

Nathan Hewitt

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EDUCATION

Oregon State University, Corvallis, OR

Masters of Science Student, Robotics

Sept 2021 – March 2023 (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

SKILLS AND RELEVANT COURSEWORK

Skills: Python, Deep RL, Machine Learning, PyTorch, C++, Linux, Git, ROS, Gazebo, OpenCV, Technical Writing

Coursework: Learning-Based Control, Kinematics Dynamics & Control, Multiagent Systems, Robots and Society

RESEARCH EXPERIENCE

Multiobjective Continuous Control for Underwater Manipulation

Sept 2021 – Present

Masters Student and Research Assistant, Oregon State University; advised by Kagan Tumer

- Developed novel machine learning based method for continuous control balancing multiple, unaligned objectives
- Created custom, simulated manipulation environment in Python using PyBullet and OpenAI Gym
- Engineered neural networks using PyTorch to model manipulator kinematics faster than real-time
- Communicated extensively with peers and presented quarterly updates to project group

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

Aug 2020 – Aug 2021

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

- Led senior design project prototyping full-stack, vision-based pedestrian detection
- Deployed TensorRT models and significantly improved recall using synthetic datasets, resulting in journal paper

Reinforcement Learning for Socially-Legible Control

Jun – Aug 2020

Research Assistant, West Virginia University; advised by Yu Gu

- Trained deep reinforcement learning models and configured ROS Gazebo simulations
- Formulated 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 custom testbed for human-swarm interaction using ROS, resulting in conference paper

Computational Reconstruction of Bone Fractures

Jan – Dec 2019

Research Assistant, 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 the introductory engineering course.

Quality Assurance Intern

Hendrick Motorsports, Concord, NC

Jun – Aug 2018

Streamlined inspection data entry with C# and VB scripts, and 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