PIYUSH JAGADISH BAG

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EXPERIENCE

Arista Networks — Santa Clara, CA
Software Engineer, Infrastructure — Mar 2022 - June 2022, Sep 2022 - Dec 2022 (Intern), Jan 2023 - Present

- Designed and automated **a scalable ML pipeline using Kubeflow** to process **150 million supply chain records**, enabling real-time risk categorization from 1-5 ratings, which resulted in a **40% reduction in model deployment time**.
- Implemented **distributed transactions** using the **Two-Phase Commit Protocol**, ensuring data consistency across multiple microservices, which resulted in a **25% reduction in transaction failures** during high-concurrency operations.
- Developed and automated an **Internal Developer Platform (IDP)** on AWS using **Terraform and CDKTF**, streamlining cloud infrastructure provisioning for development teams, resulting in a **50% reduction in deployment time** and enhancing self-service capabilities for developers.

Apple — Sunnyvale, CA
Software Engineer Intern, Data Access Layer — Jun 2022 - Sept 2022

- **Replaced built-in Query Parser ANTLR** with custom Query-Support developed using **Go** and **MongoDB Aggregation Pipeline** and **MongoDB Query Language**, enhancing performance of Search API in Data Access Layer by **30%**.
- Allowed front end team to search DB using custom-built structs and unifying within an interface to leverage **MongoDB query operators** in **JSON format**. Wrote unit tests for 30+ use cases, bringing test coverage to **100%**.
- **Improved the performance** of a legacy backend system by refactoring and optimizing code in **Go**, resulting in a **60% reduction in response time** and a **40% increase in system stability**.

TECHNICAL SKILLS

Languages:	**Go (Proficient)**, Python, C/C++, JavaScript
Frameworks:	**Gin (Proficient)**, Django, Flask, React, Node.js, GraphQL
Databases:	**SQL - [Postgres, MySQL] (Proficient)**, NoSQL - [MongoDB, Cassandra]
Developer Tools and Other Technologies:	**Git (Proficient)**, Docker, Kubernetes, Kubeflow, GitOps, Terraform, AWS

PROJECTS

Redis Internals in Go — Jan 2024 - Jun 2024

Go, Event Loops, Serialization Protocols, TCP/IP Networking, IO Multiplexing, Persistent Mechanism, Eviction Strategies

- Reimplemented Redis core features in Golang, including event loops, serialization protocols, and command pipelining, enabling seamless integration with any Redis client worldwide
- Implemented Redis persistence mechanisms, including Append-Only File (AOF) persistence, to guarantee data durability and recovery in distributed systems

Custom Orchestrator in Go — Aug 2023 - Dec 2023

Go, Table-driven Design, BoltDB, Singleton, Circuit Breaker, Leader Election

- Developed a fully functional orchestrator from scratch using Go, inspired by systems like Kubernetes and Nomad. Implemented core components including the manager, worker, scheduler, and CLI for efficient task management and orchestration.
- Built features to start, stop, and manage Docker containers using the Docker API, ensuring smooth operation and scalability of containerized applications. Developed a scheduling algorithm that optimizes resource allocation across a cluster of worker nodes.
- Integrated metrics collection and monitoring for both tasks and worker nodes to facilitate real-time tracking of system performance. Implemented APIs for collecting and reporting metrics, enhancing the system's observability and maintainability.

EDUCATION

Santa Clara University — Santa Clara, CA
Master of Science in Computer Science — Mar 2021 - Dec 2022

University of Mumbai — Mumbai, India
Bachelor of Engineering in Information Technology