

Ayush Sharma

Indian Institute of Technology, Goa

3rd Year **Undergraduate, Mathematics and Computing**

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Education

B.Tech, Mathematics and Computing, IIT Goa,

2023 – Present

Experience

Software Development Intern [Supervisor:- Dr. Rahul CS]

May 2025 – July 2025

- Role:** Backend developer for ERP modules (consultation, referral, evaluation).
- Tasks:** Designed and integrated RESTful APIs using Express.js and MongoDB, refactored backend logic for form submissions, student updates, and admin approval workflows. Collaborated with frontend team to ensure smooth integration.
- Accomplishments:** Optimized database queries and API response handling, reducing average fetch times by 25%. Enhanced data consistency through validation and middleware checks, lowering bug frequency in record updates.

Projects

Task Queue System [[GitHub](#)]

Dec 2025

- Situation/Task:** Required an asynchronous backend system for reliable background job execution with retries and duplicate prevention.
- Action:** Built a Redis-backed task queue with REST-based ingestion, PostgreSQL, stateless workers, idempotent execution, exponential backoff retries, and recovery of stalled tasks via periodic re-queuing.
- Accomplishments:** Reduced task polling latency by ~95% (4.5ms → 0.2ms), achieved ~4ms API latency, sustained 40k+ enqueues/sec, and prevented duplicate execution via strict idempotency and non-retryable error handling along with architecture designed for horizontal scaling via multiple worker instances.
- Tech Stack:** Node.js, Express.js, PostgreSQL, Redis

Alumni Management System [[GitHub](#)] [[Demo](#)]

March 2025 – Apr 2025

- Situation/Task:** Students lacked centralized visibility into placement statistics and alumni career paths, making data-driven academic and career decisions difficult.
- Action:** Built a MERN stack platform with JWT authentication, role-based access control, and admin-verified profile update workflows. Implemented server-side filtering for placement and alumni data.
- Accomplishments:** Optimized placement search queries using compound indexing and field projection, reducing documents scanned by 96% (10k → 360) and improving query latency by 50%, measured via MongoDB executionStats on a 10k-record dataset.
- Tech Stack:** React.js, Node.js, Express.js, MongoDB, JWT

Fraud Detection System [[GitHub](#)] [[Demo](#)]

Oct 2024

- Situation/Task:** Goa Police Hackathon required a system to detect and flag fraudulent websites in real time.
- Action:** Designed a multi-signal fraud detection pipeline combining SSL certificate validation, domain age analysis, phishing keyword detection, and external AI-based scoring. Ordered checks to prioritize low-cost signals before invoking expensive API-based analysis.
- Accomplishments:** Reached 85%+ fraud detection accuracy in testing datasets. Project ranked in top 32 out of 100+ hackathon teams.
- Tech Stack:** Python, Flask, MongoDB, Gemini API, BeautifulSoup

Skills

Programming Languages: C++, Python, JavaScript

Backend Technologies: Node.js, Express.js, REST APIs, JWT

Databases & Caching: PostgreSQL, Redis, MongoDB

Frontend Technologies: React.js, HTML, CSS, JavaScript

Tools & Coursework: Git, Linux, Postman, Algorithm Design, Data Structures, OS Internals, Compilers, Cache Design

Achievements & Extracurricular

- Secured top 32 position among 100+ teams at Goa Police Hackathon 2024 with a Fraud Detection System achieving 85%+ accuracy.
- Achieved LeetCode rating of 1800+ (top 8% globally), demonstrating problem-solving and DSA proficiency.
- Selected for Inter-IIT Basketball Championship, representing IIT Goa.