Aryaman Pandya

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Education

Tufts University School of Engineering   **Medford, MA**

Degree: Bachelor of Science in Computer Engineering (BSCPE)   *May 2022*

Relevant Coursework*:* Algorithms, Operating Systems, Distributed Machine Learning, Software Engineering, Embedded Systems, Computer Architecture, Quantum Information, Probabilistic Systems, Differential Equations, Linear Algebra

Independent Coursework: DeepMind/UCL: Reinforcement Learning lecture series, Stanford Online: Deep Learning for Computer Vision, AI Principles and Techniques, Coursera/University of Toronto: Introduction to Self-Driving Cars

Skills

Programming Languages: Python, C++, C

Technical Skills: Git, Linux, PyTorch, Sci-Kit Learn, AWS, Reinforcement Learning, Search Algorithms, Deep Neural Networks, Control Systems, Experimental Design, Social Robotics, ROS, Qt (C++ & Python)

Experience

Motional   **Boston, MA**

Associate Software Engineer   *December 2022 - Present*

• Designed and trained Machine Learning systems for identifying and classifying failures in autonomous vehicles, leveraging both manual and automated feature engineering techniques for comprehensive time series analysis

• Sourced and synthesized large datasets from multiple components of the autonomy stack including planning, controls, localization, and perception, to create rich inputs for model training and in real time for inference

• Led continuous model improvement through systematic re-training and maintenance, ensuring long-term reliability

• Architected an AWS cloud services infrastructure to enable auto-triaging of AV failures with minimal latency post return to base, adeptly processing thousands of incidents with high accuracy and efficiency, robustly handling large-scale data

• Contributed to the development of software standards and CI/CD pipelines, enhancing team efficiency and product quality

Associate Engineer, AV Testing   *June 2022 - November 2022*

• Implemented a novel autonomy stack interface and controller in Qt & C++ that improved safety engineer efficiency by 50%

• Designed and implemented a tool in PyQt to generate interactive visualizations of Motional's autonomy graph framework

• Collaborated with autonomy developers and research engineers to design and automate development tests for AV performance

Human-Robot Interaction Engineer Intern   *August 2021 - May 2022*

• Performed literature reviews and conducted research studies on topics including: signaling lane change intent in AVs, AV-First Responder interaction, and AV-Vulnerable Road User (VRU) interaction

• Collaborated with the Motion Planning and Rulebooks teams to implement a more intuitive yield-to-pedestrians behavior

Human-Robot Interaction Lab, Tufts University   **Medford, MA**

Robotics Research Assistant   *May 2021 - August 2021*

• Developed C++ code to alter the representation of human agents in ROS costmaps to demotivate violation of personal space boundaries while path planning; Experimented with different cost function formulations based on the planning algorithm used

• Wrote a module leveraging the ROS server-client model to motivate or demotivate navigation through marked polygon-zones

• Tested these programs in simulation using RViz and in real time on Fetch robotics & Universal Robotics mobile robots

Publications

• "Advancing the State of AV-Human Road User Interaction: Challenges and Opportunities", IEEE RO-MAN 2023

• "I See You! Design Factors for Supporting Pedestrian-AV Interaction at Crosswalks", published at IEEE & ACM Human-Robot Interaction 2023, Stockholm, Sweden

• "Safe to Approach: Insights on Autonomous Vehicle Interaction Protocols with First Responders", published at IEEE & ACM Human-Robot Interaction 2023, Stockholm, Sweden

• "Coming In!: Communicating Lane Change Intent in Autonomous Vehicles", published at IEEE & ACM Human-Robot Interaction 2023, Stockholm, Sweden