

AROMAL S

Software Engineer

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WORK EXPERIENCE

IBM India Software Labs 🔗, *Software Development Engineer* 08/2023 – Present | Kochi, Kerala, India

- Working on back-end development of **IBM watsonx.data™** 🔗, a purpose-built data store leveraging an open data lakehouse architecture to scale AI workloads and unify, curate, and prepare data efficiently for AI models.
- Designed and built a **secure multi-tenant reverse tunnel system in Go** using **mTLS authentication, Yamux stream multiplexing, and Redis-backed tunnel registration**, supporting high-volume concurrent requests over a single encrypted connection and enabling horizontal scaling across relay instances.
- Served as **Developer Security Focal** for IBM watsonx.data, owning **SOC 2, FIPS, and FedRAMP compliance readiness** across 5+ core platform components; partnered with security architects to remediate **SAST, SCA, and container image vulnerabilities** ahead of release gates.
- Contributed to the **Bring Your Own Cloud (BYOC) deployment on Microsoft Azure**, enabling the data plane to run within customer-managed **Azure subscriptions and VNets** while IBM operated the control plane; extended Console APIs to provision and manage instances across the split-plane architecture.
- Built **durable execution workflows using Temporal and Go** for multi-step cloud resource provisioning and teardown, implementing **idempotent activities, configurable retries, timeouts, and granular task-level status tracking** to enable resilient and resumable operations across worker and API failures.
- Led the migration of watsonx.data from a single-tenant to a **multi-tenant database architecture**, reducing infrastructure costs by approximately **98%** while improving **scalability, resource utilization, and operational efficiency**.
- Implemented **Bring Your Own JAR (BYOJ)** support in watsonx.data, enabling customers to use custom database drivers such as **SAP HANA** and dynamically configure connectors across multiple **Presto engines**.
- Collaborated with senior architects and engineers to integrate **Apache Spark (IBM Analytics Engine)** natively into IBM watsonx.data expanding distributed data processing capabilities and enabling advanced analytics workloads.
- Developed **REST APIs and a Go SDK** integrating **Presto, Apache Spark, Db2, Netezza, and Milvus** with IBM watsonx.data extending data processing, analytics, and management capabilities across **on-premises and SaaS deployments**.
- Authored and published comprehensive **Swagger/OpenAPI documentation** for Iwatsonx.data APIs on IBM's official documentation platform, improving API discoverability, standards compliance, and developer integration.
- Performed **root cause analysis and debugging** of critical platform issues, designing optimized solutions for custom **database and engine connectors** to ensure reliable integration with IBM watsonx.data.

Kerala Police, *Software Developer Trainee* 06/2023 – 07/2023 | Trivandrum, Kerala

- Developed and contributed to an internal **Kerala Police CBCID Special Branch web application** integrating **machine learning capabilities** to support intelligence operations and analysis, under the guidance of an **IPS officer**.

Katha - Audio Information App 🔗, *SDE Intern (Full Stack)* 05/2022 – 06/2023 | Kerala, India

- Developed and deployed **responsive web applications using Next.js** and engineered scalable **Ruby on Rails APIs**, enabling seamless frontend-backend integration and efficient data management.
- Integrated a new **AI-powered Text-to-Speech (TTS) engine** for automated news narration, improving audio quality, performance, and overall user engagement.
- Optimized **MySQL databases on AWS RDS** through query tuning and database optimization, reducing query execution time and improving application responsiveness for large datasets and high user traffic.
- Implemented **analytics and data-driven insights** for a high-traffic advertising platform serving an audience of **10M+ users**, leveraging advanced **SQL queries and database optimization** to support scalable data analysis.
- Developed an in-app game for a **FIFA World Cup 2022 prediction contest**, featuring **live match data, real-time scores, and leaderboards/scoreboards** to enhance user engagement.

EDUCATION

B.Tech Computer Science & Engineering, *College of Engineering Chengannur* 🔗 2019 – 2023 | Alappuzha, Kerala
APJ Abdul Kalam Technical University, First Class With Distinction, **CGPA 8.54**

SKILLS

Languages

Golang, JavaScript, Ruby, Python, C, Java

Libraries & Frameworks

React JS, Next JS, Ruby On Rails, Node JS, Flask, FastAPI

Platforms & Tools

Docker, K8s, Linux, AWS, Azure, IBM Cloud, Git, Claude

Databases

MySQL, MongoDB, Redis, PostgreSQL