

Harshana Lakshara Fernando

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🌐 Portfolio • 🔗 LinkedIn • 🐙 GitHub

Summary

Backend-focused Computer Science Engineering undergraduate with a rigorous foundation in **System Design**, **Distributed Systems**, and **Cloud-Native Engineering**. Proven experience architecting high-performance, fault-tolerant applications using **Microservices**, **Serverless Architectures**, and **Event-Driven Design** with **Java (Spring Boot)**, **Go**, **AWS Lambda**, and **Kafka**. Validated through the delivery of high-throughput systems handling massive load, seeking to solve complex **concurrency** and **low-latency** challenges within high-velocity engineering teams.

Education

B.Sc. (Hons) in Engineering – Computer Science and Engineering

2021 – Present

University of Moratuwa, Sri Lanka

Relevant coursework: Programming Fundamentals, Program Construction (OOP), Data Structures and Algorithms, Advanced Algorithms and Advanced Data Structures, Parallel and Concurrent Programming, Operating Systems, Programming Languages, Theory of Computing, Advanced Software Engineering, Database Systems, Computer Networks, Computer Architecture, Calculus, Linear Algebra, Numerical Methods, Operational Research, Statistics, Introduction to AI, IoT Devices

Experience

Software Engineer Intern

Dec 2024 – May 2025

Information Systems Associates (Pvt) Ltd — Aviation Technology Company

- **AeroOrder — Revamped Order Management Microservice (Java 18, Spring Boot)**
 - Engineered a **distributed, high-throughput** unique ID generator for Passenger Name Records (PNRs) using a **Kafka**-backed pool model, ensuring uniqueness and security across scaled instances while adhering to aviation domain standards.
 - Optimized the PNR generation service to achieve **25+ PNRs/sec throughput** per node with **<100ms latency**, validating performance and resilience through extensive load, stress, and spike testing with **Apache JMeter**.
 - Resolved critical **production** issues, including **Kafka** consumer lag and offset resetting, by implementing robust shutdown hooks and enhanced retry mechanisms to improve fault tolerance and system recoverability.
 - Led **Research and Development** for **asynchronous load testing**, establishing a monitoring stack with **Prometheus** and **Grafana** to collect and visualize key performance metrics like queue time and latency.
 - Investigated and refactored inefficient **Kafka Streams** processing logic, building a proof-of-concept to validate a more efficient **Producer-Consumer** model that significantly reduced consumer lag and improved system stability.
 - Modernized the logging infrastructure by implementing structured **JSON logging**, which removed legacy dependencies and improved log parsing efficiency across all microservices.
- **AeroMart — Legacy Monolithic Passenger Reservation System (Java 8 ,Ant)**
 - Architected and implemented a hybrid integration strategy by embedding a **gRPC** client and **Kafka** consumer into a **legacy Java 8** monolith (AeroMart), enabling seamless, backward-compatible communication with the new **AeroOrder microservices** platform.
 - Developed dynamic, database-driven **feature toggles** to control PNR routing logic, minimizing risk during the phased **production rollout** by allowing for granular control and immediate fallback.
- **Other**
 - Authored comprehensive **design documents**, **sequence diagrams**, and **integration plans** on Confluence; facilitated knowledge transfer sessions to ensure seamless handover to the core development team.
 - Actively contributed to the **agile development lifecycle**, participating in all ceremonies, performing **code reviews**, and collaborating with cross-functional teams to deliver **production-ready** features using **Jira** and **Bitbucket**.

KEYWORDS: Java 18, Java 8, **Spring Boot**, **Spring Security**, Ant, **gRPC**, **Kafka**, React, Protobuf, REST API, Couchbase, Oracle DB, Oracle SQL, PostgreSQL, **JMeter**, Gatling, Ant Design, **Docker**, Docker Compose, Gradle, **Prometheus**, **Grafana**, Kibana, Confluence, Jira, Bitbucket, Microservices, **Kafka Streams**, JSON

1. Employee Management System (EMS) (2025 | Individual) Architecture | Github

Designed and built a comprehensive, cloud-native microservices application for employee and department management, featuring a full-stack architecture with a React/TypeScript frontend and Spring Boot backend.

