Nathan Hewitt

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EDUCATION

Oregon State University, Corvallis, OR — Sept 2021 – March 2023
Master of Science, Robotics

University of North Carolina at Charlotte, Charlotte, NC — Sept 2017 – May 2021
Bachelor of Science, Computer Engineering, *summa cum laude*

SKILLS AND TECHNOLOGIES

- Deep Reinforcement Learning, Multiobjective Optimization, Multiagent Systems
- Python, C++, PyTorch, ROS and ROS2, Linux, Git, Jupyter, Technical Writing, MATLAB

EXPERIENCE

Research Assistant, Learning-Based Multiobjective Control — Sept 2021 – Present
Oregon State University; advised by Kagan Tumer

- Developed multiobjective MPC for manipulators carrying unknown payloads, balancing speed, energy use, and grasp stability using NSGA-II and PyTorch system models
- Trained MCDM RNN on sparse feedback to learn control tradeoffs between dense, unaligned objectives
- Created simulation environment using PyBullet and Gym to benchmark against deep RL algorithms

Research Assistant, Dataset Generation for Pose Estimation — May 2021 – Aug 2021
University of North Carolina at Charlotte; advised by Hamed Tabkhi

- Investigated data augmentation and generation for training computer vision deep neural networks
- Identified issues with domain adaptation when deploying CV models outside of the lab
- Significantly improved model recall by developing a synthetic dataset, resulting in journal paper

Research Assistant, Reinforcement Learning for Socially-Legible Control — June 2020 – Aug 2020
West Virginia University; advised by Yu Gu

- Trained deep reinforcement learning models and configured ROS Gazebo simulations
- Developed RL algorithm to align robot motion with models of pedestrian social conventions using feature engineering and reward shaping, resulting in journal paper

LEADERSHIP

- **Mentor, OSU Robotics REU** (2022): Guided a ten-week project for a visiting undergraduate researcher.
- **Team Lead, Senior Design** (2020-2021): Point-of-contact for team, scoped deliverables, documented progress.
- **Teaching Assistant** (2018): Graded assignments, proctored, and ran review sessions for intro engineering course.

SELECTED PROJECTS

- **Human-Swarm Interaction Testbed** (2019): Interface for a human operator to control behaviors of 50 tabletop robots using gesture recognition. NSF-funded REU project. *Written in C++ using ROS.*
- **Real-Time Privacy-Aware Pedestrian Detection** (2020-2021): Full-stack prototype for monitoring pedestrian behaviors in public spaces using deep networks and serving information to smartphones. Senior design project. *Used Python, PyTorch, TensorRT, Linux, AWS, and Flutter.*
- **Autonomous Create 3** (2023): Autonomous home robot using DIY hardware built on the iRobot Create 3 platform and an Nvidia Jetson. *Using ROS2, Docker, Python, and C for microcontrollers.*