Tags: Hyperlinks | Skills | **Highlights** Available to join full-time starting May 15, 2026

Dhruv Patel | dhruvp@cmu.edu • dhruvArchives.com • GitHub: dhruv0000 • LinkedIn: dhruv0000 • +1 (412) 918-0204

EDUCATION

Carnegie Mellon University | MS in Computer Systems and Information Networking (GPA: 3.9/4) *August 2024 – May 2026*

- *Courses*: Cloud Computing, Distributed Systems, Information Security, Embedded Systems and more.
- ***Teaching Assistant***: Intro to Computer Systems, Intro to Machine Learning, AI Application in Information Security

Indian Institute of Technology, Jodhpur | B.Tech in Computer Science and Engineering *August 2018 - May 2022*

- Received Silver Medal for **Student Distinguished Contribution Award**
- *Courses*: Software Engineering, Virtualization & Cloud Computing, Theory of Computation

EXPERIENCE

Analytics 4 Everyone LLC | *AI Engineering Intern* | Pittsburgh *May 2025 - August 2025*

- **Developed scalable** pipelines using LangGraph/LangChain for **agentic tools**, incorporating Retrieval-Augmented Generation using Milvus to process data, export quizzes in QTI XML format and upload them to LMS platforms like Canvas.
- **Integrated** Django app **with LTI 1.3** using OAuth 2.0 & OpenID Connect, enabling secure authentication and authorization.
- **Implemented** Redis-based **session management** and psql **object-relational mapping** for the above; migrated from Redis Instance to cluster, improving horizontal scalability and availability.

Oracle Cloud Infrastructure (PostgreSQL/Aries) | *Member of Technical Staff 2* | Bangalore *August 2022 - August 2024*

- **Led the development of production-ready** (full-test coverage) **Terraform provider** using *GoLang*. This led to **35% more customer onboarding** during limited availability/beta testing.
- Engineered fault-tolerant RPC-based **workflows** in Java **for vertical** (read-replica) **scaling, password management** (with optional OCI Vault integration), and **soft container restart** (reducing replica recovery time by ~50%).
- **Led** several **Service**/OpenAPI **Spec review** meetings, helped separate control/mgmt planes, wrote multiple on-call runbooks.
- **Integrated service to**: Quota/Limits enforcement, SDKs and CLI generation; configured telemetry for on-call incidents.

Google Summer of Code | *Summer Intern* | Remote *May 2021 - August 2021*

- **Developed K8s visualization & deployment dashboard** using React/Redux, tailwind and Cytoscape.js, called MeshMap.
- **Implemented pod-specific log viewing and terminal capabilities** for the dashboard using Golang and NATS, leveraging MeshSync Kubernetes controller for real-time log streaming and cluster discovery.
- Led **Meshery's API migration** from REST to GraphQL,and designed a Ruby **application to automate GraphQL documentation generation** in Meshery Docs, improving data fetching flexibility and documentation accuracy.

The Linux Foundation Mentorship Program | *Winter Intern* | Remote *September 2020 - December 2020*

- **Developed** gRPC-based (language agnostic) **conformance test suite** for **Service Mesh Interface** (SMI) compliance (later migrated to K8s Gateway API), defining test cases and validating meshes from AWS, Azure, GCP, Nginx and Alibaba Cloud.
- Implemented automated PostgreSQL persistence and public publication workflows for SMI Conformance test results.

VOLUNTEERING & LEADERSHIP

Cloud Native Computing Foundation (Meshery) | *Open-Source Maintainer* | Remote *July 2021 - January 2022*

- Selected as a **speaker at KubeCon North America 2020**, "Meet the Maintainer: Service Mesh Interface" event.
- Mentored new contributors by providing technical guidance, code reviews and hosting newcomer's meetings.
- Authored technical docs and how-to guides on Service Meshes, Envoy Proxy, and ProtoBufs.

Founding Member, Devlup Labs (Open-Source Group) | **Oracle Volunteering** for Surabhi Foundation Trust | **Captain, Designerds Club** (UI/UX & Design Workshops/Contests) | Assistant Head (and Student Guide), **Student Wellbeing Committee, IITJ**

PROJECTS

Practical Byzantine Fault Tolerance (Go, Distributed Systems, Fault Tolerance)

- Implemented PBFT consensus protocol for **state machine replication**, enabling **tolerance of up to f/3f+3 Byzantine faults**..
- Developed a **controller** to manage peers, simulate crashes & invalid digests/signatures;for managing & validating consensus.
- Engineered **replica recovery mechanisms** for deactivated nodes, synchronizing logs through quorum agreement

Raft Consensus Protocol (Go, Distributed Systems, Microservies)

- Engineered a RPC library from scratch enabling remote method invocation with **runtime stub generation**.
- Developed a **Raft-based consensus system** in GoLang ensuring consistency **across distributed nodes**.
- Implemented **leader election, log replication, and failure recovery**, validated for network partitions and peer failures.

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**.

Unix Shell with Job Control (C, Unix, Signal Handling)

- Built a 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 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*