Charlton Shih

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Education

University of California, Los Angeles (UCLA) — Expected June 2027
B.S. in Computer Science — 3.2/4.0

Relevant Coursework: DSA, Networks, OOP, OS, Software Construction, Computer Graphics, Linear Algebra
Teaching: CS35L (Software Construction), MATH 32B (Multivariable Calculus)

Experience

Clubhouse | *Software Engineer* — March 2025 – Present

- Developed a full-stack **React, Next.js, Supabase, Tailwind CSS, and Vercel**, serving **200+** users since launch
- Built and optimized database schemas and API integrations to handle over **1,000+** club entries across 40+ categories
- Implemented UI components using TailwindCSS, collaborating closely with a 14-person cross-functional team to translate Hi-Fis into functional features

Pellegrini Lab & Roychowdhury Lab | *LLM Epigenetics Researcher* — September 2025 – Present

- Engineered sequence tokenization and embedding pipelines with **Python and PyTorch** to handle bisulfate conversions and improve downstream classification accuracy
- Evaluated LLM-derived genomic embeddings by comparing evolutionary distances with traditional sequence metrics

BruinML Lab | *Machine Learning Researcher* — December 2024 – September 2025

- Collaborated with a 3-person team to formulate a multi-click cascading bandit framework with asymmetric information, extending applicability to search and recommendation domains
- Implemented modified **Python algorithms** (e.g., interval-elimination for reward asymmetry) and performed statistical analysis on simulation data, establishing **sublinear regret guarantees** with theoretical proofs
- Executed **100,000+ round simulations** demonstrating how slot-termination probabilities and feedback asymmetries reshape algorithmic performance

AdOptimal | *Software Engineer* — December 2024 – August 2025

- Architected a full-stack web application with **React.js, Node.js, and Express with MongoDB** to connect businesses with student organizations to streamline advertisements.
- Developed server and client architecture, enhancing speed and accuracy of **data request and retrieval processes by 30%**; developed with **REST APIs** to simplify internal communication
- Engineered and optimized **indexed partial matching**, leveraging debouncing to cut API calling by up to **50%**
- Automated **data ingestion pipelines** via web scraping, and secured user authentication utilizing **OAuth 2.0 with JWT**

Arisaka Elegant Mind Lab | *Autonomous Robotics Researcher* — July 2024 – July 2025

- Collaborated with a **10-person team** to develop **autonomous surgical robots** with 3D visualization and 8 DOF
- Programmed in **C++ and Python**, writing data-transfer scripts to coordinate robotic arms and engineered a low-latency, high-precision servomotor system with ROS2 + ESP32, reducing synchronization delays by around **30%**
- Boosted ultrasound tracking accuracy by **60%** through **OpenCV** image 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 using **Next.js, React, Node.js, Express, Prisma, and PostgreSQL**, containerized with Docker and Docker Compose for reproducible, scalable development and deployment
- Integrated API routing, database migrations, authentication, and environment configuration, maintaining scalability and reproducibility across local and cloud environments

PillPal | *Typescript, React.js, MongoDB, Express, Arduino, Websocket* — January 2025 – June 2025

- Collaborated with 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 API, OAuth 2.0, and Google Cloud IAM**

Technical Skills

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