

# SEAN O'CONNOR

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Computer Science and Engineering student with extensive experience in software development, robotics research, and technical leadership. Demonstrated track record of building scalable solutions and leading cross-functional teams. Published researcher in human-robot interaction with experience in both academic and commercial software development.

## EDUCATION

### BUCKNELL UNIVERSITY

#### Bachelor of Science in Computer Science and Engineering

LEWISBURG, PA

Expected Graduation: May 2026

- Cumulative Engineering GPA: 3.90. Dean's List: Fall 2022, Fall 2023, Spring 2024

## EXPERIENCE

### RIVERHEAD RACEWAY

#### Software Developer

RIVERHEAD, NY

Oct 2020 – Present

- Engineered a digital registration platform that modernized paper-based processes, integrating payment processing and real-time number availability checking, eliminating manual processing delays
- Built and deployed a high-performance race statistics platform serving 1500+ concurrent users, providing real-time access to driver positions, rankings, and lineups, replacing physical bulletin boards
- Developed an intuitive content management system tailored for non-technical staff, enabling content management through familiar interfaces while maintaining website consistency
- Orchestrated migration to containerized architecture using Docker and implemented automated backup systems to improve reliability

#### IT Administrator

Oct 2020 - Apr 2024

- Engineered migration from consumer desktop computers to enterprise thin clients with virtualization servers, improving reliability and remote access capabilities enabling continued support while away at university
- Implemented automated backup solutions using the Backblaze platform with version control and disaster recovery procedures
- Deployed Windows Server with Active Directory for centralized user management and file storage
- Established standardized workstation images and software deployment protocols across facilities

#### Media Producer

Oct 2020 - Apr 2024

- Designed and deployed facility's first multi-camera live streaming system with ATEM production switchers and custom graphics pipeline
- Developed real-time graphics integration system connecting race timing data to broadcast overlays
- Operated replay and instant highlight system for live broadcast to FloRacing and NBC Sports networks
- Managed live production during race events, coordinating camera operators, replay, and graphics control

### BUCKNELL UNIVERSITY

#### Computer Science Researcher - Human-Robot Interaction

LEWISBURG, PA

Jan 2023 – Present

- Engineered a modular web-based experimental platform for human-robot interaction studies using the Wizard of Oz experimental paradigm and ROS2 and C++/Python
- Published and presented a first-author paper and poster at the 33rd IEEE International Conference on Robot and Human Interactive Communication

#### Computer Science Research Assistant - Chemical Engineering Department

Aug 2023 – Present

- Designed and implemented an automated data collection system using a microcontroller and C++ to collect real-time temperature, pressure, and humidity data in harsh environments
- Currently integrating robotic arm into existing coffee research project to automate repeated brewing-related tasks and data collection, freeing up researchers from unskilled repetitive work

#### Computer Science Teaching Assistant

Jan 2024 - Present

- Led lecture and lab sections focusing on agile development practices and following scrum guidelines for group work in the field of computer science.
- Assisted students with classwork, homework, and lab assignments, focusing on teaching students how to find the answers to their questions using existing documentation

#### Engineering Study Spot Tutor - Computer Science

Aug 2024 - Present

- Held drop-in help sessions for computer science students throughout all stages of the curriculum, assisting with introductory courses, software engineering, and systems programming assignments

#### **Engineering Teaching Assistant**

**Aug 2023 - Dec 2023**

- Led recurring workshops on Arduino-based microcontroller programming, assembly, and wiring for multidisciplinary student engineering projects
- Assisted students during class and lab sections on their design session projects, with emphasis on engineering ethics education

#### **Physics Teaching Assistant**

**Aug 2023 - May 2024**

- Assisted students during laboratory sections with introductory and exploratory physics lab experiments, working with industry-standard data collection and analysis tools

#### **MILLER PLACE SCHOOL DISTRICT**

**MILLER PLACE, NY**

#### **Information Technology Intern**

**Sep 2020 - May 2022**

- Worked under senior technical staff to assist faculty, staff and students with district-owned printers and computers
- Assisted staff in one-laptop per person deployment and support in response to the COVID-19 pandemic, teaching students how to fully utilize newly-available remote learning tools and programs

