



Nathan L. Butler

Graduate Research Assistant

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EDUCATION

Oregon State University

M.S. in Robotics; minor in Artificial Intelligence

Sep. 2023 - Present

Iowa State University

B.S. in Mechanical Engineering; minors in Computer Science and Cyber-Physical Systems
GPA: 3.94/4.00

Aug. 2018 - May 2023

RELEVANT COURSEWORK

Deep Learning; Sequential Decision Making; Multiagent Systems; Learning-Based Control; Intelligent Agents and Decision Making; Kinematics, Dynamics, and Controls; Machine Learning for Cyber-Physical Systems; Principles of Artificial Intelligence

EXPERIENCE

Graduate Research Assistant, [Robotic Decision Making Lab](#), Oregon State Univ.

Sep. 2023 – Present

- Developed hybrid decentralized planning algorithm that enables multi-robot team to integrate local and global information, published at ICRA 2025
- Implemented and trained transformer-based information parsing model to provide communication-efficient behavioral coordination to multi-robot team to achieve distributed coordination without explicit communication
- Collaborating on multi-university grant to develop coordination algorithms for teams of underwater robots
- Designing modular hardware package to provide autonomy to a variety of autonomous surface vehicle platforms

Undergraduate Research Assistant, [ABE Automation and Robotics Lab](#), Iowa State Univ.

Jan. 2022 - Jul. 2023

- Integrated robotic arm into field robot system to support dexterous crop data sampling techniques
- Updated design of mobile data collection robot by introducing modular, removable base to reduce recharging downtime
- Developed mechanical components for heat dispersion and weatherproofing for custom stereo camera with LED array, integrated 12 units into field robots

Intern, Intelligent Control & Autonomy Group, [NASA Glenn Research Center](#)

Jan. 2021 - May 2021

- Modeled physical responses of electrical hardware components as Simulink blocks and added components to NASA's [Electrical Modeling and Thermal Analysis Toolbox](#) for use in realistic digital twins of electric aircraft propulsion systems
- Developed multiple example Simulink models with accompanying tutorial documentation to reduce learning curve for new toolbox users

ADDITIONAL PROJECTS

[MERL for Constrained Coordination](#): Multiagent Evolutionary RL for training agents in tightly coupled tasks with sparse rewards

[Bravo MPC](#): Model Predictive Control for Reach Bravo robotic arm

[Multiagent Routing as COP](#): Constraint Optimization Problem formulation with solver for multiagent orienteering

[Robot Moisture Sensor](#): ROS-based hardware implementation of plant-probing robot

[DQN for Task Scheduling](#): Deep Q-Network for multi-robot task scheduling

[Crop Row Robot Steering](#): AE+CNN approach for robot steering commands from visual data within crop rows

SKILLS & TOOLS

Software: Python (PyTorch, TorchRL), ROS/ROS2, Linux, SolidWorks, MATLAB/Simulink, GitHub, Docker

Mechanical: Rapid Prototyping, 3D Printing, Metal Fabrication, Wood Fabrication

Algorithms & Control: Learning-Based Control (DL, RL, EA), Multiagent Systems, Path Planning, MPC, PID, IK

Soft Skills: Research & Analysis, Robotic Frameworks, Systems Engineering, Project Management, Technical Communication