

Peter Ziegler

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EDUCATION

University of Georgia, College of Engineering – Athens, GA Expected December 2027
Bachelor of Science in Mechanical Engineering GPA: 3.42

Skills:

Engineering Software: Onshape, AutoCAD LT, Autodesk Inventor Pro, MQTT, VT-Scada, Microsoft Office

Programming & Fabrication: MATLAB, Python, Arduino, Node-Red, Linux, MIG & Stick Welding

Relevant Coursework: Biomechanics, Data Science I, Circuits, Thermodynamics, Strength of Materials, Fluid Mechanics

PROFESSIONAL EXPERIENCE

Undergraduate Research Assistant, UGA Physical Ai Lab – Athens, GA Jan 2026 – Present

- Collected 100 iterations of demonstration data via teleoperation, then trained a robot arm via imitation learning to perform basic tasks without human intervention.
- Currently researching the advantages and disadvantages of 8 VLA policies to improve the accuracy and precision of the designated robot's actions.

Automation Engineering Intern, Southern Flow – Alpharetta, GA May 2025 – Aug 2025

- Researched and developed a proof-of-concept diaphragm seal fill station with the potential to reduce subcontractor labor costs for pressure gauges by an estimated 40%.
- Developed a MQTT-enabled Remote Telemetry Unit and documented the fabrication and integration process in a detailed 22-page manual in order to enable Industry 4.0 data acquisition and analysis.
- Utilized AutoCAD LT to create wiring diagrams for the IO cards of PLCs in 4 separate sites, enabling lower maintenance downtime and easier troubleshooting.
- Configured a protocol gateway to bridge Modbus RTU(RS-485) to Ethernet-based TCP communication, enabling modern data acquisition.

PROJECT EXPERIENCE

Biomechanics, The University of Georgia – Athens, GA Jan 2026 – May 2026

- Modeled lower-back spinal loading across 20 lifting postures using a 2D 6-DOF human body model in MATLAB, identifying which knee angles minimized injury risk.
- Analyzed full gait-cycle joint forces and moments on the ankle, knee, and hip by processing motion and force plate data.
- Researched constitutive equations for modeling the nonlinear stress-strain behavior of human skin and presented findings as part of a 6-person team.

Inverse Kinematics Solver, Self Study Dec 2025 – Jan 2026

- Developed a Python-based inverse kinematics solver for an open-chain 6-DOF robotic arm utilizing Newton-Raphson iteration to compute correct joint angles.
- Built a CoppeliaSim simulation to analyze the convergence of the iterations produced by the Python script and verify solver stability.

Object Avoiding Robot, Self Study Dec 2024 – Jan 2025

- Developed an Arduino program to receive sonar distance and direction signals, translated those signals into avoidance regions, and instructed the robot to move, avoiding those regions.
- Improved the code by increasing the smoothness and accuracy of object detection, resulting in a 25% increase in speed.

Disc Launcher, The University of Georgia – Athens, GA Aug 2024 – Dec 2025

- Collaborated with a team of 5 student engineers to create a 5ft³ prototype of a Ballista-like disc launcher.
- Led the fabrication and performance testing efforts by optimizing the launch angle, flight stability of the dart, and constructing a robust trigger mechanism, resulting in a 30% increase in launch distance.

CAMPUS INVOLVEMENT & ASSOCIATIONS

American Welding Society, – Athens, GA Jan 2026 – Present

- Attended the NASCC: The Steel Conference, exploring advances in structural steel design and manufacturing.

Brooklyn Cemetery Volunteer, – Athens, GA Nov 2023 – Present