Aditya Sugandhi

+1 448 500 6857 | Tallahassee, FL | adityasugandhi.dev.ai@gmail.com | GitHub |adityasugandhi.com

SUMMARY

Software Engineer with 5+ years building **high-throughput distributed systems** in **C++, C, and Java**. Production experience writing **efficient systems code**, **asynchronous/concurrent programming** (threads, futures, async/await), and **debugging distributed systems** at scale. Proven track record in **Kubernetes orchestration**, **database query optimization**, and **live site operations** with **99.5% availability**.

WORK EXPERIENCE

BAS Software Developer Nov 2024 – Present
Florida State University Tallahassee, FL

- Engineered **high-performance async network scanning system** in **C++ and Python** with **concurrent futures, thread pools**, and custom memory management; scanned **172+ networks simultaneously**, processing **35K+ devices** with **99.2% accuracy**, reducing manual discovery by **85%**.
- Designed **distributed service architecture** for enterprise building automation platform; built **37 REST API endpoints** with **PostgreSQL** backend, **Redis caching layer**, and **WebSocket streaming** for real-time device state management across **15+ engineering teams**.
- Owned **live site operations**: built **monitoring dashboards** (Grafana/CloudWatch), configured **on-call alerting** and **incident response runbooks**; reduced **mean time to resolution by 60%** through systematic root cause analysis and **SLA compliance tracking**.
- Built **CI/CD deployment pipelines** on GitHub Actions for automated testing, code validation, and multi-environment rollouts (dev/stage/prod); established **code review standards** and **operational documentation** adopted across the team.

Machine Learning Researcher Jan 2023 – Aug 2024
Prof. Olmo Zavala Romero — FSU Tallahassee, FL

- Built **distributed data processing engine** using **C++ and Spark (Scala/PySpark)** on **Kubernetes** clusters; implemented custom **shuffle partitioning**, **indexing strategies**, and **query optimization** achieving **+40% throughput** over **1TB+ datasets** with **99% job success rate**.
- Architected **parallel data pipeline** with windowed aggregations and batch processing; reduced **pipeline runtime by 50%** through **async optimization**, **memory management tuning**, and efficient **data structure selection** for large-scale compute.
- Implemented **vector indexing and embedding pipelines** for semantic search using Transformers; deployed **query engine** processing **1,000+ documents** with **95% accuracy** and **sub-200ms retrieval latency**; monitored via **Grafana/MLflow** with automated drift detection.

Software Analyst Oct 2020 – Jul 2022
Aspire Systems Chennai, India

- Led **monolith-to-microservices migration** on **AWS EKS (Kubernetes)** with **Helm**; designed **event-driven Java/C++ services** processing **500K+ transactions/day** with **99.5% availability**, **20% cost reduction**, and **5x deployment frequency**.
- Wrote **efficient systems code in C++ and Java** for low-latency data processing modules; implemented **asynchronous delivery** with Kafka, dead-letter queues, and **exactly-once semantics** handling **10x traffic spikes**.
- Managed **production SRE/live site operations**: **monitoring** (Prometheus, Grafana, CloudWatch), **incident triage**, **alerting**, **root cause analysis**, and **automated remediation workflows**; reduced **MTTR by 60%** and maintained **SLA compliance**.
- **Debugged distributed system failures** across microservices using **distributed tracing** and structured logging; mentored **5 developers** on **concurrent programming patterns** and **TDD**; achieved **90% test coverage**.

PROJECTS

- **Maximal Clique Discovery in Uncertain Networks (C++)** GitHub — Implemented **graph algorithm engine in C++** for discovering maximal/maximum cliques in probabilistic networks. Built custom **pruning strategies** and **indexing optimizations** reducing runtime on Intel Xeon Silver 4114 CPUs. Designed **data structures** for uncertain edge weights with configurable probability thresholds. Tech: **C++, Makefile, Python (data generation)**.
- **Multi-Modal Data Pipeline (Kafka/Spark/Vector)** GitHub — Built **distributed real-time data ingestion pipeline** using **Kafka** and **Spark Streaming** on **Kubernetes** with **Helm** charts. Implemented **vector indexing** with **columnar storage** for multi-modal query support, processing **10K+ events/sec** with sub-second latency. Tech: **Java, Scala, Kafka, Spark, Kubernetes, Helm, Docker**.
- **Async Network Discovery Engine** GitHub — Developed **high-concurrency async system in C++ and Python** with **thread pools, futures**, and **TCP/IP protocol handling** for enterprise device discovery. Built **query engine** with **full-text search** and **real-time WebSocket** updates. Tech: **C++, Python, asyncio, PostgreSQL, Redis, Linux**.

TECHNICAL SKILLS

- **Languages:** C++, C, Java, C#, Python, Scala, Go, SQL, Bash, JavaScript/TypeScript
- **Systems & Concurrency:** Asynchronous Programming (async/await, futures, threads, tasks), Distributed Systems, gRPC/Protobuf, IPC, Memory Management, Debugging Distributed Systems, Network Protocols (TCP/IP)
- **Database & Indexing:** PostgreSQL, MongoDB, Redis, InfluxDB, Vector Indexing, Full-Text Search, Columnar Storage, Query Optimization, Graph Algorithms, Time-Series Data
- **Cloud & Infrastructure:** Kubernetes (AKS/EKS), Docker, Helm, AWS (EKS, EMR, MSK, S3), Terraform, CI/CD (GitHub Actions, Jenkins)

- **AI/ML Systems:** Apache Spark (PySpark/Scala), NLP/NER Pipelines, Vector Embeddings, MLflow, Transformers, CUDA (familiar)
- **Practices:** SRE/Live Site Operations, Monitoring (Prometheus, Grafana, CloudWatch), Alerting, Incident Response, On-Call, SLA Management, Deployment, Compliance, TDD, Code Review

EDUCATION

Florida State University
M.S. in Computer Science — Tallahassee, FL

- **Relevant Coursework:** Advanced Database Systems, Distributed Systems, Data Communications, Algorithms, Cryptography

SRM Institute of Science & Technology
B.Tech. in Computer Science — Chennai, India

PUBLICATIONS & AWARDS

- Review Classification & False Feedback Detection (IJAST)
- 2nd Place, SRM University Hackathon (2019)
- AWS Solutions Architect Course (Udemy, 2024)