

ERICH LIANG
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EDUCATION

Princeton

Ph.D. in Computer Science

Advisor: Prof. Jia Deng

Princeton, NJ

August 2023 - Present

Expected Graduation: May 2028

California Institute of Technology

B.S., Computer Science and Mathematics

Double Major; GPA 4.1

Pasadena, CA

September 2017 - March 2021

(graduated early)

HONORS AND AWARDS

First Year Fellowship in Natural Sciences and Engineering

BAIR Research Ignition Award, UC Berkeley

NSF Graduate Fellowship Winner

Doris S. Perpall SURF Speaking Competition Finalist (Top 6)

Manit M. Limlamai SURF Fellowship (\$3000 awarded)

Caltech Meeting of the Minds Best Research Poster Presentation Award

TreeHacks: Juntos, winner of Best Deep Learning Hack, MLH Finalist

Hacktech: GunShield, winner of Best IoT Hack, Best Hardware Hack, Best ML Hack

LA Hacks: Crowdchain, winner of "Make Something People Want" Grant (\$6000)

USA Math Olympiad Qualifier; USA Junior Math Olympiad Qualifier

USACO Computer Programming Online Competition, Platinum Level

August 2023

August 2021

March 2021

November 2020

Summer 2020

May 2019

February 2019

March 2018

March 2018

2013-2015

2015-2017

SELECT PUBLICATIONS AND PRESENTATIONS

InFlux++: Real and Synthetic Data for Estimating Dynamic Camera

Intrinsics

Erich Liang, Caleb Kha-Uong, Chinmaya Saran*, Sreemanti Dey*,*

David Weizhong Liu, Harry Ouyang, Benjamin Zhou, Jia Deng

Submitted for review

March 2026

ProcFunc: A Framework for Compositional Procedural Data

Generation

Alexander Raistrick, Karhan Kayan, Jack Nugent, David Yan, Lingjie

Mei, Meenal Parakh, Hongyu Wen, Dylan Li, Yiming Zuo, Erich Liang,

Jia Deng

Submitted for review

March 2026

Handling Hidden Holes in View-Based 3D Scene Generation

Erich Liang, Sreemanti Dey*, Jia Deng*

Submitted for review

March 2026

R6D-MU: A Benchmark for Relative 6D Pose Estimation of Multiple Unknown Objects

Beining Han, Siyang Wu, Lingjie Mei, Jack A Defay, Derek Geng, Yiming

Zuo, Erich Liang, Alexander Raistrick, Lahav Lipson, Jia Deng

Submitted for review

March 2026

SciPredict: Can LLMs Predict the Outcomes of Scientific Experiments in Natural Sciences?

Udari Madhushani Sehwaq, Elaine Lau, ..., Erich Liang, ..., Bing Liu

ICLR 2026 Workshop

March 2026

InFlux: A Benchmark for Self-Calibration of Dynamic Intrinsic of Video Cameras

Erich Liang, Roma Bhattacharjee, Sreemanti Dey*, Rafael Moschopoulos, Caitlin Wang, Michel Liao, Grace Tan, Andrew Wang, Karhan Kayan, Stamatis Alexandropoulos, Jia Deng*

NeurIPS DB 2025
November 2025

Princeton365: A Diverse Dataset with Accurate Camera Pose

Karhan Kayan, Stamatis Alexandropoulos, Rishabh Jain, Yiming Zuo, Erich Liang, Jia Deng

ICCV 2025
October 2025

LayeredFlow: A Real-World Benchmark for Non-Lambertian Multi-Layer Optical Flow

Hongyu Wen, Erich Liang, Jia Deng

ECCV 2024
September 2024

Radar Fields: Frequency-Space Neural Scene Representations for FMCW Radar

David Borts, Erich Liang, Jipeng Sun, Tim Broedermann, David Brueggemann, Christos Sakaridis, Luc Van Gool, Andrea Ramazzina, Edoardo Palladin, Stefanie Walz, Mario Bijelic, Felix Heide

SIGGAPH 2024
July 2024

HR-NeuS: Recovering High-Frequency Surface Geometry via Neural Implicit Surfaces

Erich Liang, Kenan Deng, Xi Zhang, Chun-Kai Wang

Arxiv Preprint
February 2023

Pie and AI: Juntos

Invited talk at DeepLearning.ai and Nova77 Stem Workshop
Alex Cui, Erich Liang* (equal contribution)*

