Tim Xie

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Education

University of California, Berkeley May 2026
B.A. Computer Science & B.A. Applied Mathematics w/ Statistics GPA: 4.00/4.00

Coursework: Numerical Linear Algebra†, Convex Optimization, Artificial Intelligence, Computer Security, Algorithms, Computer Architecture, Data Structures, Discrete Mathematics & Probability Theory, Principles & Techniques of Data Science. [†graduate level]

Teaching (Course Staff): CS 61A (Structure and Interpretation of Computer Programs), Data 8 (Foundations of Data Science).

Experience

CubeTime Jan 2022 – Present
Founder & Lead Software Engineer

- Built speedcubing utility app with 150,000+ users, 10,000,000+ sessions with 4.8/5.0 rating from 700+ reviews across 142 countries.
- Developed and productionized full-stack web app combining 8 regional speedcubing non-profits, serving 1,200+ local competitors.
- Optimized statistical analysis in Swift by 100x via C++ extensions, reduced iOS app memory usage by 50x with AOT-compilation.

Youther Dec 2022 – Feb 2023
Software Engineer

- Integrated new frontend with existing backend, ensuring consistent user experience throughout Android, iOS and web platforms.
- Developed core iOS app using SwiftUI app lifecycle with repository design pattern and assisted development in NextJS backend API with Prisma & MongoDB; refined user experience with efficient optimistic UI & extensive caching, with 3x faster load times.
- Performed extensive A/B testing in local Sydney regions, optimising interfaces, improving Day 7 Retention by 20%.

Berkeley Artificial Intelligence Research (BAIR) May 2024 – Present
Undergraduate Researcher

- Multimodal machine learning research, working with document understanding, agents, knowledge graphs, task vectors and activation steering; advised by Roei Herzig & Prof. Trevor Darrell.
- Built multi-agent parallel agentic framework with multimodal tool use and manager-worker structure with particle filter process.
- Integrated layout detection models with in-house document extraction infrastructure and agentic framework to query multi-hop document information.

Machine Learning @ Berkeley Sep 2023 – Present
Education & Research Officer

- Developed content for "Deep Learning for Computer Vision" course used by 100+; led introductory machine learning course.
- Spearheaded creation of machine learning content for IBM Developer Learning Path, on kNN and sentiment analysis.

Projects

ClimateHack.AI 2023

- Created machine learning pipeline for ClimateHack.AI 2023 with custom ResNet based model to predict solar panel generation with 20x improvement in memory efficiency over default dataset and achieves 2200+ inferences/s.

CubeCV

- Engineered and fine-tuned machine learning models to segment a Rubik's Cube and detect the state through a video stream, producing a solution to solve scrambled state, using OpenCV (C++), DINO, LangSAM and classical CV methods.

R-DPI

- Built low level mouse customisation tool on Linux with QT GUI and low level asynchronous event handler for USB-HID protocol.

Busy Bean Café

- Developed full-stack point of sale web application with stocking management system and pre-ordering functionality; implemented statistical analysis of sales and finance trends, report generation and automated stock alerts, resulting in 20% increase in sales.
- Backend written with Python Flask; hosted on Microsoft Azure Cloud with MS SQL; utilized GitHub Actions CI/CD.

Awards & Honors

- 2nd Place Overall at ClimateHack.AI 2023 Worldwide Finals, 1st Place in Qualifying Round.
- 7x CAIE Cambridge Outstanding Learner Award (2x Top in World, 5x Top in New Zealand).
- Top 20 Nationally in New Zealand Informatics Olympiad (NZOI) & New Zealand Chemistry Olympiad (NZChO).

Skills

Languages & Frameworks: C, C++ [SFML, OpenCV], Swift [SwiftUI, UIKit], Python [Flask, NumPy, Pandas, OpenCV, sklearn, PyTorch], Java, Go, Lua, JS/TS, Svelte [SvelteKit], Prisma, Kysely, SQL [PostgreSQL, MS SQL, MySQL], Bash, Lisp [Scheme]

Tools: Git, Github Actions CI/CD, Sketch, Figma, Illustrator, Linux, Vite, Azure, Docker