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, C, C++, Java, TypeScript, JavaScript, HTML, CSS, Swift, Shell, SQL, Window, MacOS, Linux
Frameworks: React, React Native, Next.js, Node.js, PyTorch, Scikit-learn, Flask, Numpy, Pandas
Tools: Git/GitHub, Docker, PostgreSQL, OpenCV, Supabase, MongoDB, Selenium WebDriver, Google Cloud Platform (OAuth 2.0, IAM), Postman, Prisma, Jupyter, ROS2

Experience

Software Engineer | *Clubhouse* — March 2025 – Present

- Launched and implemented a full-stack web application using **React**, **Next.js**, **Supabase**, **TailwindCSS**, and deployed on **Vercel**, enabling **200+ users** to access information about UCLA student clubs and promote a transparent community
- Built and optimized database schemas and API integrations to sort over **100+** reviews across **1,400+** club entries
- Worked alongside a 14-person cross-functional team to translate Hi-Fis into functional UI features using TailwindCSS

LLM Epigenetics 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 cfDNA, 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

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 speed and accuracy of **data request** and **retrieval processes** by **30%**; developed with **REST APIs** to enable efficient and maintainable internal communication between services
- Constructed and optimized indexed partial matching and leveraged debouncing to cut API calling by up to **50%**
- Automated **data ingestion pipelines** via web scraping, and secured user authentication utilizing **OAuth 2.0** and **JWT**

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 modified **Python algorithms** (e.g., interval-elimination for reward asymmetry) and performed empirical mean estimation and confidence-bound analysis, establishing **sublinear regret** guarantees with theoretical proofs
- Executed **100,000+ simulations**, demonstrating how termination probabilities and feedback reshape model performance

AI/ML Engineer Researcher | *Arisaka Elegant Mind Lab* — July 2024 – July 2025

- Coordinated with a **10-person team** to develop autonomous surgical robots with 3D visualization and 8 DOF
- Trained and tuned ACT policies using **PyTorch** and **Mujoco**, stabilizing learning across **5000+** epochs of human demos
- Programmed in **C++** and **Python**, writing data-transfer scripts to coordinate robotic arms and engineered a low-latency servomotor system with **ROS2 + ESP32**, reducing synchronization delays by around **30%** and improving motion precision
- Boosted ultrasound tracking accuracy by **60%** through **OpenCV** image and object refinement for more reliable navigation

Projects

CrowdPlan | *Typescript, Next.js, PostgreSQL, Redis, Docker, Prisma, Git/Github* — September 2025 – Present

- Architected a full-stack event coordination platform using **Next.js**, **React**, **Node.js**, **Express**, **Prisma**, and **PostgreSQL**, containerized with **Docker** and Docker Compose for an isolated, reproducible, scalable development and deployment
- Implemented core event management endpoints with a **RESTful** backend and relational database managed by **Prisma**

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**