Vandan Sharma

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EDUCATION

Vishwakarma Institute of Technology   Pune, Maharashtra

Bachelor of Technology — Computer Science & Engineering (AI & ML)

Expected 2028 · CGPA: 8.8 / 10 · 2nd Year

TECHNICAL SKILLS

Languages: Rust, Java, Python, C++, TypeScript

Systems: Lock-free Data Structures, Distributed Systems, Raft Consensus, WAL, Async I/O

Tools: Linux, Git, Docker, PostgreSQL, gRPC

SELECTED PROJECTS

Titan — Ultra Low-Latency Matching Engine   Rust · Lock-Free · Cache-Aware

High-Frequency Trading Infrastructure — Single-threaded, Event-driven Architecture

- Engineered lock-free limit order book achieving **12.8M matches/sec** with **sub-microsecond median latency**
- Designed 64-byte cache-aligned order structs and SPSC ring buffer with cache-line padding to eliminate false sharing
- Implemented zero-allocation hot paths using pre-allocated object pools and fixed-point arithmetic for determinism
- Built modular architecture: titan-core, titan-ring, titan-proto, titan-net, titan-feed, titan-replay, titan-metrics
- Validated with HdrHistogram benchmarking (P99, P99.9 tail latency) and 33 comprehensive unit tests

Vajra — Distributed Vector Database   Rust · Raft · HNSW · Async

Distributed Systems — Fault-tolerant ANN Search with Consensus

- Built distributed vector database for real-time similarity search achieving **99% Recall@1**
- Implemented Raft consensus from scratch for leader election, log replication, and automatic failover
- Designed HNSW index with configurable parameters and Write-Ahead Logging for crash recovery
- Validated fault tolerance via chaos testing under node failures and network partitions

MiniDrive — Hybrid Cloud Storage System   Java · Spring Boot · gRPC · MinIO

Storage Infrastructure — Deduplication, Resumable Uploads, ACID Guarantees

- Architected hybrid storage combining MinIO (objects) + PostgreSQL (metadata) with chunk-based resumable uploads
- Implemented SHA-256 content-addressable storage for block-level deduplication
- Containerized full stack with Docker Compose; production-ready deployment architecture

EXPERIENCE

Open Source Contributor   2025

GirlScript Summer of Code (GSSoC)

- Contributed features and bug fixes to production-grade open-source projects
- Collaborated via pull requests, code reviews, and asynchronous distributed teams