

Pressnave Kiruparaj

Senior Backend Engineer (Java | Go | Spring Boot | Python | Distributed Systems) | Email: pressnavek@gmail.com | Dubai, UAE | Phone: +971 544809241 | LinkedIn: <https://www.linkedin.com/in/pressnave-kiruparaj-b60606178/>

Professional Summary

Senior Backend Engineer with 7+ years of experience building **high-performance backend systems, enterprise microservices, and AI-integrated systems** including RAG pipelines, LLM evaluation, and semantic retrieval architectures. Strong expertise in **Java, Spring Boot, WebFlux, microservices, distributed messaging, and cloud-native deployments**. Experienced in designing **low-latency APIs, event-driven systems, and scalable data pipelines** using Kafka, RabbitMQ, Redis, and PostgreSQL. Skilled in deploying production-grade systems on **Kubernetes**, implementing **DevOps automation**, and optimizing backend performance. Adept at applying **DDD, Clean Architecture, and resilience patterns** to deliver maintainable, fault-tolerant systems.

Professional Experience

Java Software Engineer | Modsoft Technology, Dubai, UAE | 2025 December – Present

(Banking & Fintech Platform)

Tech Stack: Java 21, Spring Boot, Spring WebFlux (Netty), JPA, R2DBC, CQRS, Apache Kafka, PostgreSQL, Redis, OAuth2/JWT, Docker, Kubernetes, Clean Architecture, DDD

- Part of building a banking platform on **SDK Finance (SDK5)** supporting fiat and crypto operations.
- Designed a scalable microservices architecture with independently deployable services using Spring WebFlux(Netty) with a CQRS pattern for both blocking (JPA) and non-blocking (R2DBC) database operations.
- Implemented end-to-end KYC flows integrating third-party compliance providers.
- Developed fiat banking features: account creation, virtual IBANs, and transaction processing via BCB rails.
- Implemented event-driven architecture using Apache Kafka for async service communication.
- Built secure API integrations with token-based authorization and session validation.
- Ensured reliability with async processing, message-driven workflows, and retry mechanisms.
- Collaborated cross-functional to align technical solutions with regulatory requirements.
- Applied Clean Architecture and DDD principles for scalability and maintainability.
- Built a scalable ETL pipeline to process **high-frequency financial tick data (50k+ events/sec)** and generate **OHLIC (Open-High-Low-Close) candle data** for multiple timeframes (1s, 1m, 5m, 1h).
- Contributed to system design focusing on performance, security, and extensibility.

Tech-lead Backend | Royal Class LLC, Dubai, UAE | 2025 March – 2025 December

Tech Stack: Java, Spring Boot, Spring WebFlux, NestJS, Python (FastAPI), LangGraph, FastMCP, Elasticsearch, pgvector, SQLite, RabbitMQ, Redis, gRPC, Nginx Ingress, Kubernetes, GitHub Actions, Prometheus, Grafana, ELK Stack

- Migrated a monolithic system of Ads classified marketplace to **modular, event-driven microservices** using Spring Boot (WebFlux), NestJS, and DDD.
- Built **resilient microservices** with rate-limiting, circuit breakers, and retry patterns.
- Designed a **high-performance dynamic UI metadata engine** using SQLite + S3, reducing retrieval latency by **80%**.
- Built an **API Gateway** with Nginx Ingress for routing, authentication, and multi-service orchestration, interservice communication using **gRPC**.
- Implemented **RabbitMQ-based async communication** between Java (Spring boot), Python(Fast API), and Node services.

- Delivered **AI/RAG microservices** with LangGraph, Elasticsearch, and pgvector checkpoints for high-throughput pipelines.
- Built **both remote (SSE) and STDIO-based MCP servers** for B2B users using **FastMCP**.
- Implementing STDIO-based MCP tool functions that directly invoked internal REST APIs for AI-driven ad creation and publishing.
- SSE-based (remote) MCP tools as a dedicated microservice, designed tool-triggered interservice communication using **gRPC for low-latency calls**, avoiding HTTPS overhead between internal microservices while maintaining secure and scalable orchestration.
- Built **lead management workflows** integrating user inquiries, chat interactions, and ad engagement into structured pipelines.
- Implemented **customer lifecycle tracking** (lead → engagement → conversion) using event-driven architecture.
- Improved backend performance by **40%** using async validations, Redis events, and optimized SQL views.
- Implemented **full observability stack** (Prometheus, Grafana, ELK Stack) and GitHub Actions CI/CD.
- Created a **Golang deployment orchestrator** for automated rollouts and version management.

