Pulak Ghosh

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EDUCATION

National Institute of Technology, Nagpur — CGPA: 8.15
Master of Technology, Computer Science and Engineering — *Aug 2022 — Jun 2024*

- Served as a **Teaching Assistant** for core courses including **Data Structures and Algorithms, IoT, DBMS, and Software Engineering labs**, handling labs, grading, and student support

Jalpaiguri Government Engineering College — CGPA: 7.87
Bachelor of Technology, Information Technology — *Aug 2017 — Jun 2021*

WORK EXPERIENCE

Frontend Developer — Aug 2024 — Present
Tata Consultancy Services (TCS) — *Bangalore, India*

- Contributed to migrating a legacy JavaScript codebase to **Angular 17** with **micro frontend architecture**, improving maintainability, scalability, and reducing technical debt, which led to **20% faster developer onboarding**
- Helped build a **reusable component library**, cutting duplicate code by **30%**, improving consistency, and boosting test coverage to **80%**, which reduced production regressions by **25%**
- Worked on frontend **authentication flows** (JWT handling, session management, route guards), strengthening security for a **10M+ user financial platform**
- Collaborated in an agile team with designers and senior developers to deliver **accessible (WCAG 2.1 AA)**, responsive, and high-performance applications, improving page load speed by **20%**

PUBLICATIONS

kMiST: A KD-Tree Based Fast Minimum Spanning Tree Algorithm — *IEEE ICCCNT 2024, IIT Mandi*

- Proposed a **KD-Tree−based MST algorithm** with reduced time complexity $O(n \log^2 n)$, achieving **100× speedup** over Prim's on large datasets with **99% accuracy**

PROJECTS

Gofka

- Built a **Kafka-like message broker in Go** with append-only logs, segmented storage, indexing and durable writes, achieving **80k msg/sec ingestion**, **under 10 ms publish latency** and fast crash recovery **under 200 ms** for multi-GB logs

SecureFed: Privacy-Preserving Federated Meta Learning

- Built a framework enabling **collaborative model training without sharing data**, using **CKKS homomorphic encryption** for secure computation and **NaCl** for communication security, while preserving accuracy and reducing overhead

EXTRACURRICULAR ACTIVITIES

- Competitive programming: **800+ problems** across LC/GFG/HR/CF
- CodeChef: **Global Rank 32** among **3000+** in Contest 88C
- Won **Silver Medal** in VNIT intra-college powerlifting competition

SKILLS

- **Frontend**: Angular, React, Next.js, TypeScript, JavaScript, HTML5, CSS3, SCSS, RxJS, Micro Frontends
- **Backend**: Node.js, Express.js, Go, MongoDB, REST APIs, SQL (PostgreSQL, MySQL, SQLite)
- **Tools**: Git, GitHub, CI/CD, Agile/Scrum, Docker, vim, Linux