

Mayur Mankar

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Summary

Software Engineer with hands-on experience building optimization systems for vehicle routing and logistics operations, complemented by a strong background in data science and ML research. Experienced in Python, operational data processing, routing systems, and production engineering, with hands-on experience in Operations Research, dynamic optimization, and decision systems.

Education

Indian Institute of Science Education and Research Bhopal

BS-MS (5-year), Department of Data Science and Engineering CGPA: 7.03/10

Work Experience

Spindle Quantum | Software Engineer (SDE-I) June 2025 - Present

- Developed and maintained backend and optimization systems for a Vehicle Routing platform, contributing to production logistics and fleet optimization workflows.
- Designed routing and data-processing pipelines in Python using OSRM and MongoDB, with automated Excel↔JSON transformations for operational planning and reporting.
- Built and operated CI/CD pipelines on self-hosted GitLab and Jenkins with SonarQube integration, automating builds, tests, and deployments to replace prior manual release steps.
- Containerized backend services with Docker and Kubernetes on Google Cloud Platform, standardizing environments across development and production.

PawScan.AI | Co-founder December 2024 - April 2025

- Co-founded an startup building end-to-end AI surveillance systems that fuse gait and face recognition for robust human identification.
- Pre-incubated at IICE-IISER Bhopal and PIEDS-BITS Pilani; secured a development-and-deployment grant of Rs. 150,000 from iHub Anubhuti, IIIT Delhi Foundation.

Research & Internship Experience

Indian Institute of Technology Delhi | ACM IKDD Uplink Internship

- Researched adversarial robustness in temporal graphs, developing attack and defense strategies for dynamic networks.

Shiv Nadar Institute of Eminence | INSA-IASc-NASI Summer Research Fellowship

- Improved the attention-aware multi-prototype transductive inference (attMPTI) method for few-shot 3D point-cloud semantic segmentation of indoor scenes.

I-DAPT Hub Foundation, IIT (BHU) Varanasi | CHANAKYA PG Fellowship

- Built an end-to-end camera-LiDAR multi-modal data collection and pre-processing pipeline for downstream 3D object detection.

Indian Institute of Technology Roorkee | Google Research Sponsored Mentorship

- Built AI-driven models to detect anomalous road-traffic patterns, improving road-safety analytics.

Technical Skills

Optimization & OR: OR-Tools, QUBO / Quantum Optimization, Qiskit, Constraint Modeling

Programming: Python, R, C++, MATLAB

Backend & APIs: FastAPI, REST APIs

Databases: MongoDB, MySQL, PostgreSQL

Cloud, DevOps & MLOps: GCP, Docker, Kubernetes, Jenkins, GitLab CI/CD, SonarQube, Git, Linux

ML & Data Science: PyTorch, TensorFlow, Keras, OpenCV

Projects

Dynamic Vehicle Routing & Fleet Optimization System

- Designed and developed an **event-driven DVRP engine** with stateful route management, supporting pickup-delivery, time windows, heterogeneous fleets, multi-depot operations, vehicle/driver constraints, and dynamic events including new orders, cancellations, traffic delays, and vehicle breakdowns.
- Architected a hierarchical optimization framework with a Trigger Decision Engine for event-driven optimization decisions, cost-aware insertion, vehicle- and region-level re-optimization, and QUBO-based global optimization; integrated state versioning, OSRM routing, FastAPI, and MongoDB/Firestore persistence.