
EDUCATION

- Boston University, Boston, MA*** 2021 – Present
MS, PhD in Mechanical Engineering – May 2026
Advisor: Professor Alyssa Pierson
Research Focus: *Multi-Agent Systems, Autonomous Collaboration, Efficient Graph Algorithms, Multi-Objective Optimization*
- North Carolina State University, Raleigh, NC*** 2017 – 2020
BS in Mechanical Engineering – Magna Cum Laude

EXPERIENCE

- Research Assistant, Boston University*** 2021 – Present
- Presenting realized research results at high-profile international conferences and workshops
 - Researching high-level planning problems for autonomous systems in limited information environments
 - Developing algorithmic solutions for multi-objective task specifications
 - Implementing full-stack perception-to-planning pipelines on ground and aerial robots
 - Control theory, combinatorial and multi-objective optimization, machine learning, and simulation tools realize research results for academic peer-reviewed publications
- Graduate Student Teacher, Boston University*** 2022 – 2023
- Directed lessons for a variety of lectures and lab-based courses for engineering students
 - Instructed courses on MATLAB, Python, and C++ topics
 - Instructed labs on automated manufacturing processes and instrumentation layout for experimental testing
- Undergraduate Research Assistant, NCSU*** 2019 – 2020
- Studied viability of fixed wing UAV systems in performing biodiversity surveys
 - Primary topics researched included acclimation of wildlife to drone presence, detection of partially occluded animals, and poacher deterrence

RELEVANT PROJECTS

- Generating Private Trajectories on Labelled Graphs, BU*** 2023
- Utilized reinforcement learning to generate private trajectories in labelled environments
 - Studied different methods for RL, including Q-Learning, DQN, and Average Reward Learning
 - Project required designing a novel training architecture, reward shaping to overcome sparse rewards, and developing a custom simulation to analyze results
- Predicting Property Value from Real-World Data, BU*** 2021
- Utilized neural networks to create a predictive model for property values trained on a real-world data set
 - Project required designing the NN architecture, implementing the model in PyTorch, and developing code to automatically clean incoming data
 - Our model placed in the top 4% of over 100 models when compared on a hidden validation dataset

PUBLICATIONS

- Brennan Brodt and Alyssa Pierson,
- **“Go With the Flow: Understanding Coexistence Between Multi-Agent Systems in Shared Environments”**,
Under review for 2026 IEEE International Conference on Intelligent Robots and Systems
 - **“Free-Space Ellipsoid Graphs for High-Level Coordination in Real-World Environments”**,
Under review for Springer Nature: Autonomous Robots
 - **“Heterogeneous Exploration and Monitoring with Online Free-Space Ellipsoid Graphs”**,
2025 IEEE International Conference on Robotics and Automation (ICRA), Atlanta, USA
 - **“Gathering Data from Risky Situations with Pareto-Optimal Trajectories”**,
2024 IEEE International Conference on Robotics and Automation (ICRA), Yokohama, Japan
 - **“Obscuring Objectives with Pareto-Optimal Privacy-Aware Trajectories in Multi-Robot Coverage”**,
2023 IEEE International Conference on Robotics and Automation (ICRA), London, England

TECHNICAL SKILLS

- Software: Python and PyTorch, MATLAB, C++
 - Laboratory: Research and Technical Writing, ROS, Local Networking, LaTeX Formatting
 - Manufacturing: SolidWorks, Automated Machining, Production Line Optimization
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