Mihir Salot

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SUMMARY

Robotics Engineer with **4 years** of experience developing and deploying perception, control, and navigation algorithms for robots. Skilled in ROS2, Python, C++, MATLAB, GD&T, DFMA, Solidworks and Ansys

SKILLS

Hardware Implementation: Arduino, Raspberry Pi, Cube Orange, iMX7, Jetson Nano, GPS, LiDAR, RADAR
Programming Languages and Tools: Python, C++, MATLAB, Gazebo, MuJoCo, IsaacGym, ROS2, SolidWorks, Ansys,

EXPERIENCE

Graduate Student Researcher, ERL Lab, UCSD **Mar 2025 - Oct 2025**
Manipulation and Control| Isaac Gym, CopeliaSim

- Deployed a Model Predictive Path Integral (**MPPI**) controller using **Isaac Gym**'s GPU-accelerated rollouts to optimize trajectories for real-time, **contact-rich** block manipulation on **6-DOF** xArm6 robot arm hardware
- Developed feedforward-plus-PI controller and trajectory generation algorithm for **KUKA** youBot mobile manipulator with **5-DOF arm** to perform a pick-and-place task in **CoppeliaSim**

Software Engineering Intern, BrainCorp [Video] **June 2025 - Sept 2025**
Vision-Language-Models (VLM) based Global Localization for warehouses| Python

- Built VLM-based **semantic mapping pipeline** to generate maps robust to months of environment changes
- Developed **particle filter-**based localization algorithm using **VLM** and Distance Transform-based **LiDAR** observation models to eliminate manual homing requirements during delocalization/cold starts
- Achieved **95%** localization accuracy (distance error <**4m**) across **10,000m²** warehouse using **1-month-**old semantic maps, converging in **12 m** of robot motion

Senior Robotics Software Engineer, General Aeronautics (GA) **June 2022-June 2024**
Enhancements and Bug Fixes| Python, C++, Ardupilot (Open-source)

- Implemented and field-deployed a **BUG2**-based path planning algorithm, reducing crash rate by **70%**
- Engineered a regression testing setup by interfacing Gazebo, autopilot's simulator, ground control station and drone hardware, cutting field testing time by **60%** and accelerating code release by **10%**
- Improved flight stability by modifying control and estimation algorithms to handle sensor failures and prevent I-gain buildup, and enhanced safety through online performance checks

Senior LPG Project Engineer, Indian Oil Corporation Limited **July 2019-June 2022**

- Led Design and Execution teams to commission a **$30M** LPG Bottling Plant in India
- Designed pressure vessels, steel structures, heat exchangers and piping using **Ansys, SolidWorks and STAAD**

PROJECTS

Robotics| SLAM, RANSAC, CasADi, OMPL

- Implemented LiDAR-based **SLAM** using **Iterative Closest Point** for scan matching and **GTSAM for pose graph optimization** to generate occupancy maps for the environment
- Implemented EKF-based **visual-inertial SLAM** to estimate poses and landmarks using IMU and stereo camera
- Implemented receding-horizon certainty equivalent control **(CEC)** using **CasADi** and deterministic **Generalized Policy Iteration (GPI)** algorithm for optimal control of a differential drive robot

Neural Networks| Pytorch

- **Classification using CNNs:** Implemented **ResNet-10** and **DenseNet** from scratch, achieving **56%** accuracy on CIFAR-100; incorporated self-attention mechanisms to increase CIFAR-10 accuracy from **56% to 61%**
- **Segmentation:** Implemented **U-Net, FCN-8s,** and **FCN-32s** from scratch achieving **87%** pixel accuracy and **0.42 IoU** on CamVid dataset for autonomous driving applications

EDUCATION

University of California, San Diego | MS in Mechanical Engineering (GPA: 3.5/4) **Sept 2024 - present**
Indian Institute of Technology, Gandhinagar| B.Tech in Mechanical Engineering (GPA: 3.5/4) **2015-2019**