SRINAG RAO SADANANDA

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EDUCATION

University of Wisconsin–Madison, Master of Science in Computer Science (PMP) 2024 - 2026
Research: Performant Data Engine for Recursive Datalog Programs

National Institute of Technology Karnataka (NITK), B.Tech in Information Technology 2016 - 2020
GPA: 8.82 / 10.00

INTERESTS AND SKILLS

- Passionate about high-performance systems, distributed systems, parallel systems, and cutting-edge hardware.
- Interests: **Database Systems**, **Operating Systems**, Web Systems, Networking, Security, IoT.
- Skills: **C++**, **C**, Rust, Python, C#, JavaScript, **Bash**, **SQL Server**, **Linux**, Docker, Node.Js, React, CI/CD.

EXPERIENCE

Microsoft, Software Engineer 2 May 2021 - Aug 2024

- At Azure SQL DB, worked on database internals: **locking**, **transactions**, **recovery**, **storage**.
- Worked on Optimized Locking, a revamp of DML locking by avoiding lengthy transaction-duration row locks.
- Achieved a 40% reduction in lock memory, 35% decrease in lock escalations, and 70% reduction in lock waits.
- **Led** the elimination of short-duration row locks, putting us on par with lock-free systems like PostgreSQL.
- Stressed tested, fixed assertion failures and correctness bugs, debugged **core dumps** and **transaction logs**.
- Gained expertise in **corruption**, **high availability**, **replication**, and Azure orchestration while **on-call**.

Samsung, Software Engineer Jan 2021 - May 2021

- Worked on live-migrating JavaScript routines across IoT home appliances to enable compute sharing.

Indian Institute of Science, Intern Jun 2020 - Dec 2020

- Contributed to an open-source project facilitating data exchange in smart cities, by developing a containerized and clustered data pipeline using **Elasticsearch**, Logstash, and **RabbitMQ**.

Morgan Stanley, Summer Intern May 2019 - Jul 2019

- Developed a chatbot to assist engineers in monitoring **DevOps** pipelines and deployments.

Indian Institute of Science, Summer Intern May 2018 - Jul 2018

- Developed MudBoxer, a transparent security wrapper for ROS, by injecting a shared library to intercept C++ ROS API calls, secure passed data, and forward requests back to the original calls.

PATENTS AND PUBLICATIONS

- **Rao, S.**, Mittal, R., Gandikota, J., Sampath, S., Purnananda, P., Kodavalla, H., Radu, A., Byrne, P. 2023. **Granular Tracking of Locking Queries to Reduce Locking**. Patent pending.
- Ravella, C., Purnananda, P., Kodavalla, H., Byrne, P., Radu, A., Chen, W., Sampath, S., Atluri, N., **Rao, S.**, Kakade, P. **Optimized Locking in SQL Azure**. *IEEE ICDE 2024, Utrecht, Netherlands.*

PROJECTS

Process Migration System. Developed a system to migrate active user processes across Linux machines using **kernel modules** to query process execution context and capture virtual memory state.

IPoX. Developed a framework to create **network** links over custom transport mediums utilizing TUN. IPoX, for instance, can connect a computer to the internet via a phone call.