sim2Real** implementations and **OpenUSD** practices, contributing to open-sourced robotic perception and embodied AI research.

Autonomous Line-Following Robot Car **October 2025 – December 2025**

- Programmed an ESP32 **microcontroller** with Arduino embedded systems frameworks for fully autonomous control with **3 ms** response latency.
- Implemented manual **PID tuning** features, reducing oscillations by **40%** and improving line centering accuracy to within **2 mm**.
- Built a **photoresistor** array to generate analog readings at **100 Hz**, with **signal filtering** and **thresholding** achieving **98%** reliable line detection.

SKILLS / INTERESTS

- **Programming Languages**: Python, Java, C/C++, JavaScript, HTML/CSS, SQL, TypeScript
- **Frameworks/Tools**: PyTorch, Tensorflow, Keras, ROS 2, Linux, Scikit-Learn, NVIDIA Isaac Sim, Isaac Lab, CUDA, Azure, AWS, HPC
- **Robotics**: Object Detection, Localization, Sensor Fusion, PID Tuning, Microcontrollers, Simulations, Embedded Programming
- **AI/ML**: Computer Vision, Language Models, Deep Learning, Transformers, Reinforcement Learning, Natural Language Processing