

Nathan Hewitt

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EDUCATION

Oregon State University, Corvallis, OR

Master's Student, Robotics

Sept 2021 – Fall 2023 (estimated)

Doctor of Philosophy Student, Robotics; advised by Kagan Tumer

Sept 2021 – Spring 2026 (estimated)

University of North Carolina at Charlotte, Charlotte, NC

Bachelor of Science, Computer Engineering, *summa cum laude*

Sept 2017 – May 2021

Minors in Mathematics and Artificial Intelligence

Fulbright Summer Institute, Glasgow, Scotland

Presented on Gaelic language preservation, later extended to project on language death and AI

Aug 2019

RELEVANT COURSEWORK AND SKILLS

Skills: Deep RL, Evolutionary Algorithms, Python, Torch, C++, MATLAB, ROS, OpenCV, Git, Linux

Coursework: Learning-Based Control, Deep Learning on the Edge, Multiagent Systems, Robots and Society

RESEARCH EXPERIENCE

Multiobjective Continuous Control for Underwater Manipulation

Sept 2022 – Present

PhD Student, Oregon State University; advised by Kagan Tumer

- Developing learning-based methods for continuous control of agents balancing multiple, unaligned objectives
- Exploring reward shaping and multi-objective optimization for loosely-defined and sparsely-rewarded tasks

Real-Time, Privacy-Aware Pedestrian Monitoring on the Edge

Aug 2020 – Aug 2021

Senior Project and Research Associate, University of North Carolina at Charlotte; advised by Hamed Tabkhi

- Led senior design project prototyping a full-stack implementation of vision-based pedestrian detection
- Significantly improved model performance with data augmentation and synthetic datasets, published at ICPRAI

Reinforcement Learning for Socially-Legible Control

Jun – Aug 2020

Research Associate, West Virginia University; advised by Yu Gu

- Trained deep reinforcement learning approximators for high-dimensional state spaces
- Generated MDPs to align motion with pedestrian social conventions, resulting in journal paper

NSF Research Experience for Undergraduates

May – July 2019

REU Student, West Virginia University; advised by Yu Gu

- Developed a novel testbed for human-swarm interaction using ROS
- Integrated 50 physical robots with gesture recognition, resulting in conference paper

Computational Reconstruction of Bone Fractures

Jan – Dec 2019

Research Associate, University of North Carolina at Charlotte; advised by Andrew Willis

- Analyzed performance of an algorithm to plan complex surgery from CT imagery, resulting in journal paper

PUBLICATIONS

Noghre, G. A., Pazho, A. D., Sanchez, J., **Hewitt, N.**, Neff, C., and Tabkhi, H., “ADG-Pose: Automated Dataset Generation for Real-World Human Pose Estimation,” *Int. Conf. on Pattern Recognition and Artificial Intelligence*, Paris, France, 2022, pp. 258-270

- Smith, T., Chen, Y., **Hewitt, N.**, Hu, B., and Gu, Y., Socially Aware Robot Obstacle Avoidance Considering Human Intention and Preferences, *Int. Journal of Social Robotics*, 2021
- Liu, P., **Hewitt, N.**, Shadid, W., and Willis, A., A System for 3D Reconstruction of Comminuted Tibial Plafond Bone Fractures, *Computerized Medical Imaging and Graphics*, 2021
- Dhanaraj, N., **Hewitt, N.**, Edmonds-Estes C., Jarman, R., Seo, J., Gunner, H., Hatfield, A., Johnson, T., Yifru, L., Maffeo, J., Pereira, G., Gross, J., and Gu, Y., “Adaptable Platform for Interactive Swarm Robotics (APIS): A Human-Swarm Interaction Research Testbed,” *19th IEEE Int. Conf. on Adv. Robotics*, Belo Horizonte, Brazil, 2019, pp. 720-726

LEADERSHIP AND ADDITIONAL EXPERIENCE

Mentor, NSF Research Experience for Undergraduates

Oregon State University

Summer 2022

Guided a ten-week project for a visiting undergraduate student, scoping their personal project and providing help and feedback on programming, the research process, technical writing, and presentations.

Team Lead, Senior Design

University of North Carolina at Charlotte

Sept 2020 – May 2021

Responsible for organizing meetings, appropriately scoping deliverables, and documenting project progress.

Teaching Assistant

University of North Carolina at Charlotte, ENGR 1201

Aug – Dec 2018

Graded assignments, ran review sessions, and proctored tests for introductory engineering course.

Quality Assurance Intern

Hendrick Motorsports, Concord, NC

Jun – Aug 2018

Streamlined inspection data entry with C# and VB scripts, performed black-box tests for database upgrades

HONORS AND SCHOLARSHIPS

University Honors Program, UNCC

Aug 2017 – May 2021

Fietchner Scholarship, UNCC

Aug 2018 – May 2021

Chancellor's List, UNCC

Dec 2017 – May 2021