SAFIULLAH RATTAR

SOFTWARE ENGINEER | AI INFRASTRUCTURE & FULL-STACK
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SUMMARY

Software engineer focused on AI infrastructure and full-stack systems. Built production software across education, fintech, healthcare, and logistics, including RAG pipelines, LLM orchestration, real-time applications, and cloud-deployed React/Node/PostgreSQL systems

EXPERIENCE

Contract Software Engineer 2022 – Present
Sunnycrest Software Solutions **Remote**

- Automated news gathering, market scanning, and statistical data analysis with OpenClaw, feeding processed signals into a real-time trading system (Python, WebSocket, PostgreSQL, AWS ECS) with circuit breakers, risk checks, position tracking, and deployment monitoring
- Built a university LMS (React, Node.js, PostgreSQL, Docker) for course content delivery, student enrollment, assignment submissions, automated grading, and progress tracking dashboards
- Built a medical practice management platform (React, Node.js, PostgreSQL) embedded as an iframe widget, enabling doctors to manage patient records, appointments, and daily clinical workflows inside an existing healthcare SaaS product
- Developed a React Native mobile app (TypeScript, QuickBooks API, PostgreSQL) with automated client background checks, QuickBooks financial data integration, and lead scoring for contractor risk evaluation
- Modernized warehouse worker device interfaces by rebuilding legacy terminal systems into Angular and Java/Spring Boot applications with PostgreSQL, real-time WebSocket data sync, and offline-capable mobile interfaces

EDUCATION

Carleton University **B.Eng, Software Engineering** GPA: 9.98 / 12.00

PROJECTS

Parhako

- Built AI-powered exam question processing pipeline (Next.js, Prisma, PostgreSQL, LangChain, AWS ECS) handling 20,000+ practice questions with configurable document chunking, RAG retrieval, vector embeddings, structured output parsing, and automated validation with retry
- Designed multi-provider LLM orchestration layer (Python, Redis, asyncio) managing 20+ API keys across 5 providers with automatic rate limiting, exponential backoff, and failover under concurrent student traffic
- Implemented three-layer validation gates (regex pattern checks, structural integrity verification, secondary LLM cross-validation) to reject malformed generated content before it reached users
- Built real-time mock test system (WebSocket, PostgreSQL, Next.js) with concurrent sessions, live leaderboards, weighted grading, and exam timers
- Architected full-stack infrastructure with Next.js SSR, TypeScript, Prisma, PostgreSQL, AWS ECS services, GitHub Actions CI/CD, S3 for question assets, and SES for transactional email

Vectordb-lite

- Built an HNSW (Hierarchical Navigable Small World) vector database from scratch in Python with NumPy: multi-layer graph construction with configurable efConstruction, greedy layer descent for search, and heuristic neighbor selection
- Implements cosine, euclidean, and dot-product similarity with soft-delete persistence using binary NumPy arrays + JSON metadata, batch indexing for incremental inserts, and a reproducible benchmark suite. Zero external vector DB dependencies

Carleton Course Scheduler **Capstone Project**

- Designed and built a smart course scheduler (Python, FastAPI, React, PostgreSQL, pdfplumber) that parses PDF degree audits, extracts course and requirement data via HTML parsing and regex pattern matching, determines course eligibility against degree rules, and generates conflict-free academic schedules using constraint satisfaction

SKILLS

AI Infrastructure:	LLM Orchestration, RAG Pipelines, HNSW Vector Search, Multi-Provider API Routing, Rate Limiting, Failover, Validation Architecture
Cloud & DevOps:	AWS (ECS, S3, Lambda, SES), Docker, Kubernetes, Terraform, CI/CD, Observability
Languages:	Python, TypeScript, JavaScript, Go, Rust, SQL, Node.js
Data & Storage:	PostgreSQL, MongoDB, Redis, Prisma, NumPy
Frontend:	React, Next.js, Angular, React Native, TypeScript, Tailwind
Other:	I can play chess blindfolded