Online due to COVID
May 2021

NuiVend - Next Generation Vending Machine

Robert Gruen, Erich Liang* (equal contribution)*

CSCI 2016
December 2016

RESEARCH EXPERIENCE

Princeton Vision and Learning Lab

Ph.D. Student

Advisor: Prof. Jia Deng

Working on a variety of 3D reconstruction problems in the areas of MVS and SLAM, predicting camera intrinsics, and occlusion reasoning for generative 3D models. Accurate 3D geometry reconstruction from 2D images is challenging, and learning strong 3D geometry priors from data is crucial for achieving success. Working on using concepts such as optical flow, epipolar geometry, bundle adjustment, and realistic camera models to improve accuracy of robustness of 3D algorithms.

Princeton, NJ
August 2023 – Present

Amazon Imaging Sciences

Applied Scientist Intern

Advisor: Thomas Kahn, Frederic Devernay

We worked on improving the robustness of NeRF renders in the presence of heavy defocus blur, which is common in most casual video capture settings. Taking inspiration from optics, we computed the silhouette of light rays that can affect a given pixel and incorporated relevant parameters such as entrance pupil and focus distance into the ZipNeRF volumetric rendering formulation. By jointly optimizing for NeRF and defocus blur parameters, our model infers proper defocus blur parameters and can synthetically re-render the scene under different focus settings.

New York, NY
May 2023 – August 2023

Video and Image Processing Lab

Research Assistant

Berkeley, CA
January 2023 – May 2023

Advisor: Prof. Avideh Zakhor

We worked on problems in the general area of vision-based robotic navigation and path planning, with a focus on using reinforcement learning to create a robust autonomous path planning algorithm to deploy on real life drones. Many existing path planning algorithms are 2D in nature, meaning that they struggle to find paths that involve sharp changes in elevation. Other directions we explored include task-oriented path planning, memory-enabled path planning agents, and creating a specialized pipeline for flying a drone autonomously for high quality NeRF capture and 3D reconstruction.

Amazon A9 MARS Group

Applied Scientist Intern

Palo Alto, CA
May 2022 – November 2022

Advisor: Kenan Deng

We worked on NeRF-based approaches for reconstructing 3D surface geometry with high frequency features from 2D images and camera poses. Our method achieves much more fine-detailed surface reconstruction compared to previous SOTA methods, and utilizes a novel surface regularization technique and a coarse-to-fine training schedule to maintain large-scale geometric accuracy of the reconstructed 3D surface.

Berkeley Ng Research Group

Research Assistant

Berkeley, CA
July 2021 - January 2023

Advisor: Prof. Ren Ng

We worked on Oz Vision, a prototype of next-generation color display that utilizes adaptive optics and retinal tracking to precisely deliver laser stimulation to individual cone photoreceptors in a person's retina. Focused on designing a novel eye-tracking algorithm that could produce more accurate tracking with lower latency. Oz Vision could enable humans to see new "impossible colors" that cannot be observed naturally, or enable color-blind people to differentiate between red and green.

Caltech Bouman Research Group

Undergraduate Researcher, Manit M. Limlamai SURF Fellow

Pasadena, CA
September 2019 – March 2021

Advisor: Prof. Katherine L. Bouman

We investigated improving blackhole video reconstruction accuracy by generalizing model priors. Methods used include particle filtering and other Markov Chain Monte Carlo (MCMC) algorithms. Also worked on model-fitting and importance analysis directly on raw EHT data to avoid algorithmic image reconstruction biases.

Caltech Rigorous Systems Research Group

Undergraduate Researcher

Pasadena, CA
September 2018 - June 2020

Advisor: Prof. Adam Wierman

We analyzed Pasadena Unified School District's open enrollment (OE) system and suggested changes based on ML simulation results and mean field theory analysis. Our suggested OE changes improved number of students receiving top choice school by 10%. We then analyzed the socio-economic impacts of the changes via a diversity metric and autogenerated enrollment visualizations.

Caltech Computational Vision Lab

Undergraduate Researcher

Pasadena, CA
March 2019 - June 2019

Advisor: Prof. Pietro Perona

We worked on creating a bandwidth-conserving, hierarchical map search algorithm. We tested reinforcement learning policies on synthetically generated maps of colored MNIST digits.

Microsoft Research Advanced Development Group

High School Research Intern

Redmond, WA

June 2016 - August 2016

Advisor: Robert Gruen

We added natural voice commands, purchase history, and multi-item vending functionality to a 1992 PolyVend machine to create NuiVend. Tasks included reverse engineering vending machine circuitry for shelf control and experimenting with various speech-to-text and text-to-intent methods.

