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EDUCATION

Carnegie Mellon University | M.Sci in Information Networking (GPA: 3.9/4) August 2024 – May 2026
- *Courses*: Machine Learning, Distributed Systems, Information Security, Packet Switching & Networking

Indian Institute Technology, Jodhpur | B.Tech in Computer Science and Engineering August 2018 - May 2022
- Received Silver Medal for Student Distinguished Contribution Award
- *Course*: Software Engineering, Virtualization & Cloud Computing, Theory of Computation

SKILLS

Languages: Golang, C++, C, Java, Python, JS/ES6
Technologies: Terraform, Kubernetes, gRPC, ORM, React/Redux, Django, REST, GraphQL, Service Meshes

EXPERIENCE

Oracle Cloud Infrastructure | Member of Technical Staff | Bangalore, India August 2022 - August 2024
- Engineered and deployed a production-ready **Terraform provider** singlehandedly for OCI PostgreSQL service, also implemented comprehensive test suites for the same to ensure robustness and reliability.
- Developed *fault tolerant and recoverable workflows* of **vertical scaling, password management and system restart.**
- Implemented **custom pagination solution** at the DAO layer for key-pair database interactions for better user queries.
- Hygiene: Separated control and management plane logic, modularized API spec structure, authored multiple on-call runbooks
- Facilitated service integration to: Quota/Limits enforcement, SDKs and CLI generation, led API design and review.

CNCF | Open-Source Maintainer (Frontend, Meshery and MeshMap) | Remote July 2021 - January 2022
- Engineered a **Ruby application** to **automate GraphQL documentation generation** for the Meshery website, improving developer experience and documentation accuracy.
- Authored and refined *technical docs* and *how-to guides* on **Service Meshes, Envoy Proxy, and ProtoBufs**.
- Mentored new contributors by providing technical guidance, code reviews and hosting newcomer's meetings.
- Selected as a speaker at **KubeCon North America 2020**, "Meet the Maintainer: Service Mesh Interface" event.

Google Summer of Code | Summer Intern | Remote May 2021 - August 2021
- Developed a **Kubernetes visual topology dashboard** with pod-specific **log viewer** and **interactive terminal** using React, Cytoscape.js and GoLang.
- Led **migration of Meshery's API** architecture from REST to GraphQL, enabling more flexible data fetching capabilities.

The Linux Foundation Mentorship Program | Winter Intern | Remote September 2020 - December 2020
- Engineered a comprehensive validation suite for **Service Mesh Interface compliance** as a gRPC spec**,** validated using a SMI operator deployed across various k8s platforms by cloud platforms like AWS, Azure, GCP, and Alibaba.
- Implemented automated persistence of those tests in Meshery cloud (psql) and publication on the public-facing website.

PROJECTS

RPC Protocol (Go, Reflection, Networking)
- Engineered a generic RPC library enabling remote method invocation with **automatic stub generation using reflection**.
- Implemented fault-tolerant mechanisms to **handle network failures and reconnections**, enhancing system reliability.

Heap Allocator (Linux, C, GDB):
- Developed a high-performance heap allocator using **segregated free lists and best-fit search**, achieving **10180 Kops/sec** throughput and **76% utilization**.
- Optimized memory management for small allocations with a **dedicated mini-block list, reducing fragmentation**.

Raft Consensus Protocol (Go, Distributed Systems)
- Developed a **Raft-based consensus system** in GoLang ensuring consistency **across distributed nodes**.
- Implemented **leader election, log replication, and failure recovery**, validated through rigorous testing of network partitions and peer failures.

Unix Shell with Job Control (C, Unix, Signal Handling)
- Built a fully functional Unix shell in C, featuring **job control for managing foreground and background processes** with a dynamic job list.
- **Managed child process reaping and job states** using signal handling (SIGCHLD, SIGINT, SIGTSTP) and I/O redirection.

PUBLICATIONS

CrossTrustchain: Cross-Chain Interoperability using Multivariate Trust Models (First Author)
2023 15th International Conference on COMmunication Systems NETworkS *10.1109/COMSNETS56262.2023.10041399*

LEADERSHIP & KEY ACHIEVEMENTS

Winner of Tata Crucible Hackathon | Captain of the University Designing Team | Assistant Head, Student Wellbeing Committee | Web Development Head, Varchas Sports Fest | Creativity Head, Aaftab Literature Fest | Founding member of Devlup Labs, IITJ Open-Source Development Enthusiasts Group