

Charlton Shih

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Education

University of California, Los Angeles (UCLA)

Bachelor of Science in Computer Science

Los Angeles, CA

Expected June 2027

Relevant Coursework: Software Construction, Data Structures & Algorithms, Networks, Object-Oriented Programming, Operating Systems, Computer Graphics, Digital Logic Design, Linear Algebra, Discrete Math, Differential Equations

Teaching: CS35L (Software Construction), MATH 32B (Multivariable Calculus)

Experience

Software Engineer Intern

AfterQuery

October 2025 – Present

San Francisco, CA (remote)

- Engineered a full-stack RL training environment for a GRC platform, designing and implementing scalable APIs, frontend interfaces, and unified **Docker/nginx** deployment using **TypeScript**, **FastAPI**, and **SQLAlchemy/SQLite**
- Integrated an **MCP** server to abstract complex workflows, reducing debugging time by **25%** and accelerating model training
- Authored and executed detailed QA plans for a full-stack application, validating state consistencies and user flow
- Engineered a Python **CLI/pip** package for LLM-driven synthetic data generation using schema introspection and FK-safe seeding; added async batching for **10–20+** model calls per row, improving generation throughput by approximately **3–4x**

Software Engineer Intern

Bruinwalk (UCLA Student Media)

October 2025 – Present

Los Angeles, CA

- Refactored backend and **Docker**, **React**, and **Django** workflows for **50,000+** monthly users, cutting loading times by **20%**
- Automated scripts to populate new enrollment information utilizing **Redis** for caching and cutting API calls by **33%**
- Scaled **PostgreSQL** backend and parsers on **10 DigitalOcean VMs**, supporting over **1M+ views** monthly site visits

Software Engineer

ClubhouseUCLA

March 2025 – Present

Los Angeles, CA

- Launched and implemented a full-stack web app on **Vercel**, serving **200+** users with access to UCLA club information
- Constructed and optimized **SQL** queries and API integrations to sort over **100+** reviews across **1,400+** club entries, streamlining data aggregation, improving accuracy, and workflow efficiency for development and deployment
- Worked with a 14-person cross-functional team to translate Hi-Fis into functional profile and home pages using TailwindCSS

Machine Learning Researcher

Pellegrini Lab & Roychowdhury Lab

September 2025 – Present

Los Angeles, CA

- Built genomic tokenization and embedding pipelines using **Python**, **PyTorch**, and **Hugging Face Transformers** to analyze plasma RRBS DNA, processing over **17 million+** reads to classify samples using **SeqIO**, **NumPy**, **Pandas**, and **XGBoost**
- Applied PCA, UMAP, and LLM-based genomic embeddings to visualize methylation variance relationships across samples

Lead Software Engineer

AdOptimal

December 2024 – August 2025

Los Angeles, CA

- Designed a full-stack web app using **React.js**, **Node.js**, and **MongoDB**, providing a centralized platform for businesses
- Streamlined server and client architecture, enhancing data **retrieval processes** by **30%**; developed with **REST APIs** to enable efficient and maintainable internal communication with secured user authentication utilizing **OAuth 2.0** and **JWT**
- Cut API calling up to **50%** by optimizing indexed partial matching, debouncing, and automated web scraping pipelines

Projects

PillPal | *Typescript, React.js, MongoDB, Express, Arduino, Websocket, Git/Github*

January 2025 – June 2025

- Directed a **16-person cross-disciplinary team** to build a full-stack IoT automated pill dispenser that tracks usage and sends real-time notifications using integrated **Google Calendar**, **OAuth 2.0**, and **Google Cloud IAM**

UCLA Design | *JavaScript, React.js, Node.js, MongoDB, Express, Git/Github*

January 2025 – April 2025

- Architected a **MERN full-stack web platform** with RESTful API endpoints with **real-time drag-and-drop interface** in React, integrating state management to streamline layout creation and editing for **100+ interactive** dorm room designs

Technical Skills

Languages & OS: Python, JavaScript, TypeScript, C++, C, Java, SQL, HTML, CSS, Windows, MacOS, Linux

Frameworks: React, React Native, Next.js, Node.js, Django, FastAPI, Flask, PyTorch, Scikit-learn

Tools: Git, Docker, Kubernetes, PostgreSQL, SQLite, MongoDB, Redis, Selenium, GCP (OAuth 2.0, IAM), Jupyter, OpenCV