Sean O'Connor

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Professional Summary: Computer Science and Engineering student with experience in software development, robotics research, and technical leadership. Demonstrated experience building practical solutions for real-world problems, from modernizing business operations to contributing to academic research. Interested in human-robot interaction and developing technology that enhances human capabilities, with a background spanning commercial software development and educational mentorship.

Education

Bucknell University — **Lewisburg, PA**
Bachelor of Science in Computer Science and Engineering — **Expected Graduation: May 2026**

- Cumulative Engineering GPA: 3.86. Dean's List: Fall 2022, Fall 2023, Spring 2024, Fall 2024, Spring 2025

Experience

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

- Transformed organizational culture by building trust in data-driven decision making, replacing manual paper-based workflows with integrated digital solutions that eliminated processing delays and improved operational efficiency
- Revolutionized fan engagement through a real-time statistics platform serving 1500+ concurrent users, enabling spectators and racers to access live standings and plan race attendance more effectively
- Empowered non-technical staff with intuitive content management tools, enabling immediate publication of race results and statistics rather than posting physical papers on walls days after events
- Modernized entire technical infrastructure through containerization and automated systems, ensuring reliable operations and remote support capabilities

IT Administrator — **Oct 2020 - Apr 2024**

- Led complete infrastructure overhaul from consumer-grade to enterprise systems, dramatically improving operational reliability while enabling continuous remote support during university attendance
- Established comprehensive data protection and disaster recovery protocols, safeguarding years of racing data and ensuring business continuity
- Streamlined operations through centralized user management and standardized deployment processes, reducing setup time and maintenance overhead across all facilities
- Built foundation for digital transformation that enabled all subsequent software development and modernization efforts

Media Producer — **Oct 2020 - Apr 2024**

- Launched facility's first professional broadcast capability, expanding audience reach through live streaming to national networks including FloRacing and NBC Sports
- Created seamless integration between live timing data and broadcast graphics, enhancing viewer experience and setting new standards for local racing broadcasts
- Coordinated complex live production workflows during high-pressure race events, ensuring professional-quality coverage that elevated the facility's reputation
- Established broadcast infrastructure that became a model for other racing facilities seeking to modernize their media capabilities

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

- Developed a web-based platform for human-robot interaction experiments that addresses reproducibility challenges in Wizard-of-Oz studies, contributing to improved experimental rigor in the field
- Led research and authored first-author paper presented at international conference, with second publication forthcoming based on continued platform development
- Built framework that enables researchers to conduct experiments across different robot platforms without specialized programming knowledge, lowering technical barriers to HRI research

Computer Science Research Assistant - Chemical Engineering Department — **Aug 2023 – May 2025**

- Built automated data collection tools that enabled researchers to focus on analysis rather than manual data gathering, providing critical environmental measurements that guided research direction
- Developed technical solutions that supported conference presentations and research outcomes, bridging the gap between engineering expertise and domain-specific research needs

Computer Science Teaching Assistant **Jan 2024 - Present**

- Mentored 150+ students in software engineering principles, employing a unique pedagogical approach that connects theoretical concepts to real-world applications through recently-acquired student perspective
- Developed learning environments that embrace productive failure, enabling students to understand the "why" behind programming concepts rather than just memorizing syntax and procedures

Engineering Study Spot Tutor - Computer Science **Aug 2024 - Dec 2024**

- Provided personalized academic support to students across the entire computer science curriculum, using a gentle but functional approach that breaks down complex concepts into relatable, manageable components

Engineering Teaching Assistant **Aug 2023 - Dec 2023**

- Empowered 40+ engineering students from diverse disciplines to master embedded systems programming, translating complex technical concepts into accessible learning experiences
- Guided students through hands-on project development while fostering critical thinking about engineering ethics and real-world design implications

Physics Teaching Assistant **Aug 2023 - May 2024**

- Supported 30+ students in developing scientific reasoning and experimental design skills, helping them connect abstract physics principles to hands-on laboratory discoveries and data analysis

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**
Former President, Electrical and Mechanical Team Lead **Jan 2023 – Present**

- Pioneered team's first custom hardware solution by designing and fabricating a microcontroller-based control system with isolated power circuits for hydrogen fuel cell regulation, implementing finite state machine architecture integrating spectrometer readings, relay control, and LED feedback for real-time reaction monitoring
- Improved team dynamics by introducing agile development principles and structured communication protocols, then strategically transitioned from leadership role to focused technical contribution while remaining active team lead, recognizing that direct engineering impact would better serve team and personal objectives

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 first-author research at international conference on HRIStudio - a platform that lowers technical barriers for human-robot interaction experimentation by enabling researchers without programming backgrounds to conduct rigorous studies

AIChE Annual Student Conference **Oct 2024**

- Competed in the 2024 National AIChE Chem-E-Car Performance Competition with Bucknell's car, H_2Go
- 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_2Go
- 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_2Go
- 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. HRIStudio: 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.

[2] Sean O'Connor and L. Felipe Perrone. A Web-Based Wizard-of-Oz platform for collaborative and reproducible Human-Robot Interaction research. In *2025 34th IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)*, Eindhoven, The Netherlands, 2025. Accepted for publication.

Relevant Coursework

Systems & Architecture: Computer Systems, Operating Systems Design, Computer Networks & Security
Software Development: Software Engineering, Algorithm Design & Analysis, Research Methods, Ethics in Computing
Mathematics: Calculus II, Linear Algebra, Discrete Mathematics, Statistics, 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