

# SEAN O'CONNOR

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## EDUCATION

### BUCKNELL UNIVERSITY

#### Bachelor of Science in Computer Science

Engineering GPA: 3.88/4.0 • Overall GPA: 3.67/4.0 • Dean's List: Six semesters

### LEWISBURG, PA

Expected May 2026

## 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

#### Software Developer

### RIVERHEAD, NY

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

#### Teaching Assistant - Software Engineering & Engineering Design

### LEWISBURG, PA

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

#### Human-Robot Interaction Researcher

### LEWISBURG, PA

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