

ASWIN K M

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EDUCATION

Lovely Professional University

Bachelor of Technology in Computer Science

Aug. 2022 – May 2026

Punjab, India

- Relevant Coursework:** Data Structures & Algorithms, Databases, Computer Systems, Computer Networks

PROJECTS

RideSync Real-Time Spatial Dispatch Engine | Go, PostgreSQL, Redis, React, Docker

- Architected a real-time ride-hailing backend in Go, leveraging Uber's H3 Spatial Index within Redis to dynamically match riders with nearby drivers in **<2ms**, serving **100%** of spatial queries from in-memory cache.
- Engineered a highly concurrent full-duplex WebSocket pipeline using Go Channels and Mutex locks, capable of sustaining **10,000+** simultaneous vehicle telemetry streams without data race conditions.
- Reduced PostgreSQL disk I/O overhead by **99.8%** by implementing an asynchronous background worker that buffers high-throughput telemetry data and executes optimized **500-record** bulk inserts every 5 seconds.
- Developed a reactive frontend dashboard using React and Leaflet.js to visualize live vehicle tracking and instantly broadcast dispatch events with sub-second end-to-end latency.

SeatForge Distributed Seat Reservation System | Spring Boot, Redis, PostgreSQL, Nginx

- Built a distributed seat reservation platform supporting concurrent seat discovery, locking, and booking with strong consistency guarantees.
- Deployed behind an Nginx load balancer with 3 Dockerized Spring Boot instances, achieving **3× throughput** over a single-instance setup and sustaining **4,000–5K RPS** at **sub-150ms** median latency.
- Reduced database load by **65%** through aggressive query optimization and Redis caching strategies.
- Eliminated N+1 database queries, significantly improving tail latency during high-traffic concurrent access events.

TECHNICAL SKILLS

Languages : Go (Golang), Java, Python, C/C++, JavaScript (ES6+), SQL

Backend & APIs : Spring Boot, Node.js, Express.js, FastAPI, RESTful APIs, WebSockets, JWT

Databases & Caching : PostgreSQL, PostGIS, Redis

Frontend : React.js, Next.js, React Native, Tailwind CSS, Leaflet.js

Infrastructure & Architecture : Docker, Nginx, Linux, Git, Distributed Systems, Load Balancing, Batch Processing

ACHIEVEMENTS & CERTIFICATIONS

- Standard Membership, Google Developer Program:** Active member utilizing enterprise tools including Gemini Code Assist and Firebase Studio.
- Smart India Hackathon (SIH):** Ranked **Top 10** in college internal rounds with a **97/100** evaluation score, recognized for technical implementation and solution quality.
- Certifications:** Cloud Computing (NPTEL), Blockchain Specialization (Coursera).