Charlton Shih

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Education

University of California, Los Angeles (UCLA) — Los Angeles, CA
Bachelor of Science in Computer Science — *Expected June 2027*

Relevant Coursework: Software Construction, Data Structures & Algorithms, Networks, Object-Oriented Programming, Operating Systems, Computer Graphics, Programming Languages, Linear Algebra, Discrete Math, Machine Learning
Teaching: CS35L (Software Construction), MATH 32B (Multivariable Calculus)

Experience

Software Engineering Intern — October 2025 – Present
AfterQuery — *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**
- Built a Python **MCP server** exposing tool calls for Excel report generation (charts, formulas), reducing manual data entry by **50%+**, and integrated it into a **Harbor** benchmarking pipeline using **LLM** verifiers to score trajectories and outputs
- Authored and executed detailed QA plans for a full-stack application, validating state consistencies and user flow
- Developed a Python **CLI/pip** package for LLM-driven FK-safe data generation with async batching (**10–20+** calls/row)

Software Engineer — October 2025 – Present
Bruinwalk (UCLA Student Media) — *Los Angeles, CA*

- Refactored backend and **Docker**, **React**, and **Django** workflows for **41,000+** users, cutting loading times by **20%**
- Automated scripts to populate new enrollment information utilizing **Redis** for caching and cutting API calls by **100%**
- Scaled **PostgreSQL** backend and parsers on **10 DigitalOcean VMs**, supporting over **1M+ views** monthly site visits

Software Engineer — March 2025 – Present
ClubhouseUCLA — *Los Angeles, CA*

- Launched and implemented a full-stack web app on **Vercel**, serving **600+** monthly users 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 — September 2025 – January 2026
Pellegrini Lab & Roychowdhury Lab — *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 — December 2024 – August 2025
AdOptimal — *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**
- Cut API calling up to **50%** by optimizing indexed partial matching, debouncing, and automated web scraping pipelines

Projects

Imprint | QWER Hacks 2026 Winner | *TypeScript, PostgreSQL, Prisma, Docker, Vercel* — February 2026

- Launched a zero-upload provenance platform using Ed25519 signatures and client hashing for tamper-proof digital ownership
- Pioneered perceptual image hashing via 2D DCT to detect modified copies, with indexed lookups enabling verification

Terminal-Bench | *Typescript, FastAPI, AWS, Harbor, Docker, Redis, Supabase, Vercel* — January 2026

- Built a scalable AI benchmarking platform with AWS(ECS, EC2, IAM), Next.js + FastAPI and Supabase that automated evaluation and analytics, handling **750+** concurrent jobs across **150+** trials with reward scoring, reducing batch times

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, AWS (EC2, ECS, IAM), GCP, Jupyter