

Samuel Zih

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Education

- **M.Eng. Computer Science**, Virginia Tech — Data Analytics & AI **Expected 2027**
- **B.Tech. Computer Science & Engineering**, Lovely Professional University · GPA 3.5 **Apr 2023**

Work Experience

Software Engineer **Instaacademics Technologies** **Aug 2023 – Apr 2025**
E-commerce platform optimisation & distributed systems India · Remote

- Architected **Kubernetes-based distributed systems** in C++ and Python handling **15,000+ RPM** for **50K+ daily active users**
- Engineered an **Elasticsearch search pipeline** with custom relevance scoring, reducing P95 latency by **60%** (1,200 ms → 500 ms) and boosting conversion **18%**
- Optimized **PostgreSQL with Redis caching**, decreasing read latency by **40%** (300 ms → 180 ms) and reducing DB load by **65%**
- Built a **Kafka CDC pipeline** with exactly-once semantics, achieving **99.9% data consistency** and eliminating **200+ monthly incidents**

Software Engineer Intern **XEARTH** **May 2022 – Aug 2022**
Payment processing infrastructure & gateway integrations Côte d'Ivoire · Remote

- Architected payment microservices in Java and Go scaling to **100K+ daily active users** at **99.99% uptime** with **40% latency reduction**
- Led integration of **5+ payment gateways** with circuit-breaker patterns, achieving **PCI-DSS Level 1** compliance and reducing failures **87.5%** (3.2% → 0.4%)
- Built a fault-tolerant reconciliation engine using Go concurrency and Kafka, **auto-resolving 95%** of discrepancies and saving **20+ hours weekly**

Software Engineer Intern **Zenith Bank (Ghana) Limited** **May 2021 – Sep 2021**
Customer portal & banking API development Ghana · Remote

- Developed a **React customer portal** with real-time transaction monitoring serving **50K+ monthly active users**
- Designed **RESTful and gRPC microservices** with Spring Boot, reducing partner integration time by **25%** and enabling **3 new integrations**
- Implemented **OAuth 2.0 authentication and RBAC**, improving customer engagement by **15%** through enhanced security and UX

Projects

Zoomaa | Intercity Bus Booking & Live-Tracking (Passenger App) **Feb 2026 – Present**

- Engineered **concurrency-safe atomic seat booking** (document-level guarded writes + unique indexes + expiring holds), guaranteeing a seat is sold once under retries and races with idempotent 409 handling
- Built a **split-payment flow** over mobile money and card via a licensed gateway (funds never custodied), plus **live bus tracking** over authorized WebSockets
- Modeled routes on **OSRM** with along-corridor stop suggestions and **offline-first QR boarding**, with DST-correct cross-border trip timing denormalized per stop
- **Stack:** Go, Fiber, MongoDB, Flutter, Riverpod, WebSocket, Mapbox, Firebase, Azure

Zoomaa Partner | Multi-Tenant Operator Back-Office (B2B App) **Feb 2026 – Present**

- Architected a **multi-tenant** back-office and platform-admin console over one **Go (Fiber) + MongoDB** backend, with **operator-scoped JWT + RBAC** isolating every tenant's data and actions
- Built **offline-first QR manifests** and Firebase push for operators managing boarding across routes

- Set up **CI/CD auto-deployment to Azure Container Apps** on every merge; maintained technical documentation and operational procedures across three apps and a shared backend
- **Stack:** Go, Fiber, MongoDB, Flutter, Riverpod, WebSocket, Firebase, Azure

CrisisEcho | Real-Time AI Crisis Intelligence Platform

Jan 2026 – Mar 2026

- Architected a five-layer AI pipeline (Kafka ingestion → semantic preprocessing → LLM clustering → crisis verification → push alert) running on a **60-second cycle**, covering **51 crisis types** across **1,700+ event variations**
- Ingested multi-source data streams — Twitter, Reddit, Bluesky, USGS, GDACS, NASA FIRMS — converting noise into verified, GPS-precise crisis intelligence within **60 seconds**
- Built **one-tap SOS** and a real-time responder dispatch system; currently onboarding pilot partners across emergency management and humanitarian organizations
- **Stack:** Go, Python, Kafka, Flutter, PostgreSQL, Docker, GCP

AuraGoFood | AI-Powered Semantic Food Discovery Platform

Aug 2025 – Dec 2025

- Engineered **semantic search** using Sentence-BERT and FAISS vector indexing, delivering **92% relevance accuracy** across **100K+ dishes**
- Implemented **RAG-based conversational AI** with cosine similarity, achieving **85% user satisfaction** and **91% Top-1 retrieval accuracy**
- Optimized geospatial queries with Geohash and Redis, enabling **sub-50ms proximity searches**
- **Stack:** Go, Flutter, MongoDB, Google Cloud Run, GitHub CI/CD

Technical Skills

- **Languages:** C++, Python, Java, Go, JavaScript, TypeScript
- **Distributed Systems & Cloud:** AWS, GCP, Azure, Kubernetes, Docker, Microservices, CI/CD, Linux/Unix
- **Data & Storage:** PostgreSQL, MongoDB, Redis, Elasticsearch, Kafka, FAISS, Vector Databases
- **Backend & APIs:** Spring Boot, NestJS, ExpressJS, Fiber, REST, gRPC, GraphQL, WebSocket, OAuth 2.0, JWT
- **AI / ML:** Hugging Face Transformers, Sentence-BERT, RAG, NLP, Semantic Search, Vector Embeddings, spaCy
- **Frontend (Supporting):** React, Next.js, Flutter, WebRTC