JUSTIN LUO

jluo2@caltech.edu — Linkedin — **justin-luo.com** — (858) 793-1618 — US Citizen

Highly motivated Computer Science major at Caltech with a strong foundation in mathematics and engineering. Actively seeking opportunities to contribute to technology development with real-world applications.

EDUCATION

California Institute of Technology (Caltech), Pasadena, CA — September 2023 — Present
Major in Computer Science w/ Minor in Robotics — GPA 4.04 out of 4.0

SKILLS

- **Platforms:** Python, C++, C, Java, Rust, React, OCaml, CUDA, GLSL, OpenGL, Matlab, Git, PyTorch, TensorFlow, MuJoCo, Blender, ROS, Kubernetes, Docker, Linux & Windows Sysadmin
- **Concepts:** Large Language Models, Software Design, Algorithms, Computer Systems, Robotics, Reinforcement Learning, Computer Vision, Graphics, Parallel Computing, Real Time Simulation

AWARDS & ACCOLADES

- Putnam Top 300
- IMC Prosperity 12th Place
- USA Computing Olympiad Gold, Cyberpatriot Cybersecurity National Finalist
- USA Physics Olympiad Semifinalist
- Eagle Scout

RESEARCH AND PUBLICATIONS

Research Internship w/ UCSD Su Lab — San Diego, CA
Research Intern — *Summer 2025*

- Engineered pipelines for grasp-aware mesh decomposition for **Reinforcement Learning (RL)**, mitigating the computational bottleneck imposed by simulation speed.
- Contributed to **Maniskill**, a comprehensive RL manipulation training library developed by the Su Lab.
- Achieved up to **100% speedup** in training time with grasp-optimized agents.

Undergraduate Research w/ Caltech Perona Lab — Pasadena, CA
Undergraduate Researcher — *Summer 2024*

- Investigated the novel use of **Reinforcement Learning** (RL) to generate synthetic datasets for tracking on animals.
- Generated a dataset of **2000+ synthetic videos**, and significantly improved in-domain performance for CoTracker3.
- Workshop paper presented at **CV4Animals @ CVPR 2025**

Research Project w/ Dr. Makoto Miyakoshi @ UCSD — San Diego, CA
Research Assistant — *September 2021 — April 2023*

- Researched the reliability, durability, and performance of **ICA**, an advanced algorithm used for **EEG signal processing**.
- Published into **Frontiers in Computational Neuroscience**: https://doi.org/10.3389/frsip.2023.1064138.

TEACHING EXPERIENCE

Teaching Assistant — California Institute of Technology

ME/CS/EE 129 - Experimental Robotics — *Spring 2025*
Guiding small groups in creating an automated exploration robot, integrating sensors and implementing interrupt-driven and multi-threaded architectures in the graduate level course.

CS 12 - Introduction to Prototyping — *Winter 2025*
Assisted 50+ students in designing and creating an open-ended project, providing a foundational experience in prototyping.

ME 8 - Introduction to Robotics — *Fall 2024*
Led 40+ students in designing a fully autonomous camera & arm system, requiring teaching proficiency in Python and CAD. Responsible for guiding several teams in achieving success in the project-based course.