Alvin Huang

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🌐 Portfolio | in LinkedIn | ⓖ GitHub

Education

Northeastern University, Seattle   Expected Dec 2026
M.S. in Computer Science   GPA: 4.0
Coursework: Data Structures, Algorithms, Object-Oriented Design, Database System, Distributed System, Operating Systems, Machine Learning

Shanghai University, Shanghai   Sep 2011 – Jul 2015
B.A. in Economics
Coursework: Probability & Statistics, Linear Algebra, Calculus

Technical Skills

Languages & Tools:	Python, JavaScript/TypeScript, Java, C/C++, Git, TDD, Selenium, JUnit
Frontend:	React, Next.js, HTML/CSS, Tailwind CSS, REST API, Redux/React Query, Socket.IO
Backend:	Node.js, Express.js, Flask, Prisma, Kafka, JWT
DevOps & Cloud:	Linux, AWS (EC2, S3, Lambda, ECS, API Gateway, Load Balancer, Auto Scaling), Docker, Terraform, Kubernetes, CI/CD (GitHub Actions, Jenkins)
Data & Storage:	PostgreSQL, MySQL, MongoDB, Redis, Elasticsearch, PyTorch, Dask, Pandas

Projects

E-Commerce Microservices Distributed System
Stack: Express.js / Next.js / Kafka / MongoDB / Docker / AWS ECS

- Designed decoupled microservices with Express.js & Kafka, implementing service-to-service messaging and RBAC (JWT + IAM), reducing integration effort by 40%.
- Developed a resilient, event-driven system, processing 2,000+ async events/sec with 99.9% uptime with auto-scaling and load balancing, supporting high-volume e-commerce transactions.
- Implemented role-based access control (RBAC) with IAM and JWT, improving security posture for customer data.
- Automated containerized deployments via GitHub Actions CI/CD onto AWS ECS, increasing deployment frequency 4x and reducing roll-backs by 25%.

Scene-Based Music Recommender (Qualcomm Edge AI Hackathon)
Stack: Python / PyTorch / Flask / Next.js / React

- Integrated frontend and Spotify API using Flask + React to build a full-stack webpage for music recommendations.
- Developed a hybrid recommendation algorithm combining CNN-derived image tags with cosine similarity-based playlist retrieval, increasing recommendation relevance by 20%.
- Engineered the offline AI engine with PyTorch MobileNetV2, optimized inference to <200ms, and scaled to 50+ concurrent users with Flask async APIs.

Work Experience

Backend Software Engineer   Shanghai, CN
Omron Automation Company Ltd.   Jun 2020 – May 2024

- Developed microservices for an order management system processing 100K+ daily transactions with 99.9% availability, supporting global operations.
- Optimized MongoDB queries by adding compound indexes and rewriting slow aggregations, reducing p95 API latency from 200ms to 70ms and tripling throughput.
- Designed distributed transaction handling using the Saga pattern with Kafka, reducing data discrepancies by 15%.
- Managed cloud infrastructure as code (IaC) using Terraform and serverless ETL pipelines, reducing environment setup time by 40%.

Data Engineer   Shanghai, CN
STS Certified Ltd.   Aug 2015 – May 2019

- Engineered scalable data pipelines (Python, Dask) to ingest and validate 500GB+ structured quality audit data for ISO compliance reporting, reducing manual data processing time by 60%.
- Designed and optimized PostgreSQL schemas and indexing strategies, improving complex query performance for report generation by 30%.

Activities & Certificates

Teaching Assistant, CS5001: Python Programming, Northeastern University	Sep 2025 - Present
Selected Participant, CodePath TIP 102-Algorithms & Coding Bootcamp	Fall 2025
AWS Certified Solutions Architect - Associate	Dec 2024-Present
Awarded multiple academic scholarships for Academic Excellence, Shanghai University	2011-2015