INDUSTRY EXPERIENCE

Scale AI

Student Researcher

San Francisco, CA

September 2025 - Present

Mentor: Madhu Schwag

Developing experiments to analyze the capability of LLMs to serve as assistants for research scientists working in empirical fields like physics, chemistry and biology. Planning to submit to ICML 2026.

Gatsby Labs

Web Fullstack Intern

Austin, TX

March 2021 – June 2021

Mentor: Zach Rivkin

Utilized technologies such as React, Typescript, MongoDB, and more to enhance and create features that help make event planning a more efficient and manageable task. Worked on researching and designing a notification system for the Gatsby website.

HVF Labs

ML and Data Science Intern

San Francisco, CA

August 2019 - October 2019

Mentor: Reginald Long

Worked at Max Levchin's startup incubator on Resolve, a B2B risk management startup. Performed data analytics on past loan data and created ML models to decide how much to loan to customers.

Facebook

AR/VR Fullstack Intern

Menlo Park, CA

June 2019 - August 2019

Mentor: Rachel Lee

Pioneered engineering work on bringing the "Guide" user role to Facebook Horizon. Created back-end logic, API layer, and VR UI button updates for Guide interactions with other users (blocking, muting). Discussed with legal teams and design teams about Guide moderation privacy concerns.

Bloomberg

Machine Learning Intern

New York, NY

June 2018 - September 2018

Mentor: Peter Petrov and Yichen Yang

Developed Skynet, a ML model generation pipeline that preemptively detects anomalous trades. Improved Skynet's accuracy by 35% and cut training time on 15,000+ points to 30 seconds.

Versium Analytics Inc.

High School Data Science Intern

Redmond, WA

September 2016 - September 2017

Mentor: Kevin Marcus

Built AmISafe.com, a website that generated heat maps of criminal activity across the US. Worked on DataFinder, a service that provided clients with lists of personal and business data. Created PHP pipeline for list generation, sped generation time from several days to 2-3 hours.

TEACHING EXPERIENCE

Princeton Senior Thesis / Independent Work Mentor

September 2024 – May 2026

Mentor

Worked with various undergraduate students on camera intrinsics and transparent object segmentation research projects. I host weekly research meetings to provide feedback and insight on these projects, which will contribute to the students' thesis works.

ProjectX Summer Program

May 2026 – August 2026

Mentor

Worked with Princeton first / second year undergraduate students on projects involving camera intrinsics, synthetic data generation, and robotics. Gave informal lectures and assignments to help establish fundamentals in machine learning and 3D computer vision.

OURSIP Summer Program

June 2024 – August 2026

Mentor

Worked with Princeton first / second year undergraduate students on projects involving SLAM and camera intrinsics. Gave informal lectures and assignments to help establish fundamentals in machine learning and 3D computer vision.

ReMatch+ Summer Program

June 2024 – August 2026

Mentor

Worked with Princeton first / second year undergraduate students on projects involving SLAM and camera intrinsics. Gave informal lectures and assignments to help establish fundamentals in machine learning and 3D computer vision.

Princeton COS526 Neural Rendering

January 2025 – May 2025

Teaching Assistant

Served as a TA for Princeton's COS526 course (Neural Rendering), which covered a variety of topics related to NeRF, 3D Gaussian Splatting, GANs, and more. Responsibilities included creating and grading student assignments, giving precepts, and hosting office hours.

Princeton COS324 Introduction to Machine Learning

September 2024 – December 2025

Head Teaching Assistant

Served as the head TA for Princeton's COS324 course (Introduction to Machine Learning), which has 140+ students enrolled. Responsibilities include coordinating a team of 24+ teaching assistants for grading, running weekly staff meetings, holding office hours, and answering questions from student forums.

Summer STEM Institute (SSI)

December 2020 – August 2021

Head Instructor, Curriculum Creator

One of the head instructors of the programming bootcamp, a 6-week intensive course designed to help students become familiar with Python, machine learning, and tools used in practice. Hand-picked and processed 200 starter datasets designed for students to quickly get started on analyzing clean data. Designed five research tutorials containing guided case studies utilizing methods such as linear fits, decision trees, KNN, inferential statistics, and more.

Turing Prep

August 2020

Head Instructor

Designed curriculum plan for an 18-week online USACO course for high school students. Created course content on EdStem to deliver high-quality, online learning during COVID.