Senior Backend Engineer | Royal Class LLC, Dubai, UAE | 2024 December – 2025 March

Tech Stack: Java, Spring Boot, NestJS, Python, LangGraph, PostgreSQL, Redis, RabbitMQ, WebSockets, Kubernetes (HPA, Probes), Docker

- Built **RBAC authentication** using Spring Boot with hierarchical permissions and token propagation.
- Implemented **RabbitMQ event-driven workflows** for user lifecycle, notifications, and async triggers.
- Developed **real-time WebSocket chat and bidding engine** using NestJS gateway.
- Designed **PostgreSQL + Redis schemas** optimized for high read/write throughput (**+35%** improvement).
- Built **RAG microservices** using Python + LangGraph with pgvector and Redis scheduling.
- Containerized and deployed all services to **Kubernetes** with HPA, probes, and centralized monitoring.
- Evaluated LLM outputs in RAG-based systems by analyzing response correctness, grounding, and reasoning consistency across real-world datasets
- Worked with large public and internal repositories to debug issues, validate test coverage, and assess system robustness
- Analyzed model hallucinations and improved response accuracy through structured retrieval and prompt optimization
- Evaluated LLM responses for correctness, grounding, and hallucination detection.
- Improved response quality through retrieval optimization and prompt engineering techniques.

Senior Software Engineer | Sensze Technologies PVT LTD, Sri Lanka | 2022 November – 2024 December

Tech Stack: Java, Spring Boot, Golang, Apache Kafka, Scala, Python, Apache Flink, Apache Spark, Redis, Cassandra, Feast (Feature Store), GraphQL, JWT/OAuth2, AWS EKS, Docker, Kubernetes, Jenkins, Angular

- Led the migration of domain-based monolithic ERP applications into containerized microservices using **Java, Spring Boot, Go, Docker, and Kubernetes**.
- Designed and developed real-time data pipelines using **Apache Kafka and Apache Flink** for event streaming, data transformation, enrichment, aggregation, and machine-learning feature generation.
- Built **Scala and PySpark batch-processing pipelines** for large-scale data processing, transformation, validation, and scheduled ETL workloads.
- Developed an ETL and streaming platform to process real-time fleet GPS data and delivery events, enabling: (Live vehicle tracking, Delivery-route optimization, Delivery-status monitoring, Delivery-performance analytics)
- Implemented stateful stream-processing workflows using Apache Flink, including event-time processing, windowing, checkpointing, failure recovery, and exactly-once processing guarantees.
- Integrated Flink pipelines with feature stores and low-latency data platforms, including **Redis, Cassandra, and Feast**, to support real-time machine-learning model serving.

- Connected processed streaming outputs to low-latency inference microservices for real-time predictions, scoring, and operational decision-making.
- Built customer lifecycle and engagement-tracking systems using **Kafka Streams** to monitor user interactions, behavioural events, and activity in real time.
- Developed event-driven workflows for customer onboarding, activity tracking, engagement scoring, notifications, and downstream service integration.
- Implemented scalable backend services with **REST APIs, GraphQL, JWT, OAuth2, Redis caching, asynchronous messaging, and microservice integration patterns.**
- Deployed containerized applications to **AWS EKS** and automated build, testing, deployment, and release processes using **Jenkins, Git, Docker, Kubernetes, and Python automation scripts.**
- Built AI-enabled web applications using **Angular and React**, integrated with **Python, FastAPI, LangGraph, and machine-learning services.**
- Designed and developed **MCP and FastMCP tools** for AI-driven enterprise workflows, system integrations, and automated tool invocation.
- Developed real-time conversational AI applications using **Server-Sent Events and WebSocket streaming.**
- Implemented multi-agent AI orchestration patterns with shared context, conversation memory, task delegation, structured tool invocation, and workflow coordination.
- Provided technical mentorship, architecture guidance, code reviews, and engineering best practices to development team

Software Engineer | Sensze Technologies PVT LTD, Sri Lanka | 2022 April – 2022 November

Tech Stack: Java, Spring Boot, Apache Kafka, RabbitMQ, Angular, Docker, Kubernetes, CI/CD Pipelines

- Built event-driven architectures using **Kafka + async Spring Boot services.**
- Developed **WebSocket pipelines** with RabbitMQ for real-time updates.
- Implemented **event-sourcing**, optimized SQL schemas, and reusable Angular components.
- Deployed microservices using Docker, K8s, and automated CI/CD pipelines.

