Gourab Modak

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Leetcode | Codechef | Codeforces | Portfolio

SUMMARY

Backend-focused Software Engineer with strong experience in building distributed systems, concurrent job schedulers, and scalable APIs. Skilled in designing reliable, transaction-safe services with an emphasis on data consistency, fault tolerance, and real-world production use cases. Motivated to work closely with core engineering teams to build high-impact fintech products at scale.

EDUCATION

Jalpaiguri Government Engineering College (JGEC)   Sep 2022 – May 2026
B.Tech in Computer Science and Engineering   **CGPA: 9.33/10.0**

Indian Institute of Technology Madras (IIT Madras)   May 2023 – Sep 2024
BS in Data Science and Applications (Online / Part-Time)   **CGPA: 9.63/10.0**
Entrance Exams: (94.2%ile in JEE Mains) and (98%ile in WBJEE Rank: 2152)

EXPERIENCE

iHub and HCi Foundation, IIT Mandi   Jun 2024 – Jul 2024
Software Engineering Intern   *Mandi, India*

- Engineered an **automated data processing pipeline** for 64-channel ANT Neuro EEG devices using Python, reducing manual intervention by **40%** across 150+ patient datasets.
- Built and evaluated multiple classification systems with a focus on **pipeline reliability, reproducibility, and performance monitoring**.
- Improved end-to-end system efficiency by **20%** via hyperparameter optimization and deployed an internal QR-based attendance service to streamline operational workflows.

PROJECTS

AegisQueue (A Distributed Job Queue & Scheduler System)   GitHub
Tech Stack: FastAPI, Python, MongoDB, PyMongo, REST APIs

- Built a **distributed background job processing system** ensuring **exactly-once execution semantics** using atomic MongoDB operations — suitable for transactional and financial workloads.
- Implemented a **state-driven job lifecycle** (QUEUED → RUNNING → SUCCESS / FAILED) with retries, failure persistence, and idempotent job handling.
- Designed **priority-based scheduling with FIFO guarantees** using atomic `find_one_and_update` operations to ensure correctness under high concurrency.
- Added **fault recovery and observability** via worker heartbeats and liveness checks, enabling automatic recovery of stalled jobs within **<30s** and improving system uptime under partial failures.

Competitive Programming Editor   Live Link | GitHub
Tech Stack: React.js, Node.js, Monaco Editor (VS Code Engine), Chakra UI

- Integrated the Monaco Editor API to deliver IntelliSense, real-time syntax validation, and VS Code–like code completion across **6+ programming languages**.
- Enabled **fully browser-based, zero-configuration code execution**, eliminating repeated local compiler setup and version management while ensuring low-latency performance via optimized Vercel deployments.
- Designed a **language-agnostic execution layer** with reusable snippets, improving implementation speed by **60–70%** during live competitive programming contests.

TECHNICAL SKILLS

Backend & APIs: FastAPI, Node.js, Express.js, REST APIs, Distributed Workers
Databases & Transactions: MongoDB, PyMongo, MySQL, Indexing, Transactions, Concurrency Control
Core CS: Data Structures & Algorithms, OOP, Operating Systems, DBMS, Concurrency
Languages: C++, Python, Java, JavaScript, SQL
Tools & Frontend: Git, GitHub, Postman, VS Code, React.js, Tailwind CSS, HTML5, CSS3

ACHIEVEMENTS

- **Global Rank 211/500,000+ participants:** TCS CodeVita Season 13 (Round 1) and **Global Rank 541** (Round 2).
- **NPTEL Silver Medalist (Top 5% Nationwide):** Awarded by IITs for excellence in *Data Structures in Python*, *Joy of Computing*, *Discrete Mathematics*, and *English for Competitive Exams*.
- **Competitive Programming:** Rated **3-Star (Top 10%)** on CodeChef; Solved **1500+** DSA problems across LeetCode, Codeforces, and CodeChef.
- **IIT Kharagpur Techfest (Kshitij):** 2nd Prize Winner in Voyager Robotics Competition.