### **ACTIVITIES**

#### **AIChE CHEM-E-CAR COMPETITION TEAM**

**LEWISBURG, PA**

#### **President, Electrical and Mechanical Team Lead**

**Jan 2023 – Present**

- Pioneered team's first custom hardware solution: designed and fabricated a microcontroller-based control system with isolated power circuits for hydrogen fuel cell regulation
- Implemented finite state machine architecture integrating spectrometer readings, relay control, and LED feedback for real-time reaction monitoring in isolated chamber conditions

#### **BUCKNELL COFFEE SOCIETY**

**LEWISBURG, PA**

#### **Treasurer**

**Oct 2023 – Present**

- Co-established and launched a new campus organization, managing financial operations and coordinating event logistics.
- Presented on ongoing research for publication by Bucknell's student story, engineering report, and fall magazine

#### **ROBOLAB@BUCKNELL**

**LEWISBURG, PA**

#### **Founding Member**

**Sep 2023 - Present**

- Led and participated in group discussions in a new lab bridging computer science and psychology perspectives on human-robot interaction, working with the complexities of human-robot trust, job replacement, and autonomy

### **CONFERENCES AND COMPETITIONS**

#### **IEEE INTERNATIONAL CONFERENCE ON ROBOT AND HUMAN INTERACTIVE COMMUNICATION AUG 2024**

- Presented a first-author paper in a poster session regarding my project HRISudio, a novel tool enabling human-robot interaction experiments to be conducted by those unfamiliar with robotic platforms and programming

#### **AIChE Annual Student Conference**

**OCT 2024**

- Competed in the 2024 National AIChE Chem-E-Car Performance Competition with Bucknell's car, H<sub>2</sub>Go
- Presented the design of our car in a poster session, heavily focusing on the safety-related aspects of our design

#### **AIChE Mid-Atlantic Regional Conference**

**APR 2024**

- Placed second overall in the 2024 Mid-Atlantic AIChE Chem-E-Car Performance Competition with our car, H<sub>2</sub>Go
- Presented the design of our car in a poster session, heavily focusing on the safety-related aspects of our design

#### **Specialty Coffee Exposition**

**MAR 2024**

- Attended as a representative of the Bucknell Coffee Society, meeting with vendors and equipment manufacturers to request sponsorship, donations, and educational materials for our club

#### **AIChE Annual Student Conference**

**OCT 2023**

- Attended as a representative of Bucknell's Chem-E-Car team, discussing designs and reactions with other teams to kickstart development of the next year's car

#### **AIChE Mid-Atlantic Regional Conference**

**APR 2023**

- Competed in the 2023 Mid-Atlantic AIChE Chem-E-Car Performance Competition with our car, H<sub>2</sub>Go
- Presented the design of our car in a poster session, heavily focusing on the safety-related aspects of our design

### **PUBLICATIONS**

- [1] Sean O'Connor and L. Felipe Perrone. HRISudio: A Framework for Wizard-of-Oz Experiments in Human-Robot Interaction Studies (Late Breaking Report). In *2024 33rd IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)*, 2024.

## RELEVANT COURSEWORK

**Systems & Architecture:** Computer Systems, Operating Systems Design, Computer Networks & Security

**Software Development:** Software Engineering, Data Structures & Algorithms, Research Methods, Ethics in Computing

**Mathematics:** Calculus II, Linear Algebra, Discrete Mathematics, Statistics, Applied Statistics with R, Data Mining

## SKILLS & INTERESTS

**Languages & Frameworks:** Java, C/C++, Python, JavaScript/TypeScript, React, Next.js, PHP, SQL

**Backend & DevOps:** REST APIs, MySQL, PostgreSQL, Docker, Apache Web Server, NGINX, ROS2

**Cloud & Infrastructure:** AWS, GCP, Azure, Backblaze, Linux (RHEL/Debian), CI/CD

**Development Tools:** Git, JetBrains Suite, VS Code, Cursor, Linux CLI