- Architected a distributed system using **Spring Cloud** for service discovery, centralized configuration, and an API gateway, with **Resilience4j** for robust fault tolerance.
- Enabled dynamic configuration management using **Spring Cloud Bus** with **RabbitMQ** and established a robust observability stack (Zipkin, ELK, Prometheus/Grafana).
- Designed and managed a CI/CD pipeline using **GitHub Actions**, with **ArgoCD** for GitOps-based deployments to the Kubernetes cluster.

Keywords: Java 17, Spring Boot, Spring Cloud, React, TypeScript, Resilience4j, RabbitMQ, Docker, Kubernetes, GitHub Actions, ArgoCD, Prometheus, Grafana

2. Serverless Auction Platform (2025 | Individual) Architecture | Github

A capstone project built using AWS, following a microservices architecture with an event-driven, serverless (FaaS) design.

- Architected an event-driven system using **AWS Lambda**, **API Gateway**, and **EventBridge**, with **SQS** and **SNS** for asynchronous communication.
- Designed a high-performance **DynamoDB** data model with GSIs and implemented a custom **Lambda Authorizer** for JWT-based security.
- Utilized **LocalStack** and **Docker** for local cloud emulation and integrated **Middy** middleware for robust error handling.

Keywords: Node.js, Serverless Framework, AWS Lambda, DynamoDB, SQS, SNS, SES, JWT, Middy, LocalStack, Docker

3. Food Delivery Application (2024 | Group) Architecture | Github

Built a scalable, event-driven food delivery platform inspired by systems like Uber Eats, using a modern microservices architecture. As part of the core team, I focused on designing and developing the Restaurant Service.

- Developed the Restaurant Module with secure sign-up/login using **Spring Security** and **JWT** (with extended claims).
- Built CRUD APIs for menu and item management; integrated **Redis caching** to improve performance and reduce database load, with appropriate cache invalidation strategies.
- Enabled order sync via **Kafka**: when an order is placed, an event is published to the 'order_created' topic, which the restaurant service consumes to update order details.

Keywords: Java, Spring Boot, gRPC, Kafka, Redis, PostgreSQL, WebSocket, Docker, React.js, Ant Design

4. GoTogether – Intelligent Travel Companion for Sri Lanka (2024 | Group) Architecture | Live | Github

Developed and deployed a full-stack travel assistant platform with a **Next.js** frontend (SSR/CSR, secure auth) and microservices in **Spring Boot** and **Go**, enabling AI itinerary generation via **Gemini API**.

- Implemented a **Spring Boot** social service with **Keycloak** integration for identity management and a dedicated **Go** service using **gRPC** for high-performance inter-service communication.
- Configured production-grade security with **NGINX**, **Certbot**, and **DuckDNS**, and orchestrated deployment on **Oracle Cloud Free Tier** using custom scripts and Docker optimizations.
- Built a dedicated **Auth Service using Keycloak**, managing OAuth2/OIDC flows, token issuance, and automated realm/client boot-time import scripts.

Keywords: Next.js, Go, Spring Boot, Keycloak, PostgreSQL, NGINX, Docker, Gemini API, Oracle Cloud, gRPC

5. Maison Vella – E-Commerce Admin Panel (2024 | Individual) Architecture | Live | Github

Comprehensive admin interface for the Maison Vella e-commerce ecosystem, facilitating centralized management of products, orders, and content assets.

- Engineered a responsive **Next.js 14** app with **Server Actions**, **tRPC**, and **ShadCN UI**, implementing **CQRS** and layered architecture.
- Integrated **Sanity** (Headless CMS) via GraphQL and managed data with **Prisma** and **Supabase** in a serverless environment.
- Secured access with **Clerk Auth** and optimized media delivery using **Cloudflare R2** and a global CDN.

