

MOHAMED ELARABY

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JAVA BACKEND SOFTWARE ENGINEER

Backend Software Engineer with almost 4 years of experience designing, building, and deploying scalable, cloud-native microservices for real-time EV charging platforms serving 300+ charging stations across Egypt and Saudi Arabia, with additional experience delivering blockchain-integrated web applications. Skilled in architecting event-driven systems that improve scalability, performance, and interoperability within the EV/e-mobility domain. Experienced across system design/architecture and coding phases of the SDLC within Agile team environments. Core technical stack: Java, Spring Boot, Kafka, Redis, PostgreSQL, gRPC, AWS, Docker, Kubernetes, and Prometheus/Grafana.

- Distributed Systems & Scalable Architecture Design • Microservices Architecture • Event-Driven Systems & Messaging
- Cloud Engineering & Infrastructure • Secure Backend Development & Authentication • CI/CD & DevOps Automation
- Real-Time Systems & Streaming Communication • System Reliability & Resilience Engineering

Languages: Java, Python, JavaScript, SQL

Web: RESTful Web Services, GraphQL, gRPC, WebSockets

Web Services: OCPP, OCPI

Web/App Servers: Apache, Tomcat

Frameworks: Spring Boot, React

Databases: PostgreSQL, MongoDB, Redis

Design Patterns: Inversion of Control (IoC), Dependency Injection, Factory Pattern, Singleton Pattern, Microservices Design Patterns, Circuit Breaker Pattern, Observer, Event-Driven Architecture, SAGA, Spec driven development

SDLC: Agile, Waterfall

Tools: Maven, Git, Jenkins, GitHub Actions, Docker CLI, SonarQube, Snyk, Kafka, RabbitMQ, Redis Streams, Git hub Spec kit

Platforms: Windows, Linux, AWS, Kubernetes

CAREER NOTE: Completed on-campus studies and currently taking distance education courses to complete a **Master's Degree in Computer Science** (Available for full-time, W-2 employment).

PROFESSIONAL EXPERIENCE

EVUNITY, Cairo, Egypt • 12/2022 – 05/2025

EVUNITY is a software company developing scalable, cloud-based backend platforms for EV charging infrastructure, enabling real-time monitoring, control, and interoperability across charging networks.

Backend Software Engineer

- Architected scalable microservices for a charger management system (CMS) using Java, Spring Boot, and Docker, leveraging Spec Kit and Claude Code for spec-driven system design and implementation, powering 300+ charging stations across Egypt and Saudi Arabia with 99.9% uptime for charge point operators (CPOs).
- Implemented OCPP 1.6 over WebSocket for real-time charger-to-cloud communication, handling operations including Boot Notification, Meter Values, Start Transaction, Stop Transaction, and remote charging commands.
- Built OCPI 2.2.1 roaming APIs for cross-network interoperability using Spring Boot and REST, connecting the platform to external CPO/EMSP networks and expanding charger visibility for roaming EV drivers across partner networks.
- Engineered event-driven charging session processing using Kafka and Redis, improving real-time event throughput and supporting asynchronous workflows across distributed charging stations.
- Implemented gRPC-based service-to-service communication between Java microservices, reducing internal service-call latency by 30%.
- Secured backend services and APIs using Spring Security, JWT, and OAuth2, implementing authentication and authorization across distributed charging-platform services.
- Implemented full-stack observability using Prometheus, Grafana, Loki, and Tempo, enabling centralized metrics, logs, and distributed tracing and reducing incident diagnosis time by 60%.
- Automated CI/CD, testing, and code-quality workflows using Jenkins, GitHub Actions, Docker, SonarQube, and Snyk on AWS, reducing manual deployment errors and defects reaching production.

- Designed the AWS platform architecture using API Gateway for centralized API routing and access control, SNS for asynchronous event notifications and service fan-out, EKS/ECS for scalable microservice workloads, and a dedicated OAuth2/JWT authorization server for centralized authentication across the EV charging platform.
- Engineered hybrid search and AI-powered community support service combining Elasticsearch full-text search with embedding-based semantic search in Redis Vector Store, improving knowledge retrieval and automating responses to common user queries.

Technologies Used: *Java, Spring, Kafka, Redis, PostgreSQL, AWS (EC2, ECS, EKS, RDS, Lambda, ALP, Cognito, SQS, SNS, CloudWatch, Xray), Docker, Kubernetes, Helm, Jenkins, GitHub Actions, Grafana, Loki, Tempo, Resilience4j.*

WEBDBTECH, Greater Nashville Area, USA (Remote) • 02/2022 – 12/2022

WEBDBTECH is a software development company specializing in modern web applications, interactive frontend systems, and digital platforms integrating web, backend, and blockchain technologies.

Frontend Software Engineer

- Developed responsive web applications for internal product interfaces using React.js and JavaScript (ES6+), resulting in improved usability and consistency across devices.
- Built interactive browser-based games using Phaser.js, resulting in increased user engagement on the platform.
- Integrated frontend interfaces for transaction workflows with blockchain-based backend systems, resulting in secure, real-time data handling.
- Consumed and processed REST APIs for asynchronous data workflows, resulting in improved application responsiveness and reduced load times.
- Refined UI performance and component architecture for the front-end codebase by building reusable React components, resulting in reduced code duplication and improved maintainability.
- Collaborated within Agile teams using Git version control, resulting in consistent, on-schedule sprint delivery.

Technologies Used: *HTML, CSS, JavaScript, Bootstrap, Phaser3, ReactJS.*

ACADEMIC PROJECTS

Maharishi International University (2026)

- **ResumeRocket – AI-Powered Resume Builder:** Developed a full-stack AI-powered resume platform using Spring Boot, MySQL, and Claude AI, enabling users to create, manage, and enhance professional resumes with AI-generated and refined content. Applied Spec-Driven Development (SDD) to define requirements, API contracts, and acceptance criteria, improving development consistency and alignment. Built RESTful APIs with a layered architecture, integrated interactive frontend workflows, and implemented Docker/Docker Compose for deployment and Playwright for end-to-end testing.
- **KimFlight – Flight Management and Booking Platform:** Developed a full-stack flight management platform with a decoupled Spring Boot backend and TypeScript frontend. Built RESTful APIs using Java 25, Spring Boot, Spring MVC, and Maven, with automated API testing using JUnit/MockMvc. Developed the frontend with TypeScript, Vite, and Bun, and containerized the application using Docker and Docker Compose, with GitHub Actions for CI/CD.
- **Food Delivery on AWS – Cloud-Native Microservices:** Developed a cloud-native food delivery platform using Spring Boot microservices for Order, Restaurant, Delivery, and Notification services. Implemented REST-based communication with Resilience4j circuit breakers and event-driven messaging using Amazon SNS/SQS for reliable asynchronous processing. Deployed containerized services on ECS Fargate with Service Connect/Cloud Map, API Gateway, ALB, Cognito/JWT, DynamoDB, and SSM Parameter Store, with X-Ray/ADOT and CloudWatch for observability. Used Local Stack for local AWS service testing and Docker for consistent deployments.

EDUCATION

Master of Science in Computer Science

(In progress via distance education; expected completion 10/2028)

Maharishi International University, Fairfield, Iowa

Key Courses: *Algorithms - Software Engineering - Enterprise Applications - Software Architecture*

Diploma in AI and Machine Learning

Information Technology Institute, Alexandria, Egypt (07/2023)

Bachelor of Science in Software Engineering

Alexandria University, Alexandria, Egypt (06/2022)