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, Digital Logic Design, Linear Algebra, Discrete Math, Differential Equations
Teaching: CS35L (Software Construction), MATH 32B (Multivariable Calculus)

Technical Skills

Languages & OS: Python, JavaScript, TypeScript, C++, C, HTML, CSS, Java, Windows, MacOS, Linux
Frameworks: React, React Native, Next.js, Node.js, PyTorch, Scikit-learn, Flask, Django
Tools: Git, Docker, Kubernetes, PostgreSQL, MongoDB, Redis, Selenium, GCP (OAuth 2.0, IAM), Jupyter, OpenCV

Experience

Software Engineer Intern | *Bruinwalk (UCLA Student Media)*   October 2025 – Present
- Refactored backend and **Docker**, **React**, and **Django** workflows for **50,000+** monthly users, cutting loading times by **20%**
- Automated scripts to parse and populate new enrollment and professor information using **Redis**, cutting API calls by **33%**
- Scaled **PostgreSQL** backend and parsers on **10 DigitalOcean VMs**, supporting **800+** sections and **10,000+** students

Software Engineer | *Clubhouse*   March 2025 – Present
- 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

AI & ML Researcher | *Pellegrini Lab & Roychowdhury Lab*   September 2025 – Present
- 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
- 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

Machine Learning Researcher | *BruinML Lab*   December 2024 – October 2025
- Collaborated with a **3-person** team to formulate a multi-click cascading bandit framework for recommendation domains
- Implemented **Python** algorithms alongside empirical mean and confidence bounds to establish **sublinear regret** guarantees
- Executed **100,000+ simulations**, demonstrating how termination probabilities and feedback reshape model performance

AI Researcher | *Arisaka Elegant Mind Lab*   July 2024 – July 2025
- Coordinated with a **10-person** team to develop autonomous robots with 3D visualization and 8 DOF, programming in **C++** and **Python** to engineer a servomotor system using **ROS2+ESP32**, reducing synchronization delays by about **30%**
- Trained and tuned ACT policies using **PyTorch** and **Mujoco**, stabilizing learning across **5000+** epochs of human demos
- Boosted ultrasound tracking accuracy by **60%** through **OpenCV** image and object refinement for more reliable navigation

Projects

CrowdPlan | *Typescript, Next.js, PostgreSQL, Docker, Prisma, Git/Github*   September 2025 – Present
- Architected a full-stack event coordination platform containerized with **Docker** for a reproducible and scalable development

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