Aritra Chakrabarty

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Summary

ML & Robotics Engineer with 3+ years of industry experience in ADAS testing, vehicle system integration & data analysis. Currently completing MS in Electrical Engineering with a focus on deep reinforcement learning, POMDPs, and diffusion models for autonomous systems. Proficient in Python, ROS2, Julia, and modern ML frameworks (TensorFlow, PyTorch).

Education

University of Colorado - Boulder — MS, Electrical Engineering (Focus on **Robotics & AI)**
GPA - 3.96 — *Expected Graduation – May 2025*
Key Courses: Advanced Robotics, Transformer-based Robotic AI, Decision Making under Uncertainty, Convex Optimization, Machine Learning, Deep Learning, Linear Control Design, Computer Vision

University of Michigan — BSE, Mechanical Engineering
GPA - 3.57 — *Graduation – May 2020*

Work Experience

APTIV — Troy, MI

Lead Vehicle Systems Test Engineer — *Feb 2022 – Jun 2023*

- Led design & execution of 700+ vehicle-level system tests across multiple vehicle platforms; supervised a team of 9 engineers.
- Reduced testing cycle time by 40% through streamlining data analysis process, and introducing shorter iterations for test cycles.
- Standardized documentation and data analysis for 22 engineers across 3 teams, cutting data analysis time by 30%.

Vehicle Systems Test Engineer — *May 2021 – Jan 2022*

- Performed 50+ hours/week of on-road & closed-course vehicle testing on ADAS/AD prototypes, using CAN loggers, ethernet monitoring, proprietary validation tools, and custom MATLAB scripts.
- Led autonomous vehicle testing initiatives, from route design to data acquisition and root-cause analysis.

Vehicle Systems Integration Engineer — *Sep 2020 – Apr 2021*

- Integrated ADAS/AD systems at bench and vehicle levels, employing Vector CANoe, CANape, vFlash, and Lauterbach to ensure effective inter-module communication and system functionality.
- Collaborated daily with Systems, Software, and Algorithm teams to resolve test system configurations and streamline feature integration.

Projects & Research

Advanced Robotics — CSCI 5302

- Implemented SLAM and obstacle detection with LIDAR on an AWS DeepRacer using ROS2. Integrated YOLOv3 for stop-sign recognition, tackled system memory management, and debugged network communication issues.

Transformer-Based Robotic AI — CSCI 7000

- Investigated advanced RL via Deep Transformer Q-Networks, published a blog article on CLIP embeddings, and evaluated cutting edge LLM/VLM models for robotics tasks.

Decision Making under Uncertainty — ASEN/CSCI 5264

- Implemented Q-Learning, SARSA, MCTS, & SARSOP for a variaety of MDPs/POMDPs.

Generative Models — Ongoing Research

- Working under Dr. Bradley Hayes to explore diffusion-based generative models for improved policies in partially observable domains.

Skills

Programming & Tools: Python, Julia, MATLAB, TensorFlow, PyTorch, JIRA
Systems: ROS2, Vector CAN tools (vFlash, CANoe, CANape), Polarion, Solidworks
Methodologies: Reinforcement Learning, Systems Engineering, Robotics & Autonomous Systems, Testing & Integration, Motion Planning, Bayesian Estimation