Northwest Chinese School, Eastside Education

September 2013 - June 2017

Math Instructor

Taught Math Olympiad to a classroom of 35 elementary school students every Saturday. Managed all aspects of the class, including designing course content, lecturing, and grading homework.

MENTORING

- **Harry Ouyang**, Undergraduate Student at Princeton, 2025-2026. We won ReMatch+ funding (summer 2026).
- **Chinmaya Saran**, Undergraduate Student at Princeton, 2025-2026. We won ProjectX funding (summer 2026).
- **Caleb Kha-Uong**, Undergraduate Student at Princeton, 2025-2026.
- **David Liu**, Undergraduate Student at Princeton, 2025-2026.
- **Benjamin Zhou**, Undergraduate Student at Princeton (IW), 2025-2026.
- **William Oh**, Undergraduate Student at Princeton, fall 2025.
- **Andrew Wang**, Undergraduate Student at Princeton, spring 2025.
- **Roma Bhattacharjee**, Undergraduate Student at Princeton (ST), 2024-2025. She won the Outstanding Computer Science Senior Thesis Prize.
- **Caitlin Wang**, Undergraduate Student at Princeton (IW), 2024-2025.
- **Rafael Moschopoulos**, Undergraduate Student at Princeton, 2024-2025.
- **Grace Tan**, Undergraduate Student at Princeton, 2024-2025. We won ReMatch+ funding (summer 2025).
- **Arnav Sharma**, High School Student, 2024-2025.
- **Michel Liao**, Undergraduate Student at Princeton (IW), 2023-2025. We won ReMatch+ funding (summer 2024), OURSIP funding (summer 2025).
- **William Pan**, Undergraduate Student at Princeton (IW), 2023-2024. We won OURSIP funding (summer 2024).
- **Emily Zhou**, Undergraduate Student at Princeton, 2023-2024.
- **Addison Wu**, Undergraduate Student at Princeton, 2023-2024.
- **Sumanth Maddirala**, Undergraduate Student at Princeton, 2023-2024.
- **Mingxuan Wu**, Visiting Undergraduate Student at UC Berkeley, 2022-2023.

RELEVANT COURSEWORK

Courses at UC Berkeley:

- AI: CS280 Computer Vision, CS284 Deep Reinforcement Learning
- Graphics: CS284 Foundations of Computer Graphics, CS294-164 Computational Color, CS294-26 Intro to Computer Vision and Computational Photography

Courses at Caltech:

- Select Graduate level courses: Vision: From Computational Theory to Neuronal Mechanisms, Learning Systems, Machine Learning & Data Mining, Advanced Topics in Machine Learning, Mathematical Optimization, Probability
- Computer Science courses: Algorithms, Operating Systems, Decidability and Tractability, Complexity Theory, Cryptography
- Mathematics courses: Linear Algebra, Abstract Algebra, Classical Analysis, Topology, Differential Equations, Discrete Math, Calculus
- EE and Physics courses: Signal-Processing Systems and Transforms, Quantum Mechanics and Statistical Physics, Classical Mechanics and Electromagnetism

ACTIVITIES AND LEADERSHIP

Caltech Data Science Club*September 2019 – 2021**Board Chairman*

Hosted various speakers and ML workshops for students aspiring to become data scientists. Worked with sponsors such as Citadel to host on-campus data science competitions (COVID-19 initiative).

Caltech-Harvey Mudd Math Competition*September 2019 – 2021**Organizer, Volunteer*

Recruited and coordinated volunteers for proctoring and grading tests. Worked on ensuring quality of competition problems. Oversaw and responded to unexpected delays on the day of competition.

Eastside Science Circle*September 2015 - June 2017**Founder and President*

Created Seattle's first science circle to inspire younger students to explore STEM. Led volunteers to host science summer camps, emphasizing intuitive and kid-friendly expository STEM curriculum.

Seattle Infinity Math Circle*September 2014 - June 2017**President, Student Leadership Group Member*

Led volunteers to teach and inspire Seattle mathletes of all backgrounds. Hosted monthly lectures, mock competitions, and notable guest speakers including Prof. Po-Shen Loh and Prof. Zuming Feng.

SKILLS

Java, Python, C, C#, MatLab, TensorFlow, Keras, Pandas, scikit-learn, React, Typescript, Javascript
Docker/Singularity, PHP, Bash, HTML/CSS, MySQL, Unity, GraphQL, MongoDB

Fluent in Mandarin Chinese