Rajesh Subramanian

Senior Big Data Engineer | Full-Stack Software Architect

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Profile

- **Lead Technical Architect | ML/AI & Big Data Engineer** Seasoned architect specializing in **high-throughput distributed systems** and **cloud-native infrastructure**. Expert in designing **metadata-driven ETL frameworks** that decouple business logic from compute engines, successfully reducing pipeline onboarding time by **70%**
- **Architectural Strategy:** Proven track record of transitioning complex monolithic systems to **Cloud-Native Microservices** (Python / Java / Spring Boot / Go) with a focus on **ACID compliance**, CDC, and **27% operational efficiency gains**
- **Distributed Data Engineering:** Expert in orchestrating large-scale pipelines using **Hadoop, Spark**, **Docker / Kubernetes (GKE)**, and **Airflow**, optimizing workloads to achieve **40% reductions in compute costs**
- **AI & Emerging Tech:** Hands-on experience for more than 5 years in **MLOps** and **RAG** architectures, including high-dimensional vector search (HNSW) and near-real-time SAR (Sentinel-1) processing 1GB+ high-resolution datasets using **Cloud Optimized GeoTIFFs (COG), Iceberg**
- **Leadership & Full-Stack Mastery:** Deeply proficient in Python and Java ecosystems (in **Spring Boot, FastAPI, Go/Gin)** , building resilient enterprise applications using **SOLID principles** and **12-Factor App** methodologies
- **Communication:** B1+ Level German skills.

Skills

Big Data & Analytics
Apache Spark (**AQE & Tuning**), **Apache Iceberg**, **Parquet**, Hadoop, Kafka, Airflow, *Sedona*, *Dask*, *Lakehouse*

Programming & Backend
Python, Java J2EE, Spring Boot,Microservices Go, Gin, Fast API, Node, Express JS, Nest JS

Front End
React JS, Angular, HTML5, CSS3

AI & Generative AI
Retrieval-Augmented Generation (RAG), **HNSW (Vector Search Indexing)**, Machine Learning, LangChain, Graph Convolution Network, Graph Convolution Machine

Databases & Graph
PostgreSQL, MongoDB, Neo4j, ArangoDB, Oracle, MySQL, Teradata, Database Migration

Cloud & DevOps
Cloud-Native Architecture (AWS, GCP), Docker Containers, Kubernetes (EKS/GKE), **Infrastructure as Code** (Terraform), Circle CI, Jenkins, Maven, **Cloud-Native Monitoring**

APIs & Messaging
Kafka, GCP Pub/Sub, Active MQ, gRPC, REST, Webhooks.

Work Experience

Data & AI Intern   11/2025 – 12/2025 | Stirling, Scotland
Keep Scotland Beautiful
- Participated in the architecture design phase of the AI project, providing input on data scalability and near-real-time processing requirements
- Actively contributed to the Litter Detection Project by collecting and labeling a high-quality dataset of **1000** images for AI model training

Lead Fullstack / Data Engineer   08/2022 – 01/2025 | Chennai, India
BigThinkCode Technologies 🔗
- **Architected a Metadata-Driven ETL Framework:** Developed a pluggable "Configuration-over-Code" system using **PySpark** , reducing new pipeline onboarding time by **70%**
- **Engineered Kubernetes-Native Infrastructure:** Deployed Spark on **GKE**, implementing dynamic dependency loading for distributed archives (ZIP/JAR) to ensure seamless scaling and a **40% reduction in compute costs**
- **Decoupled Business Logic from Engine:** Established a 3-tier architecture (JSON Manifest, Orchestrator, Worker Logic) that increased code reusability and maintained **99.9% pipeline reliability** across global brand datasets
- **Architected** scalable Enterprise level application using **SOLID** Principles and **12 Factor App** using Fast API / React / Postgres / AWS

Full Stack Engineer   03/2021 – 07/2022 | Pondicherry, India
Software - Freelancer 🔗

Technical Manager   03/2012 – 03/2021 | Pondicherry, India
eSales Technologies Pvt Ltd
- **Architected Scalable Cloud-Native Web Applications by** Leveraging **Java / Python ecosystem** to design a microservices-based e-commerce ecosystem, improving system modularity and reducing feature deployment cycles by **40%**
- **Engineered Generic E-commerce Data Warehousing:** Built a modular data warehouse architecture to centralize cross-platform retail data, utilizing **metadata-driven** patterns to support rapid business intelligence and reporting.
- **Modernized Legacy Infrastructure:** Spearheaded the migration of monolithic PLB legacy applications to a **Cloud-Native architecture**, resulting in a **27% gain in operational efficiency** and significantly lower maintenance overhead.
- **Optimized High-Performance APIs:** Redesigned core system interfaces using **FastAPI** and **Gin**, achieving a **30% reduction in latency** and ensuring the platform could scale to meet peak traffic demands.

Associate Consultant   12/2010 – 03/2012 | Chennai, India
Oracle Financial Software Services
  Developed and implemented core banking modules for Tier-1 financial clients, ensuring compliance with regulatory standards.

Programmer Analyst   10/2009 – 12/2010 | Chennai, India
Cognizant Technology Solutions India Pvt Limited

Senior Software Engineer   11/2006 – 09/2009 | Chennai, India

iGate Global Solutions

Led the successful migration of two legacy systems onto a unified platform in terradata, improving data consistency and reporting speed by **27%**

Education

M.Sc Big Data   01/2025 – 09/2026 | Stirling, UK

University of Stirling

M.B.A - International Business   08/2008 – 05/2012 | Pondicherry, India

Loyola College/ Pondicherry University 🔗

Bachelor of Technology - Electrical & Electronics Engineering   08/2002 – 05/2006 | Pondicherry, India

Pondicherry University

Certifications

- AWS Cloud Practitioner 🔗
- Astronomer Certification DAG Authoring for Apache Airflow 🔗
- Azure AI Fundamentals