NARENDHIRAN SARAVANANE

+1 (602) 693 6573 | narendhiran2000@gmail.com | naren200.github.io | github.com/naren200 | linkedin.com/in/narendhiran2000

Result-driven robotics software engineer at Agrobotics with 6+ months of exp. seeking immediate FT roles. Proficient in ROS2, docker, industrial communication protocols, PLC, and fine-tuning AI models.

EDUCATION

MS in Robotics and Autonomous Systems (Honors), *Arizona State University* | AZ, USA GPA: 4.0 / 4.0 May 2024
B.Tech in Mechanical Engineering, *Indian Institute of Technology Patna* | Bihar, India GPA: 7.5 / 10 Aug 2022

Tech Finalists: International Robotic Competition (eYRC) & Bachelor's Capstone Project in Mechanical Department
Conferences: IEEE, American Control Conference ACC'24 | Indian Institute of Science, I-4AM'22 | Delivered 2 talks
Courses: Linear Algebra | Sequential Decision Making | RL | ML | UAVs | Perception | Optimization | Controls | PDE

EXPERIENCE

Padma Agrobotics, *Robotics Software Engineer* | Arizona, USA Jun 2024 - Present

- Architect **Docker-ROS2** nodes, and establish GPS, camera, sensors & pneumatics through **ethernet & digital IO**
- Develop automated data processing pipelines, parsing & logging **ros2bag** binary data for efficient large-scale analysis
- Configure motor systems, motor controllers, and joystick operations via **PLC** to apply dynamic control algorithms
- Train **AI** algorithm with field-collected datasets to detect new features and fine-tune model parameters

Brainchip, *Solutions Architect Intern (Robotics & RL Specialist)* | Remote (California, USA) May 2023 - Aug 2023

- Constructed **3D models** and ROS-joints controlled through Q-Learning, **RL** model operated on AKD1000 Chip
- Spearheaded the end-to-end creation of an AI-controlled robot, accelerating project completion by **40%**
- Transformed the AI model's transition from TF to BrainChip's MetaTF **framework**, enriching customer acquisition

Indian Institute of Technology Bombay, *Robotic Software Engineer Intern* | Remote (India) May 2020 - Aug 2020

- Led an 4-person team to develop a fiducial-marker-based **localization** model for an unstable camera feed
- Achieved high-precision localization model in V-rep for real-time camera feeds, reducing calibration error to $\leq$ **0.5%**
- Amplified design, combined rule-based script, and **unit tested** to validate auto-evaluators with 95% coverage

SKILLS

Languages	Python, C/C++, C#, embedded C, Java, Catkin, CUDA, CMake, Matlab, Git, Bash, LaTeX, Vim, PCL, I2C
Robotics	ROS 1/2, V-Rep, Gazebo, Ansys, MoveIt, MuJoCo, FEA, CFD, Arduino, AtMega 2560, Sensor Fusion, PLC
Software	Linux, Tensorflow, Pytorch, Docker, OpenCV, ZeroMQ, B0RemoteAPI, CorelDraw, Solidworks, Fusion360
Certifications	Robotics Software Engineer, Udacity Nanodegree – (2023) | Self-Driving Cars, University of Toronto – (2023)

PROJECTS

LLMs operated Autonomous Car Agent (Carla Simulator) - *Capstone Master's Project* Nov 2023 - May 2024

- Engineered an advanced safety control pipeline for GPT-operated fully autonomous vehicle in Carla Simulator.
- Trained using a custom-generated dataset (**500GB**), coupled with GPT reasoned autonomous decision-making agent

Home-Delivery Bot | Robotics Software Engineer, *Udacity Nanodegree* (Scholarship Scholar) Dec 2022 - April 2023

- Developed a robot in Gazebo (**ROS**) & integrated with **feedback control** for state dynamics
- Implemented SLAM and sensor fusion (Rotary Encoder, Odom & IMU) for navigation & deployed AMCL

IEEE Paper – *Control Systems Society Conference* (Paper Accepted) Jan 2023 - Jan 2024

- Distributed RHC approach for multi-agent systems with privacy and maintained MTL specifications
- Utilized Kalman filter equations and **MILP** to encode causal MTL specifications as constraints

Visual Tracking UAV - *Mambo Drone* Jan 2023 - April 2023

- Tailored a high-performance, **low-level flight control** algorithm with an integrated **Kalman Filter** for an Drone
- Championed an optimized red color detection algorithm, slashed processing time by 30%, and improved efficiency.

Meta's Research Enhancement – *Object Goal Navigation* Jan 2023 - April 2023

- Integrated **YOLOv7** and performance enhancements led to a 7% success rate boost in object goal navigation
- Engaged with a deep RL model, leveraged On Policy. Integrated **RRT** to path planning replaced Fast Marching

Dc-GANs (Deep Convolutional Generative Adversarial Network) – *Fashion MNIST* Nov 2022 - Dec 2022

- Devised a DcGAN **neural** architecture & successfully trained within 50 epochs to generate realistic synthetic images
- Crafted a Tensorflow-based neural network and optimized the generator and discriminator model

Robotic Arm – *Singularity Analysis* Nov 2022 - Dec 2022

- Utilized Applied Inverse Kinematics to analyze a 6-DoF robotic arm, achieved a 99.9% singularity avoidance
- Incorporated **Trajectory Planner** for a Kinova Gen3 robotic arm, optimized the trajectory within the Space