Rajiv Harlalka

✉ rajivharlalka009@gmail.com | 🔗 rajivharlalka | ⌨ rajivharlalka | 🌐 rajivharlalka.in | 📞 +91-8987966604

Education

Indian Institute of Technology Kharagpur — Kharagpur, India
Integrated M.Sc. Mathematics and Computing (CGPA: 8.94/10) — 2020 – 2025

Work Experience

Microsoft India | *Software Engineer Intern* — *May 2024 - Jul 2024*
- Worked on enabling **edits on high-fidelity fields** for tasks on "Assigned to Me" View of Microsoft Planner.
- Introduced a dynamic user permission model for API enhancement and verified data convergence between sources.
- Developed multiple comprehensive **unit and integration tests**, achieving **100% code coverage** for all changes.
- Implemented industry grade coding practices with end-to-end deployment on **pre-production environments**.

Houseware | *Backend Intern* — *Aug 2023 - Oct 2023*
- Implemented organization management endpoints on the app for administrators to manage access to active users.
- Revamped DBT models to handle incremental changes for Snowflake & BigQuery warehouse, thus reducing compute.

Mello | *Backend Intern* — *Feb 2022 - Dec 2022*
- Designed and built the principal backend and its infrastructure that served **1000+ users** on the mobile application.
- Implemented **write-through cache** using Redis & asynchronous request handling to **reduce response time** by **20%**.
- Introduced internal tools for improved user communication, admin-side registration tracking and on-site user verification.

Projects

FileDB: A Toy Disk Based Key-Value Storage — *March 2025 - June 2025*
- Developed a disk persistent key-value store inspired by Bitcask Paper from Riak with order O(1) record reads.
- Implemented background file compaction similar to LSM-trees, to reclaim space and sync write buffers to disk
- Provides high write throughput due to append-only writes and reached a benchmark of 50k write/s and 110k read/s.

Google Summer of Code 2024 — FFmpeg — *May 2024 - Aug 2024*
- Engineered a video filter in FFmpeg to support PU21 encoding for HDR image and video quality assessment.
- Engaged with the community to understand the fundamentals of multimedia encoding/decoding and processing.

Google Summer of Code 2023 — PostgreSQL — *May 2023 - Aug 2023*
- Contributed to the development of **pg_statviz**, a minimal PostgreSQL statistics monitoring extension, to snapshot several **static and dynamic statistics** without restarting a running database.
- Built a CI pipeline for **regression testing** on all community supported PostgreSQL versions along with packaging the extension and it's CLI for major Linux distributions like Debian and RHEL.

Competitions

OpenSoft - MongoDB Movie Website Hackathon — *March 2024*
- Led a team of 8 members to win the **first** position for Movie Streaming Website Hackathon by MongoDB for OpenSoft.
- Aligned team goals, delegated tasks effectively, & fostered a collaborative environment for newcomer skill development.
- Implemented **adaptive bitrate streaming via HLS protocol** served through CDN for minimal video buffering.
- Enhanced search functionality by incorporating **autocomplete suggestions**, fuzzy matching and semantic search.

Inter IIT Tech Meet 11.0 — *Jan 2023*
- Member of **Gold** winning team for Path Planning for Last Mile Delivery by Grow Simplee during InterIIT Tech Meet.
- Developed **REST & gRPC services** to serve the frontend and optimization service with a P95 latency of **120ms**.
- Implemented coordinate encoding using the **Geohash** feature by Redis reducing distance computation time by **40%**.

Technical Skills

Programming Languages	C/C++, Golang, Javascript, Typescript, SQL, Bash, Perl
Frameworks & Databases	Node.js, React.js, PostgreSQL, SQLite, MongoDB, Redis
Tools & Platforms	Linux, Git/GitHub, Docker, Nginx, AWS EC2, gRPC, RabbitMQ

Positions of Responsibility

Kharagpur Open Source Society | *Advisor* — *May 2022 - Current*
- Conducted Kharagpur Winter of Code (KWoC), a month-long event with 2500+ participants and 60+ projects.
- Organized hands-on workshops and tutorials to familiarise students with Python, Git, Shell Scripting and Linux.

IQPS - Metakgp | *Maintainer*
- Revamped IQPS - Intelligent Question Paper Search, a **question paper discovery service** hosting 600+ documents.
- Implemented **vector search** using pgvector on PostgreSQL that searches through course code, year and course name.
- Developed a simple form based platform for crowd-sourcing question papers and an admin panel for detecting outliers.