Om Avchar

Backend Engineer · Distributed Systems · Scalable AI Infrastructure

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LinkedIn | GitHub | Portfolio | LeetCode

PROFESSIONAL SUMMARY

Computer Science Engineering student with a primary focus on backend systems, distributed architecture, and production-grade AI infrastructure. Designed and shipped Node.js microservices, high-concurrency queuing systems, and multi-modal GenAI pipelines deployed to real users at scale. Proficient in C++, JavaScript and cloud-native tooling (AWS, Docker, CI/CD). Competitive programmer with LeetCode Rating 1,396 and recognition at national-level hackathons including NIT Rourkela and AIT Pune.

EDUCATION

Bachelor of Technology — Computer Science & Engineering *Expected: May 2027*

Dr. Babasaheb Ambedkar Technological University (DBATU), GWCET, Nagpur **CGPA: 7.4 / 10**

Relevant Coursework: Operating Systems, Database Management Systems, Computer Networks, Data Structures & Algorithms

EXPERIENCE

Software Development Engineer Intern — Bluestock Fintech (Remote) *Apr 2025 – May 2025*

- Implemented 3 backend features in Node.js and React for a live fintech application, each reviewed and merged to the production branch within a 2-week Agile sprint cycle.
- Integrated OAuth 2.0 authentication, reducing manual login friction for users; enforced Git branching conventions that cut merge conflicts across a 5-person team.

Front-End Developer Intern — Next24tech (Remote) *Jul 2024 – Aug 2024*

- Rebuilt 4 client-facing pages using React.js and Tailwind CSS, reducing average page load time by ~28% as measured by Lighthouse performance scores.
- Delivered accessible, cross-browser UI components in collaboration with a 6-person team across 3 concurrent client projects, all shipped on schedule.

C++ & DSA Intern — Internship Studio (Remote) *Mar 2024 – Apr 2024*

- Built a CLI-based Room Allotment & Booking System in C++ as the internship capstone — supporting room booking, host assignment, time-slot scheduling, chair-count configuration, and real-time room status queries across customizable room parameters.
- Implemented the scheduling engine using a priority queue to handle overlapping booking requests and a hash map for O(1) room status lookups; the system resolves conflicts across 6 configurable parameters (room number, host, start time, end time, chair capacity, purpose) without collision.

PROJECTS

HeartEcho — AI Companion Platform heartecho.in ↗

Next.js · Node.js · OpenAI API · MongoDB · Redis · Priority Queues · Load Balancing · TypeScript

- Designed a two-tier traffic routing system using Priority Queues and a custom Load Balancer to separate free-tier and premium API calls — required by the constraint of a single shared OpenAI rate limit across 550,000+ registered users.

- Implemented a Redis-backed caching layer ("Emotional Cache") that stores per-user conversation context as structured embeddings, reducing redundant LLM inference calls and cutting average response latency by ~40% under peak load (1,000–3,000 DAU).
- Architected the message queue to decouple real-time chat from background memory writes, enabling the system to sustain throughput without blocking on database I/O.

PaperXify — AI EdTech Engine [paperxify.com ↗]
MERN Stack · Google Drive API · Openrouter API · Advance Notes Pipeline · Custom PDF Rendering

- Built a multi-modal pipeline that transcribes, chunks, and summarizes YouTube video content into structured PDF notes in 7–8 seconds for an 8-hour video — achieved by parallelizing transcript segmentation with async worker threads rather than processing sequentially.
- Implemented a "Deep Note" generation mode that runs a secondary Gemini API pass to produce visual aids and diagrams (10–16 sec total); the added pass is only triggered on explicit user request to keep base latency low.
- Integrated Google Drive API for cloud storage and delivery, with a custom PDF rendering engine that formats structured output into student-ready notes without a third-party PDF library.

Autonomous Social Media Manager — SaaS Tool
Node.js · TypeScript · Instagram Graph API · X (Twitter) API · Cron Jobs · MongoDB

- Built a scheduled content pipeline using cron-based workers that poll Instagram and X trend APIs every 15 minutes, generate brand-specific post copy via LLM, and queue posts for automated publishing — processing ~96 trend checks per day with no manual triggers.
- Designed the backend to be stateless across workers, with MongoDB storing trend history and generated content; this allowed horizontal scaling without coordination overhead.

TECHNICAL SKILLS

Languages	C++, JavaScript, TypeScript , Bash/Shell
Backend	Node.js, Express.js, WebSockets, REST APIs, Microservices
Frontend	React.js, Next.js, Redux, Tailwind CSS, Framer Motion
Databases	MongoDB, SQL, Redis (caching, pub/sub)
Message Queue	Custom Priority Queues, Async Worker Threads, Cron-based pipelines
AI & GenAI	Openrouter API, Gemini API, Ollama (Local LLMs), RAG Pipelines, Multi-Modal Systems
Cloud & DevOps	AWS, Docker, Cloudflare, AWS (EC2) , Git
Architecture	Distributed Systems, Load Balancing, High-Concurrency Design, System Design
Testing	Postman, API contract testing
CS Fundamentals	DSA (C++), LeetCode Rating: 1,396, Competitive Programming, Data Structures & Algorithms, Object-Oriented Design, Operating Systems, DBMS, Computer Networks

HONORS & CERTIFICATIONS

- **Winner** — AI Innovation Expo: New Ideas & Prototype, GWCET
- **All India Rank 11** — Raccoon AI Innovation Challenge, NIT Rourkela (Certificate of Excellence in Pitching)
- **Finalist** — CodeRed, Solutions 2k25, Army Institute of Technology (AIT), Pune
- **Semi-Finalist** — The Economic Times ET-AI Hackathon 2026
- **Certification** — C++ & Data Structures and Algorithms (ID: ISCDST268937), Internship Studio