

# Avishkar Pawar

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## Professional Summary

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Final-year Computer Science student with 9.24 CGPA and strong foundation in data structures, algorithms, and system design. Built multiple production-grade projects from scratch including distributed databases, event streaming platforms, and vector search engines using C++, Java, and Python. GATE 2026 qualified (AIR 3124) with hands-on experience in full-stack development, distributed systems, and AI/ML. Currently interning as Software Developer with proven ability to build scalable, efficient solutions. Strong problem-solving skills demonstrated through competitive programming and technical competitions.

## Education

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### MIT Academy of Engineering, Pune

2022 - 2026

*B.Tech. - Computer Engineering — CGPA: 9.24/10*

## Projects

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### MiniDB — Distributed Database with ACID Transactions

*C++17, Boost.Asio, Protocol Buffers, CMake*

- Engineered a fully-featured distributed key-value database from scratch in C++17 (all 6 phases complete) supporting ACID transactions with MVCC concurrency control, handling 10,000+ ops/sec with <1ms latency
- Implemented B+ Tree indexing with LRU-based buffer pool management, reducing disk I/O by 60% through intelligent page caching and prefetching
- Built complete query processing engine with SQL-like parser supporting JOINS, and designed custom binary protocol over TCP using Boost.Asio with connection pooling

### Event Streaming Platform

*Java 17, Spring Boot, Netty, Apache Kafka Protocol*

- Architected a distributed message queue system processing 50,000+ messages/sec with guaranteed ordering and at-least-once delivery semantics
- Implemented log-based storage with memory-mapped files and zero-copy transfer, achieving 3x throughput improvement over traditional I/O
- Built consumer group coordinator with automatic partition rebalancing, supporting 100+ concurrent consumers with <100ms rebalance time

### AI-Powered Vector Database

*Python 3.11, FastAPI, NumPy, Numba*

- Built a vector database implementing HNSW algorithm for approximate nearest neighbor search on 1,000,000+ vectors with 95%+ recall and <100ms query latency
- Optimized distance computations using Numba JIT compilation, achieving 10x speedup in cosine similarity calculations for high-dimensional vectors
- Integrated OpenAI embeddings (text-embedding-ada-002) and LangChain to power RAG pipeline for AI applications with context-aware responses

## Technical Skills

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**Languages:** C++, Java, Python, JavaScript, TypeScript

**Frameworks:** Spring Boot, FastAPI, React, Node.js, Express.js

**AI/ML:** TensorFlow, PyTorch, OpenAI API, LangChain, NumPy, Numba

**Databases:** PostgreSQL, MySQL, MongoDB, Redis, Custom Database Implementations

**Tools:** Git, Docker, Linux, AWS, CMake, Maven, Prometheus

**Distributed Systems:** Kafka, gRPC, Protocol Buffers, Raft Consensus, Consistent Hashing

**CS Fundamentals:** Data Structures & Algorithms, Operating Systems, Database Systems, Computer Networks, Distributed Systems, System Design

## Experience

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### OSMOS

Jul 2025 - Present

*Software Developer*

- Worked on backend services using Node.js and developed applications using Python
- Contributed to product development from scratch, including designing, implementing, and testing core features

### Core-Decimal Solutions

Feb 2025 - Aug 2025

*Software Developer*

- Contributed to full-stack project using Vue.js, Express.js, and Sequelize with MVC architecture
- Developed reusable Vue.js components and integrated RESTful APIs with Axios

## Achievements & Certifications

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**GATE 2026:** Secured AIR 3124 with GATE Score 601 and 51.45/100 marks in CS — 3x rank improvement from GATE 2025 (AIR 9860)

**GATE 2025:** Qualified with AIR 9860, GATE Score: 453, Marks: 39.32/100

**First Place in Technodium 25:** Won first place in technical competition

**Certifications:** AWS Certified Cloud Practitioner, CCNA: Introduction to Networks, CCNA: Switching, Routing, and Wireless Essentials, CCNA: Enterprise Networking, Security, and Automation, Python Essentials 1

## Extra-Curricular Activities

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**Outdoor Sports & Games:** Active participant in outdoor sports and recreational activities