Zephyr Conley

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EDUCATION

Worcester Polytechnic Institute **May 2025**

B.S Mechanical Engineering; B.S Robotics Engineering; Creative Writing Minor – Graduated with high distinction *Worcester, MA*

- **GPA: 3.98/4.0** Dean's List, Tau Beta Pi Engineering Honors Society, Rho Beta Epsilon Robotics Engineering Honors Society
- **Awards:** Kranich Prize: Honorable Mention, Provost Prize: Finalist, MQP Best Poster Award: Winner, GoatHacks: Honorable Mention
- Relevant Coursework: *Deep Learning for Perception, Computer Aided Manufacturing, Advanced Engineering Design, Software Engineering, Unified Robotics: Actuation, Sensors, Manipulation, Navigation*

WORK EXPERIENCE

Senvias/TPI Composites **May 2024 – Aug 2024**

Advanced Manufacturing Engineering Intern *Warren, RI*

- Assembled design specifications consisting of engineering drawings, safety analysis, and proposed solutions for complex industrial automation processes, such as a rotisserie system designed to raise and rotate composite molds weighing up to 2,000 lbs.
- Developed and improved SOPs for industrial processes such as operation of the industrial oven and safe use of the CNC machines.

Framatome **May 2023 – Aug 2023**

Instrumentation and Controls Engineering Intern *Mansfield, MA*

- Implemented full-stack development of a user-friendly application coded in VBA that automatically extracts information from AutoCAD drawings, generates new drawings based on a template, and modifies existing drawing using data from an Access database.
- Documented the development, suggested future improvements, and wrote a step-by-step guide on how to use the tool for new users.

WPI Academic Resource Center (ARC) **April 2021 – May 2024**

Peer Tutor *Worcester, MA*

- Tutored groups of 1-15 students in subjects such as mechanics, electricity and magnetism, integral calculus, and multivariable calculus.
- Collaborated with professors, TAs, and other ARC staff to help students achieve maximal understanding of subject material.

PROJECTS

Terrawarden Drone Cleanup - Major Qualifying Project (MQP) **Aug 2024 – May 2025**

- Developed an open-source aerial manipulator capable of detecting and collecting litter found on roadsides and highway medians
- Designed a robotic finger made of flexible plastic (85A TPU) that creates a tighter, more effective grasp using the FinRay effect
- Created a geared 4-bar mechanism driven by a single motor that controls both robotic fingers and maximizes precision and grasp strength

Semantic Segmentation Using Deep Learning **Aug 2024 – Oct 2024**

- Used Blender to generate a dataset of 5000 images of drone racing gates for training a semantic segmentation model (U-Net)
- Applied various image augmentation techniques, such as gaussian blur and color jitter, to increase the robustness of the trained model.

Hand Machine: Gesture-Controlled Claw Machine

- Designed, assembled, and programmed a hand-gesture controlled claw machine using spare 3D printer parts for GoatHACKs 2025
- Matched claw machine motion to user hand movements using an RGB camera feed as input for Google's Hand Landmarker model

Robotic Navigation - SLAM and AMCL **Mar 2024 – May 2024**

- Developed a robot that could autonomously navigate and map an unknown space, then localize itself within that space at a later time
- Implemented Simultaneous Localization and Mapping (SLAM), AMCL and A* on a Turtlebot3 with a planar LiDAR

TECHNICAL SKILLS

Languages	Python, Java, C++, C, MATLAB, Visual Basic
Software	Arduino, SolidWorks, Blender, Raspberry Pi, Microsoft Office Suite, Gazebo
Version Control	Git, Kanban, Github Projects
Other	ROS, ROS2, PyTorch, Soldering, Spanish (conversional level), Forklift Operator Certified

EXTRACURRICULARS

WPI Creative Writing Club, Treasurer **Feb 2022 - Present**

WPI Concert Band, Section Leader **Aug 2021 - Present**

WPI Sailing Team, Skipper **Aug 2024 – Present**