SRIRAM RAO

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Software engineer with industry and research experience in distributed data management systems. Proven track record in developing efficient, resilient solutions and collaborating across teams to drive software innovation.

EXPERIENCE

University of California, Irvine
Graduate Student Researcher
Sep 2020 - Sep 2024 Irvine, CA

- Designed database (DB) plugin that balances latency & costs, allocating **query-processing** resources to ongoing & **ML**-forecast loads.
- Developed framework for implicit **simulator** invocation by DB. Showed ease of analysis by integrating HYSPLIT into PostgreSQL.
- Collaborated with cross-domain (physics) experts to build backend data systems for Smart Practices & IoT Architectures for Prescribed fires (SPARx).
- Created a **pipeline execution** system for workflows defined as directed acyclic graphs of tasks. (On GitHub as sample.)

Dremio
Software Engineer - PhD Intern
Jun 2022 - Sep 2022 Remote, CA

- Devised a proof-of-concept (POC) to progressively improve query response in data lakes. Familiarized with **Apache Calcite** and **Iceberg**.
- Improved row-count estimation in **query planning/optimisation** via accurate statistics observed in prior executions. (LEO, Markl, VLDB 2001).

Microsoft
Software Engineer 2
Jun 2016 - Sep 2020 Bengaluru, India

- Owned Bing Ads framework processing billions of ads per day, precomputing trigger-string metrics to deliver A/B test results in < 20 minutes.
- Rebuilt workflow manager used for Extract-Transform-Load (**ETL**) in 100+ pipelines, reducing time-to-deploy from 1h to < 5s.
- Piloted **Spark** Streaming POC pipeline to compute the statistical significance of A/B tests 3x faster than existing batched method.
- Refactored cache config system in API hosted on **Azure** using Aspect-Oriented Programming. Decreased code 5x, codebase size 300 lines.
- Contributed to teammates' success with detailed input on 40+ design reviews, 100+ **code reviews**, and live issues on call.

Microsoft
Summer Intern
May 2015 - Jun 2015 Bengaluru, India

- Analyzed insert & response times of 3 data stores under stress loads. (Azure Data Explorer/**Kusto**, **MongoDB**, **column-store**.)
- Concluded Kusto suited the log analysis use-case (response < 5s), column-store the aggregate-based queries (response < 1s).
- Enabled migration from analytical (**OLAP**) cubes (instant response) to column-store (response < 1s). Cut ETL time from 10 days to 1 hour.

University of California, Irvine Academia
Teaching Assistant
Sep 2020 - Dec 2024 Irvine, CA

- Rated 4/5 in anonymous feedback from students, with appreciation for database expertise and **straightforward explanation**.
- Collaborated with professors & TAs on lecture slides, questions, assignments, discussion hours in courses with 200+ students.

SKILLS

Languages

Python, C#, Java, C++, C, Ruby, Swift, Lisp, Prolog, SQL
UI/UX: HTML, CSS, TypeScript (& JS), SwiftUI
Automation: Bash, Powershell, Lua

Technologies

Databases: Big Data, NoSQL, MongoDB, OLAP, PostgreSQL, Column-stores.
Compute Platforms: Spark, ETL, DAG, Query Engine, Apache Calcite, Iceberg, Trino.
Backend: .NET, Spring, Flask, REST, SvelteKit, Microservices, AOP, Architecture, Caching.
Infra: Docker, AWS, Azure, CI/CD, Jenkins, IaC.

EDUCATION

University of California, Irvine
MS in Computer Science
Sep 2020 - Mar 2025 Irvine, CA

University of California, Irvine
Graduate Work in the PhD Program
Sep 2020 - Sep 2024 Irvine, CA

- Advised by Prof. Sharad Mehrotra in data management: workload-aware pre-computation.

National Institute of Technology, Karnataka
B. Tech. in Computer Engineering
Jul 2012 - Mar 2016 Surathkal, India

PUBLICATIONS

- **S. Rao**, M. Boissier, and S. Mehrotra, "Genie generator-driven iterative data exploration," Integrating data generators, like simulators or benchmark data producers, into databases; poster presented at alumni meet (Paused).
- **S. Rao**, M. Boissier, and S. Mehrotra, "Janus autonomous resource allocation and pre-compute for future workloads," (Paused).
- S. Dinesh, **S. Rao**, and K. Chandrasekaran, "Traceback a forensic tool for distributed systems," in *Proceedings of 3rd International Conference on Advanced Computing, Networking and Informatics ICACNI 2015, Volume 2*, Springer, 2016, pp. 17–27.