Shriman Raghav Srinivasan

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Education

Northeastern University Boston, MA
Master of Science in Robotics; GPA: 3.78 *September 2024 – August 2026*
- Relevant Courses: Reinforcement Learning, Legged Robots, Deep Learning for Robotics, Mobile Robotics

SRM Institute of Science & Technology (SRMIST) Chennai, India
Bachelor of Technology in Mechatronics Engineering; GPA: 3.81 *June 2018 – May 2022*
- Relevant Courses: Fundamentals of Robotics, Linear & Digital Control Systems, Automation & Intelligent Systems

Experience

Manufacturing Equipment Engineer Intern April 2025 – December 2025
Tesla Inc. *Fremont, CA*
- Deployed autonomous mobile robots with SLAM and perception systems on live factory floors, achieving $2.04M projected savings
- Programmed penalty-optimized Theta* path planning with 83% complexity reduction—experience in cost-aware optimization
- Resolved AGV control instabilities through PID tuning achieving 35% reduction in downtime
- Developed multi-camera perception system with YOLOv8 achieving 30 FPS inference

Robotics Engineer – Projects July 2022 – August 2024
Hero MotoCorp Ltd *Neemrana & Tirupati, India*
- Designed gantry robotic systems with reinforcement learning for adaptive grasping of 1M+ spare parts, increasing material handling efficiency by 40% and improving grasp success rate by 28% on novel geometries
- Implemented Bidirectional RRT-based path planning achieving 31.8% efficiency improvement
- Developed precision trajectory planning in MATLAB/Simulink reducing material wastage by 11.9%

Projects

Policy Gradient Methods for Robotic Control January 2026 – April 2026
- Implemented REINFORCE and Actor-Critic algorithms for continuous control tasks, with Actor-Critic achieving 34% faster convergence and 2.3x better sample efficiency than vanilla REINFORCE
- Developed PPO and DDPG for continuous robotic control in Isaac Gym, achieving 89% success rate on manipulation benchmarks with 1.2M training steps and stable reward convergence
- Formulated robotic manipulation as MDPs with 12-dimensional state space and 6-dimensional action space, designing shaped reward functions achieving 95% sim-to-real transfer success

Improved LLM-A*: Learning-Enhanced Path Planning March 2025 – April 2025
- Redesigned LLM-A* hybrid path planning cutting node expansions by 23.4% on 10×10 grids and 21.6% on 20×20 grids, demonstrating integration of learning-based and classical planning methods
- Boosted waypoint accuracy by 17.8% through systematic prompting comparison, achieving 94% valid path generation analogous to value function approximation in RL

Maze-Solving Robot: Controller Benchmarking as MDP January 2025 – April 2025
- Modeled unicycle robot navigation as MDP with continuous state (x, y,) and actions (v,), benchmarking 4 controllers across 7 maze environments (15×15 to 45×45 grid sizes)
- MPC achieved 23% lower tracking error than PID baseline with 18% fewer control steps, demonstrating model-based planning advantages analogous to model-based RL approaches

Technical Skills

Technical: Markov Decision Processes (MDPs), Policy Gradients (PPO, DDPG, SAC), Value Functions (DQN), Actor-Critic Methods, RL Agent Design, Sim-to-Real Transfer, Domain Randomization, Monte Carlo Methods, TD Learning
Programming: Python, C/C++, CUDA
Software: Isaac Gym, MuJoCo, PyBullet, Gazebo Simulation, MATLAB/Simulink, Weights & Biases, Docker, Git
Hardware: NVIDIA Jetson Orin, GPU Workstations (RTX), RGB-D Cameras, Force/Torque Sensors, Joint Encoders
Libraries/Framework: PyTorch, TensorFlow, Stable Baselines3, RLlib, CleanRL, ROS 2, OpenAI Gym, JAX
Certifications: Deep Learning, Reinforcement Learning, Mechanism & Robot Kinematics, Systems Engineering