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Education

Bucknell University **Lewisburg, PA**
Bachelor of Science in Computer Science **Expected May 2026**
Engineering GPA: 3.88/4.0 • Overall GPA: 3.67/4.0 • Dean's List: Six semesters

Publications

First Author, IEEE International Conference on Robot & Human Interactive Communication (RO-MAN)

- O'Connor, S., et al. "HRIStudio: A Web-Based Platform for Human-Robot Interaction Studies" *IEEE RO-MAN 2025*
- O'Connor, S., et al. "A Wizard-of-Oz Framework for Reproducible HRI Research" *IEEE RO-MAN 2024*

Professional Experience

Riverhead Raceway **Riverhead, NY**
Software Developer **Oct 2020 – Present**

- Architected and deployed full-stack real-time statistics platform serving 1500+ concurrent users and 250k+ monthly visitors using Next.js, TypeScript, PostgreSQL, and Docker
- Engineered scalable backend infrastructure with optimized database queries and WebSocket connections achieving sub-100ms response times for live race data updates across 20+ simultaneous events
- Designed and implemented RESTful APIs for mobile applications and third-party integrations, processing 10M+ API requests monthly
- Built automated CI/CD pipelines with GitHub Actions and monitoring systems, maintaining 99.9% uptime across racing season

Bucknell University **Lewisburg, PA**
Teaching Assistant - Software Engineering & Engineering Design **Aug 2023 – Present**

- Mentor 150+ students across software engineering, design patterns, and embedded systems (Arduino, microcontrollers)
- Developed automated testing frameworks and grading tools, improving learning outcomes while streamlining assessment processes

Research Experience

Bucknell University **Lewisburg, PA**
Human-Robot Interaction Researcher **Jan 2023 – Present**

- Published 2 first-author papers at IEEE RO-MAN (2024, 2025) on novel HRI experimental platform enabling reproducible Wizard-of-Oz studies across multiple robot platforms
- Architected modular plugin system with WebSocket-based teleoperation and RESTful API integrating ROS for NAO, Pepper, and custom robots

Selected Projects

Computer System from Scratch - Nand2Tetris **HDL/Assembly/Java**

- Designed complete computer system from hardware (NAND gates → CPU) through software (assembler → OS), demonstrating full-stack systems understanding critical for robotics applications

Autonomous Vehicle Control - Chem-E-Car Competition **C++/Arduino**

- Led 15-member team designing autonomous hydrogen fuel cell vehicle; implemented embedded control system with real-time sensor fusion achieving ±10cm precision at AIChE National Competition (2nd place)

HRIStudio Research Platform **Next.js/TypeScript/ROS**

- Full-stack web application for managing HRI experiments with WebSocket robot control and comprehensive data logging

Technical Skills

Robotics & AI: ROS/ROS2, PyTorch, Weights & Biases, HuggingFace Transformers, OpenCV, Gazebo, NAO/Pepper SDK, Wizard-of-Oz Methodology, Computer Vision
Embedded Systems: C/C++, Arduino, Raspberry Pi, I2C/SPI Protocols, Real-time Control, Finite State Machines, Sensor Integration
Software Engineering: Python, JavaScript/TypeScript, Git/GitHub, Docker, PostgreSQL, Next.js, React, Node.js, REST APIs
Research Tools: MATLAB, R, LaTeX, Statistical Analysis, Experimental Design, Data Visualization, Jupyter