Keywords: Next.js 14, Server Actions, tRPC, GraphQL, Prisma, Supabase, Sanity, Serverless, Cloudflare R2, CQRS

6. Blockchain Supply Chain Management DApp (2025 | Individual)

Architecture | Live 

| Github 

Built a full-stack decentralized application (DApp) enabling end-to-end shipment tracking and secure escrow payments on the Ethereum blockchain (Polygon Amoy Testnet).

- Developed a Solidity smart contract with a strict 3-state lifecycle and trustless escrow payments.
- Built a Next.js/React frontend with Ethers.js for real-time tracking and secure wallet management.
- Automated contract and frontend deployment using GitHub Actions and Hardhat for development.

Keywords: Solidity, Hardhat, Ethers.js, Web3Modal, Next.js, React Context API, Tailwind CSS, Polygon Amoy, Smart Contracts, Escrow Payments, CI/CD

7. Fintech & Crypto Trading Automation Lab (Ongoing | Group)

- Working on an industry-mentored project to build intelligent automation systems and gain expertise in algorithmic trading and technical analysis.

Keywords: Fintech, Crypto Trading, Forex, Algorithmic Trading, Technical Analysis, Intelligent Automation, Industrial Mentorship, Personal Finance & Wealth Management

Professional Training, Coursework & Certificates (All credentials)

- **Ultimate AWS Certified Solutions Architect Associate SAA-C03 (Exam Prep Course)** *Aug 2025*
Udemy — Instructor: Stephane Maarek [View certificate](#)
- **Certified Kubernetes Administrator (CKA) with Practice Tests (Exam Prep Course)** *Apr 2025*
Udemy / KodeKloud — Instructor: Mumshad Mannambeth [View certificate](#)
- **Apache Kafka Series (v3)** *Mar 2025*
Udemy — Instructor: Stephane Maarek [Part 1](#) | [Part 2](#) | [Part 3](#)
- **100 Days of DevOps** *Nov 2025*
KodeKloud — Trainer: Mumshad Mannambeth [View certificate](#)
- **Implementing Software Architecture for Large-Scale Systems** *Apr 2025*
Udemy [View certificate](#)
- **Advanced OAuth Security** *Mar 2024*
Udemy [View certificate](#)
- **Next.js: Build Scalable React Apps with Page & App Routers** *Nov 2025*
Udemy — Instructors: Anton Voroniuk, Denys Kohut, Anton Voroniuk Support [View certificate](#)
- **Fundamentals of Deep Learning** *Dec 2025*
NVIDIA Deep Learning Institute (DLI) [View certificate](#)
- **Large Language Models (Level 1–3)** *Nov 2025*
Udemy — H2O.ai University (Instructor: Andreea Turcu) [Level 1](#) | [Level 2](#) | [Level 3](#)
- **Mastering Solidity, the Ethereum Programming Language** *In progress*
Udemy
- **Cardano Blockchain Certified Associate (CBCA)** *In progress*
Cardano Academy

Skills

Languages: Java, Go, Python, TypeScript, Solidity

Backend: Spring Boot, Spring Cloud, Spring Security, Express.js, Gin, Resilience4j, Node.js

Frontend: React, Next.js, React Native, Ant Design, ShadCN UI, Three.js, Vite

APIs , Messaging & Protocols: REST, gRPC, tRPC, WebSockets, Protobuf, Kafka, RabbitMQ JWT, OAuth 2.0, Kong

Databases & Caching: PostgreSQL, MySQL, Oracle DB, Oracle SQL, DynamoDB, Redis, Elasticsearch, Cassandra, Couchbase, Supabase, Hibernate, Prisma

Cloud & DevOps: AWS , OCI, Docker, Docker Compose, Kubernetes, Helm, Terraform, ArgoCD, GitHub Actions, Jenkins, Serverless Framework, Nginx, Nexus, GHCR, Certbot, DuckDNS

Blockchain: Ethereum, Solidity, Hardhat, Web3.js

Tools & Concepts: Git, System Design, Distributed Systems, Microservices, Event-Driven Architecture, Jira, JMeter, Gatling, Gradle, Ant, Confluence, Bitbucket, Pytest, Makefile, Postman,

Referees

References available upon request.