Mukundan Gopalachary

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Education

SRM Institute of Science and Technology, Ramapuram 2023 – 2027
B.Tech in Computer Science and Engineering *CGPA: 9.43 / 10*

Experience

Brakes India Pvt. Ltd Jun 2025 – Jul 2025
Data Analyst Intern

- Built and evaluated time series forecasting models (SARIMA, XGBoost) in Python on 100K+ records to predict regional and category-level sales demand.
- Wrote Python code to clean, transform, and validate raw sales data (missing values, inconsistent categories, date formats) for forecasting workflows; delivered Power BI reports covering 10+ KPIs for planning decisions.

GeekCoders Chennai Aug 2023 – Present
Technical Head

- Conducted 2 workshops on Machine Learning and LLMs for 100+ participants each; led hackathons and mentored teams on software architecture, Git workflows, and deployment practices.

Projects

FinTwin | *Event-Driven Financial Platform with GenAI* | Java, Spring Boot, Spring Cloud, Kafka, Redis, PostgreSQL, Python, Docker

- Architected a microservices backend with Spring Boot and Spring Cloud: a Eureka service discovery server and a Reactive API Gateway handling dynamic routing, load balancing, and edge-level security.
- Built a decoupled asynchronous pipeline on Apache Kafka: a Java ledger service streams transactions to a Python service that calls the Google Gemini API to categorize spending and publishes enriched data back, achieving eventual consistency without blocking client threads.
- Implemented custom JWT authentication with distributed Redis-based token blacklisting in gateway filters to invalidate compromised or logged-out sessions at the edge; used Spring Cache on Redis with targeted `@CacheEvict` for sub-millisecond ledger reads that stay consistent after every write.
- Containerized the backend stack (Java, Python, PostgreSQL, Redis, Kafka, Zookeeper) with Docker Compose and automated builds with a CI/CD pipeline on GitHub Actions.

Sysmon | *Multithreaded Linux System Monitor* | C, C++, POSIX Threads, CMake, Linux `/proc`

- Engineered a multithreaded monitor in C/C++ with a thread-safe double-buffered `SnapshotManager`: a background thread parses `/proc` telemetry and atomically swaps data pointers, giving the render thread 30+ FPS tear-free updates without blocking.
- Designed a plugin ecosystem with a custom IPC protocol, isolated process execution, and JSON output parsing so a faulty plugin cannot destabilize the core; cut boot latency to under 1ms by decoupling plugin initialization.
- Wrote an algorithm mapping socket inodes from `/proc/net/tcp` to owning process IDs by scanning `/proc/[pid]/fd` descriptors system-wide; set up CI/CD with GitHub Actions.

Paraswift | *Parametric Insurance Backend* | FastAPI, Python, Firebase (Firestore)

- Developed REST APIs in FastAPI for policy purchase, pricing, onboarding, and payout workflows, with separated API, logic, and data layers.
- Implemented Google OAuth authentication with role-based access control for riders and admins, and built automated payout triggers driven by weather, AQI, and disruption signals; CI/CD via GitHub Actions.

DevLens | *Local-First Developer Analysis CLI* | Python, SQLite, SQLAlchemy, Alembic

- Architected a modular tool across 60+ source files (13+ command modules, 7 analysis and 7 repository modules) on SQLite/SQLAlchemy with 2 Alembic migrations; wrote 29 unit tests and automated test runs with CI/CD on GitHub Actions.

Technical Skills

Languages: Java, Python, C++, C, SQL
Backend: Spring Boot, Spring Cloud, FastAPI, REST APIs, Microservices, API Gateway, JWT & OAuth Authentication, Event-Driven Architecture
Messaging & Caching: Apache Kafka, Redis
Databases: PostgreSQL, MySQL, SQLite, Firestore
Cloud & DevOps: AWS (EC2, ECR, ALB, IAM), Docker, CI/CD (GitHub Actions), Nginx, Linux
AI/ML: LLM Integration (Gemini API), XGBoost, SARIMA, Scikit-learn, PyTorch, TensorFlow (basic)
Tools: Git, SQLAlchemy, Alembic, CMake
Concepts: Data Structures & Algorithms, Object-Oriented Programming, System Design, Distributed Systems, Concurrency, Multithreading, Software Testing, SDLC

Certifications

NPTEL — Database Management Systems | NPTEL — Machine Learning