NARENDHIRAN SARAVANANE

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Result-driven AI engineer at Agrobotics with 6+ months of exp. seeking immediate FT roles. Proficient in Computer Vision, RL, LLMs, and fine-tuning AI models.

EDUCATION

MS in Robotics (AI Specialization) (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, *AI Software Engineer* | Arizona, USA — May 2024 - Oct 2024

- Trained **Yolo** algorithm with field-collected datasets to detect new features and fine-tune model parameters.
- Deployed **Docker**-ROS2 managed nodes and established GPS, camera, and solenoid pneumatic serial communication.
- Developed automated data processing pipelines, parsing & logging **ros2bag** binary data for large-scale analysis.
- Configured motor systems, motor controllers, and joystick operations via **PLC** to apply dynamic control algorithms

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

- Constructed 3D models and ROS-joints controlled through **DQN neural** model operated on AKD1000 Chip.
- Spearheaded the end-to-end creation of an **RL-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 test**ed to validate **auto-evaluators** with 95% coverage

SKILLS

Languages	Python, C/C++, embedded C, Catkin, CUDA, CMake, Matlab, Git, Bash, LaTeX, Vim, PCL, I2C
Robotics	ROS 1/2, V-Rep, Gazebo, MoveIt, Arduino, AtMega 2560, Sensor Fusion, PLC
Software	Linux, Tensorflow, Pytorch, Docker, OpenCV, ZeroMQ, B0RemoteAPI, CorelDraw, Solidworks
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

- Achieved $\sim$ 99% accuracy with minimized **hallucinating** LLM's response & enhanced collision avoidance system.
- Trained using a custom-generated dataset (500GB), coupled with LLM reasoned autonomous decision-making agent.

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 **optimization** to encode causal MTL specifications as constraints.

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** and **Actor-critic** algorithm. Integrated RRT to path planning.

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.

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.

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

- Developed a high-performance, **low-level flight control** algorithm with an integrated Kalman Filter.

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.
- Implemented **Trajectory Planner** for a Kinova Gen3 robotic arm, optimized the trajectory within the Space.