Luxmikant

Software Development Engineer — C++ Systems & Algorithms

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Professional Summary

Software Development Engineer with strong foundation in C++ systems programming, algorithms, and performance optimization. Codeforces Specialist (1496) with 600+ problems solved; experienced in building high-performance microservices using modern C++, data structures (segment trees, spatial indexing), and systems design. Proven ability to optimize critical paths from $O(n^2)$ to O(n log n) and deploy production-grade solutions with rigorous testing and documentation.

Education

Vellore Institute of Technology **CGPA: 8.35 — 2022 – 2026**

B.Tech in Computer Science Engineering, Specialization in Health Informatics

Relevant Coursework: Data Structures & Algorithms, Operating Systems, Computer Architecture, Database Management Systems, Object-Oriented Programming, Compiler Design.

Technical Skills

- **Core Languages:** C++17/20 (STL, RAII, move semantics, const-correctness), C, Rust
- **C++ Ecosystem:** CMake, GoogleTest/Catch2, GDB/LLDB, ASan/UBSan, Valgrind, clang-format, clang-tidy
- **Data Structures & Algorithms:** Segment trees, Fenwick trees, interval trees, spatial indexing (KD-trees), graph algorithms (Dijkstra, MST, topological sort), dynamic programming, greedy algorithms, complexity analysis
- **Systems & Backend:** Linux (shell scripting, system calls), multithreading, REST APIs, , PostgreSQL/MongoDB, Redis caching
- **DevOps:** Git, Docker, CI/CD (GitHub Actions), profiling & benchmarking
- **Additional:** Python, JavaScript/TypeScript, Go (familiar)

Experience

Open Source Contribution: Flamenco Web Configuration Manager **Jan 2025 – May 2025**

Core Contributor — Go, Vue.js, MQTT

- Developed server-side REST APIs connected to a Go backend, reducing configuration time by 40%.
- Implemented MQTT communication layer for real-time messaging across 50+ nodes with 99.9% uptime.
- Orchestrated task distribution system using Go's concurrent processor pools; reduced average task completion latency by 150ms across distributed nodes.
- Created cross-platform path translation layer for seamless deployment across Windows, Linux, and macOS.

Projects

Tradl AI — Real-Time Financial News Intelligence **Jun 2025 – Present**

C++, Python, FastAPI, LangGraph — AI/ML Engineer

- Built end-to-end financial intelligence pipeline processing **500+ daily articles** with 95%+ deduplication accuracy and FinBERT sentiment enrichment.
- **Accelerated deduplication by 10x** using a **C++ similarity engine** with MinHash + LSH for candidate filtering and **KD-tree spatial indexing** for embedding nearest-neighbor search; **reduced complexity from $O(n^2)$ to O(n log n)**, processing articles in **¡200ms**.
- Exposed C++ engine via **gRPC to Python FastAPI** services; maintained production reliability with comprehensive testing and monitoring.
- Engineered Groq Llama RAG system over ChromaDB vectors delivering context-aware answers with citations in ¡200ms.
- Authored **134 pytest suites** across dedup, NER, sentiment, and query layers; achieved sub-300ms total latency.

Customer Relationship Management (CRM) Platform **May 2024 – Present**

C++, Node.js, React, MongoDB — Full-Stack Developer

- Built AI-driven CRM with intelligent segmentation, campaign workflows, and AI content generation (OpenAI/Gemini).
- **Implemented C++ microservice** for high-performance segment querying using **interval trees** for range-based attributes (age, revenue, activity) and **hash-based indexing** for categorical filtering; **optimized from O(n · m) to O(log n + k)**, achieving **sub-50ms response on 100K+ customers** (8x faster than JavaScript baseline).
- Designed drag-and-drop segment builder handling 15+ attributes, **reducing segment creation time by 70%**.

Achievements

- **Published Author:** Co-authored research paper *"Detection of Alzheimer's Disease Using CNNs"* published in **Springer Nature's Information Systems Engineering and Management (ISEM)** series; applied deep learning to medical diagnosis with 92% accuracy.
- **Top 10 Finalist** at HackByte Hackathon (IIIT Jabalpur) among **100+ teams**; built and fully deployed healthcare application solving real-world patient management challenges.

Certifications

- Introduction to Rust Training — Ferrous Systems
- Data Structures and OOP with C++: CS104, CS105 Masterclass
- Applied Machine Learning in Python — University of Michigan