Elena Zhou

+1 (319) 804-9339 | zhycoach1@gmail.com | github.com/huiyuecs|US Permanent Resident

Passionate about building scalable cloud-native systems and full-stack applications that enhance real-world efficiency.

TECHNICAL SKILLS

Languages: Java, Python, C++, C#, TypeScript, SQL, Bash
Backend: FastAPI, Node.js, Spring Boot, RESTful APIs, Microservices, gRPC
Cloud & DevOps: AWS (EC2, S3, Lambda, RDS, CloudWatch), Docker, Kubernetes, CI/CD, GitHub Actions, Jenkins
Frontend: React, Angular, Next.js, Redux, HTML/CSS, Bootstrap
Testing & Tools: Git, Jira, PyCharm, IntelliJ, Agile/Scrum, SDLC, Code Review, Unit Testing, Monitoring & Debugging

EDUCATION

Georgia Institute of Technology   **GPA 4.0**

Master of Science in Computer Science   Jan. 2025 – May. 2027

EXPERIENCE

Software Development Engineer Intern   Jun. 2025 – Aug. 2025

UT Southwestern Medical Center

– Modernized a genomic analytics platform supporting 50+ researchers, improving data workflows and system performance for large-scale sequencing analysis.
– Designed and built distributed backend services in **Python/FastAPI** to process 5TB+ of genomic data (20M+ records), increasing data-ingestion throughput by **30%** compared to the prior manual pipeline.
– Deployed scalable microservices on **AWS EC2/S3/RDS** and automated workflows via **GitHub Actions CI/CD**.
– Implemented **CloudWatch-based monitoring** for query latency and optimized SQL queries to improve reliability and reduce downtime.
– Collaborated cross-functionally in Agile sprints; contributed to design reviews, documentation, and on-call troubleshooting.

Software Development Engineer Intern   Sep. 2024 – Dec. 2024

Suncool Network Technology

– Contributed to backend development for an e-government **platform** serving 2M+ active users.
– Developed **Spring Boot REST APIs** for document tracking and digital ID validation, cutting response latency by **40%**.
– Built real-time internal dashboards using **React and data-visualization APIs**, rendering **PostgreSQL** data with millisecond latency and consistently meeting SLA requirements. Implemented asynchronous event processing via a message queue and added caching layers to reduce load spikes and maintain 99.8% system uptime.
– Participated in Agile/Scrum ceremonies, performing QA verification and issue resolution aligned with production SLAs.

PROJECTS

PayRouteSim — Distributed Payment Routing Engine | *Java, Spring Boot, FastAPI, Kafka, K8s*

– Built a distributed simulation platform modeled after VisaNet flows, processing **120K+ events/min** with deterministic latency.
– Orchestrated microservices using **Docker + Kubernetes** with horizontal auto-scaling and pod health checks for 99.9% reliability.
– Designed **Kafka pipelines** for fraud checks and settlement with end-to-end latency under **45ms**.
– Integrated **Prometheus/Grafana** dashboards for SRE-style monitoring of latency percentiles and throughput.

TaskPilot AI — GenAI Developer Productivity Platform Github

– Developed a **GenAI-powered** assistant integrating **OpenAI GPT API** with **Express + React + Redux** to automate issue triage and code summarization. Integrated **GitHub APIs** for real-time pull request analysis and task assignment, improving team productivity by 35%.
– Containerized the system using **Docker** and deployed via **CI/CD** pipelines, cutting deployment time by 50%. Adopted clean code principles, implemented Jest unit tests, and followed SDLC best practices in an Agile workflow.

PUBLICATIONS

Published in *Frontiers in Genetics*, *Protein & Cell* and *Marine Biotechnology* on scalable data analysis and computational genomics.