Ben Zwiener

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Education

University of Nebraska-Lincoln (UNL), Lincoln NE
Master's in Mechanical Engineering and Applied Mechanics – December 2025

- Specification: Systems, Control and Design
- Minor: Computer Science
- GPA: 3.9

Bachelor of Science in Mechanical Engineering – December 2022

- GPA: 3.4 (Dean's List: Fall 2020, Spring 2020, Spring 2021, Fall 2022, Spring 2022)
- Minor: Robotics Engineering
- NCEES FE Mechanical: Passed

Employment/Experience

Vehicle Mechanisms Engineer Intern – Relativity Space – Long Beach, CA - May to August 2025

- Designed stiffness adjustable, modular gearbox for withstanding backdrive under high vibration
- Performed analysis to engineer strength and stiffness of parts with hand calculations & FEM simulations
- Machined components to ensure specified tolerances & fits were met
- Created plan and tested gearbox to determine efficacy, efficiency and potential for future use

Teaching Assistant (Intro to CAD) - UNL - Lincoln, NE - August 2023 to Present

- Training students for certified SolidWorks Associate in Mechanical Design
- Supporting students to complete shop-ready drawing packages
- Instructing students about fundamental GD&T and critical callouts

Graduate Research Assistant - UNL - Lincoln, NE - August 2023 to Present

- *Master's Thesis: Compliant Variable Stiffness Mechanism* – A universally attachable device capable of mitigating wear and improving energy efficiency in industrial robotics
  - Peer-review publication at ASME IDETC Conference 2024
  - Awarded NASA Nebraska Space Grant Fellowship 2024 & 2025
  - U.S. Patent Pending
- *Remote Ultrasound Robot* - A telemetric robot enabling doctors to perform diagnostic ultrasound procedures from remote locations
  - Peer-review publication at ASME IDETC Conference 2025

Engineering Intern/Field Service Technician - CapStone Technologies - Lincoln, NE - May 2021 to August 2023

- Documented robotic and software solutions supporting print-to-mail industry operations such as user manuals, maintenance processes, trouble-shooting tips, and client tutorials
- Constructed and engineered automated camera systems for parcel management conveyor systems
- Debugged and troubleshot camera systems during static and dynamic testing
- Lead on-site projects and facilitated communication between customers and contractors

Skills

- **3D Modeling** – Experience in SolidWorks, Siemens NX, Fusion 360 CAM, Abaqus, and AutoCAD. With these tools I've created assemblies, drawing packages, BOMs and applied parametric modeling and FEA.
- **Testing & Fabrication** – I am well versed in 3D printing. I'm educated in various shop tools for woodworking as well as band saw, drill press, CNC milling, and manual turning. I regularly use soldering, crimping and benchtop tools such as DMMs, oscilloscopes, power supplies, and waveform generators
- **Mathematical Simulation** – Often I leverage MATLAB, Simulink or Python to derive analytical solutions for in class problems, projects, or in my research
- **Application Software** – To prototype mechatronic systems I primarily use Arduino. I have also developed LabView programs for data acquisition and signal processing. In research we are experimenting with Raspberry Pi and computer vision to measure displacement of a mechanism as it varies its stiffness (Thesis)