Freelance Software Engineer | Hospitality Wifi Australasia PTY LTD, Australia | 2024 January – 2024 May

Tech Stack: Golang, WebRTC, WebSocket, RabbitMQ (Fanout), React, Python, LangGraph, Kubernetes, High-Availability Architecture

- Developed **WebRTC calling/messaging backend** using Golang signaling server and React clients.
- Scaled the Golang WebSocket server horizontally using **RabbitMQ fanout.**
- Added **LangGraph AI automation** for intent detection and ticket routing.
- Delivered Kubernetes deployments and HA architecture.

Full Stack Engineer | Compunnel Inc, USA | 2020 November – 2022 March

Tech Stack: Java, Spring Boot (Netty/NIO), Golang, TCP Socket Programming, RabbitMQ, PostgreSQL, Redis, AWS S3, Docker

- Designed and developed a **real-time fleet tracking platform** handling high-volume GPS telemetry from devices (Teltonika, GT06) over raw TCP.
- Built **high-performance TCP servers** using Java (NIO/Netty) to manage thousands of concurrent device connections.
- Implemented **binary protocol parsers** to decode GPS data (location, speed, ignition, health).
- Engineered **device lifecycle management** (IMEI auth, heartbeats, reconnects, session tracking).
- Processed telemetry streams and published events via **RabbitMQ** for scalable async processing.
- Developed backend microservices (**Spring Boot, Go**) for tracking, trip management, and driver activity.
- Designed **geospatial features** (route tracking, trip reconstruction, distance calculation, geofencing alerts).

- Optimized data storage using **PostgreSQL + Redis** for high-throughput ingestion and low-latency queries.
- Delivered **near real-time dashboards** with historical playback and alerting (overspeed, idle, route deviation).

Software Engineer | Advanced Autoponics LLC, USA | 2020 March – 2020 October

Tech Stack: Java, Spring Boot, MQTT, React, Python, TensorFlow, OpenCV, FastAPI, NVIDIA Jetson, Real-Time IoT Pipelines

- Built **real-time IoT pipelines** using MQTT + Spring Boot.
- Created dashboards with React and low latency embedded Java clients.
- Built AI/ML pipelines using TensorFlow + OpenCV with FastAPI inference services.
- Integrated NVIDIA Jetson devices for real-time control and ML training.

Core Backend Skills

- **Languages:** Java, Python, Rust, Go, TypeScript
- **Frameworks:** Spring Boot (MVC/WebFlux), NestJS, FastAPI, React, Spark, Flink
- **Messaging:** Kafka, RabbitMQ, Redis Streams
- **Protocols:** GRPC, GraphQL, WebSocket, SOAP
- **Databases:** PostgreSQL, MySQL, MongoDB, SQLite
- **Caching:** Redis, Materialized Views
- **Search & Vector:** Elasticsearch, pgvector
- **Cloud:** AWS, Azure, GCP
- **DevOps:** Docker, Kubernetes, Helm, Terraform, GitHub Actions, Jenkins, Linux (Debian)
- **Architectures:** Microservices, Event-driven, WebSockets, CI/CD, HPA, Observability
- **AI & RAG:** LangChain, LangGraph, FastAPI inference service

Education

BScEngHons Mechanical and Manufacturing Engineering | University of Ruhuna | 2019 March – 2023 October

Reference

- Eng Siva Sivadheeban | Regional Technical Manager | Hospitality Wifi Australasia PTY LTD, Australia | sivadheeban@gmail.com | +61414236993
- Eng Vithujan Anantharajah | Chief Executive Officer | Sensze Technologies PVT LTD, Sri Lanka | ceo@sensze.com | +94716256756