Rajiv Harlalka

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Education

Indian Institute of Technology Kharagpur   Kharagpur, India
Integrated M.Sc (CGPA: 9.03/10)   *2020 – 2025(Expected)*

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 envrionments**.

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 effectively account for incremental changes for Snowflake and BigQuery warehouse.

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 caching** using Redis and 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

Google Summer of Code 2024 — FFmpeg   *May 2024 - Present*
- 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.

Go Space: Open Source Project   *Jun 2022 - Jul 2022*
- Developed a Slack bot to upload/delete images published on slack channels on imgur to save workspace storage space.
- Used GoFiber with Goroutines to implement **concurrent upload** of image for better response time and reliability.
- Deployed the application which got utilized by workspaces reducing the average monthly storage usage by over 40%.

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.
- 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.