Kasina Jyothi Swaroop

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EDUCATION

Northwestern University   Evanston, IL
M.S in Robotics   Sept 2025 – Dec 2026(Expected)

Indian Institute of Technology (ISM) Dhanbad   Dhanbad, India
B.Tech in Electrical Engineering   July 2018 – May 2022

SKILLS

Programming: C, C++, Python, Embedded Programming, Linux, Git, Unit testing, behavior Trees, Docker
Robotics: ROS 1, ROS 2, SLAM, Perception, Path Planning, Multi-Agent Path Planning, Motion Planning, Manipulation
Machine Learning: Supervised, Unsupervised, MLP, CNN, YOLO, Reinforcement Learning
Libraries: OpenCV, MoveIt 2, Nav2, RTABMap, ORBSLAM3, g2o, realsense2, zed-sdk, Tensorflow, Scikit-learn, Pandas
Hardware: ESP32, Arduino Uno, RealSense camera, ZED2i camera, Roboteq controller
Software Tools: Gazebo, CoppeliaSim, Rviz, MATLAB, SQL, MongoDB, RabbitMQ, REST API

EXPERIENCE

Telexistence   Tokyo, Japan
Robotics Engineer   October 2024 – July 2025
- Engineered a Fleet Management System (FMS) in C++ for Autonomous Forklifts (AGF) handling depalletization tasks.
- Implemented task-planning using behavior trees and inter-process communication between AGFs and robot arms in ROS 1.
- Designed recovery pipelines that reduced AGF errors by 93%, cutting failures from 15 per day to just 1.
- Integrated external AGFs into the FMS by developing REST API interfaces in C++ within 2 weeks, accelerating validation.

Addverb Technologies   Noida, India
Robotics Engineer   August 2022 – June 2024
- Implemented multi-agent path planning algorithms in C++, using behavior trees for task and charge management.
- Independently developed FMS for two greenfield systems: a 28-robot tugger fleet and a vertical sortation robot demo.
- Dockerized code to easily deploy and manage 150+ robots across 4 countries, achieving more than 95% throughput.
- Constructed dashboards for customers and maintenance teams, automating error & throughput reports via Webhooks.
- Mentored interns and coordinated across product, hardware, and mechanical teams to deliver products and deployments.

TexMin, IIT(ISM) Dhanbad   Dhanbad, India
Robotics Research Assistant   October 2021 – February 2022
- Applied RTAB-Map SLAM algorithm in ROS 1 on a wheeled robot for underground mine rescue.
- Published a paper in the International Journal of Intelligent Unmanned Systems (IJIUS, 2025).

PROJECTS

Catch the ball - Franka Robot Arm | [Python, ROS 2, MoveIt 2, OpenCV, Machine Learning]   Dec 2025
- Worked in a team of four to design and implement a ball-catching robotic system using the Franka Emika Panda robot arm.
- Built a custom MoveIt 2 API wrapper for joint-space and Cartesian planning with gripper control.
- Developed real-time ball detection and tracking pipelines using OpenCV and YOLO in Python.
- Integrated the easy_handeye2 package for extrinsic calibration of the realsense/zed camera.
- Coded a custom ROS 2 Kilted wrapper for interfacing with the ZED2i camera.
- Implemented modular ROS 2 nodes for perception, trajectory prediction, and control.

Unscented Kalman Filter | [Python, Git]   Oct 2025
- Implemented the Unscented Kalman Filter from scratch in Python using NumPy on the MRCLAM dataset.
- Fused control inputs and measurements using UKF to correct dead-reckoned trajectories towards the ground truth.
- Resolved asynchronous data rates by building a time-ordered event list and applied correction at measurement timestamps.

Robotic Pen Grabber - PincherX Robot Arm | [Python, ROS 2, OpenCV, Rviz, Git]   Sep 2025
- Developed a vision and manipulation pipeline in Python for a robot arm to detect and pick a pen using a RealSense camera.
- Implemented color-based detection in OpenCV (HSV filtering, contour extraction) and computed centroids to locate the pen.
- Calibrated the camera–robot transform for accurate pick-and-place execution.

Saviour - Epileptic Seizure Detection Device | [Python, ESP32, TensorFlow, Arduino IDE]   Mar 2020
- Prototyped an ESP32 + EMG sensors on a glove to detect seizures and alert caretakers via an app with a team of 4.
- Achieved 89% accuracy on a custom EMG signals dataset.

KRISHAK - Terrace Farming Robot | [C, Arduino Mega, Arduino IDE]   Dec 2019
- Led a team of 4 to prototype a terrace farming robot, handling design, fabrication, electronics, and programming.
- The project involved making a stair climbing robot and using simple sensors to perform farming tasks.