Tapan Sethi

+91-9556884422 | stapankumar743@gmail.com | linkedin.com/in/tapan743 | github.com/stapankumar

Education

Indian Institute of Technology, Guwahati — Assam, India

*Bachelor of Technology in **Computer Science and Engineering*** — *Nov 2020 – July 2024*

- CGPA: 7.24
- Core CS: **Database Management Systems**, **Software Engineering**, **Data Structures and Algorithms**, Design and Analysis of Algorithms
- Basic Mathematics: **Probability Theory & Random Processes**, Elementary Number Theory & **Linear Algebra**, **Optimization**

Experience

Research Engineer — Aug 2024 – Present

Centre for Development in Telematics — *New Delhi, India*

- Developed and integrated a **historical data tracking feature** for **Indian Railways' real-time wagon monitoring**.
- Replaced inefficient PSK interaction with a **digital certificate-based custom REST client, significantly reducing socket-level failures** and strengthening portal server communication.
- Designed a regulatory-compliant delete API with scoped access controls, **deployed in 48 hours for government clients (e.g., CRIS)**, addressing a critical limitation in the oneM2M standard
- Diagnosed and **resolved a protocol-level failure during field deployment, restoring full system functionality for 50+ active vendors within minutes**, enabling uninterrupted validation of IoT devices across the network.
- Monitored real-time platform usage trends via Google Analytics, and supported vendor device testing through a **developed SDK**, **leading to higher platform reliability and adoption**.
- **Deployed and troubleshooted services on Docker and Kubernetes**, gained practical insights into container orchestration, resource management, and real-world testbed deployments of **scalable distributed systems**.
- **Decoupled the Wildfly-managed database initialization module into a standalone Docker-based microservice on Kubernetes**, improving architecture and system bootstrapping.

Projects

Compiler for nano-C (subset of C), Course Project | GitHub — Jan 2023 – May 2023

- Designed a compiler for the nano-C language, covering all four phases of **compiler design**.
- Built a lexical analyzer using **FLEX** (Phase 1).
- Created a syntax analyzer using **Bison** for generating productions (Phase 2).
- Generated **machine-independent code** using syntax-directed translation (Phase 3).
- Produced **target code** via simple table-lookup-based code generation (Phase 4).

Trivia Quiz App | GitHub | Live — Jun 2022

- Developed a user-friendly web UI using **HTML and JavaScript**.
- Implemented interactive quiz interfaces with DOM manipulation.
- Established **asynchronous communication with external APIs** to fetch questions dynamically.

IoT Notification Handler | GitHub | Live — Nov 2025 – Dec 2025

- Built a Python service using **Flask** to receive IoT sensor data securely.
- Parsed JSON payloads and stored notifications in **Neon PostgreSQL**.
- Containerized with **Docker** and deployed on **Render** with HTTPS for secure cloud access.
- Processed live notifications for **smart agriculture** applications, supporting real-time decision-making.

Technical Skills

Languages: Java, C/C++
Frameworks & Standards: Jakarta EE (formerly Java EE), JPA, JDBC, JAX-RS, EJBs, JUnit, REST, XML Schema Definitions (XSD), JSON
Developer Tools: Git, Docker, Kubernetes (K8s), VS Code, Eclipse, pgAdmin4, Postman, MQTTX
Operating Systems: Linux, Windows

Achievement

- Selected for the **Indian National Mathematics Olympiad (INMO) 2020**, one of only 2 out of over 900 participants.
- Selected as an **Edison Engineering Development Program Intern at GE Healthcare**, working on a logger management system for X-ray logs using **Fluentd**.