Bryn Heinemann

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EDUCATION

California Polytechnic State University, San Luis Obispo Expected Graduation: May 2028
B.S./M.S. Mechanical Engineering Candidate *Major GPA: 3.51*

TECHNICAL SKILLS

Design: SolidWorks (CSWP, PDM), Fusion 360, Onshape, Generative Design, Netfabb, GD&T, DFM/DFA
Analysis: FEA (Ansys, Abaqus, SolidWorks), Topology Optimization, Modal Analysis, MATLAB/Simulink
Manufacturing: Additive (FFF, SLA, LPBF design), Welding (MIG, SMAW), CNC/Manual Machining, Lean
Software/Systems: Python, Excel, C, C++, Windchill PLM, Abas ERP, Dozuki, Data Acquisition (DAQ)

EXPERIENCE

***Student Researcher, Additive Manufacturing* | Cal Poly SLO** San Luis Obispo, CA | Sept 2026 to Present
- Wrote a Python pipeline that levels, measures, and closes 3D torso scans for printed scoliosis braces
- Built a 17-level **Ansys** spine FE model with tuned disc stiffness, verified against an independent solver

Manufacturing Engineering Intern* | *IT USA San Luis Obispo, CA | June 2026 to Aug 2026
- Designed and built a 12-channel **bed-of-nails fixture** (ADS1115, STM32) for PCB voltage checks
- Cut estimated check time from 8 min (timed) to 1.5 min per board; readings averaged 0.0003 V off a calibrated multimeter before a fixed offset correction, and 0.0000 V ± 0.0001 V after
- Prototyped a test rig measuring axial clearance within a thrust-bearing stack to 0.0005 in resolution
- Installed floor-mount workholding pedestals, eliminating refixturing steps in a production process
- Wrote work instructions for thermal qualification and positional variance testing of precision gyros

Manufacturing Engineering Intern* | *Trust Automation San Luis Obispo, CA | Apr 2026 to June 2026
- Built a two-bin Kanban system for 25+ Creform part numbers with linked component bins
- Redlined 7 work instructions and their engineering drawings to support subassembly outsourcing
- Reorganized parts storage and workstations to 5S with visual management

R&D Engineering Intern (NPI)* | *Terumo Neuro Aliso Viejo, CA | June 2025 to Sept 2025
- Designed and deployed 5+ **SLA-printed manufacturing fixtures** for the pilot production line
- Redesigned a cutting fixture around a more durable razor standard, cutting blade swaps by 80%
- Reworked a tack-weld fixture with machined copper inserts, cutting cleaning time by 89%
- Correlated 9-point thermocouple data with defect locations across 20+ DOE trials and 6 input variables
- Coordinated 25+ ECNs in Windchill PLM and rewrote 9+ process documents for overseas transfer

TECHNICAL PROJECTS

***AMB Calibration Fixture* | Atlas Copco Senior Project** Sept 2026 to Present
- Developing a calibration fixture for active magnetic bearing position sensors in turboexpanders
- Wrote sine-fit code (Python, C++) that turns accelerometer data into rotor displacement
- Built a 9-source uncertainty budget with a Monte Carlo check; targeting 1 µm, modeled uncertainty bound 0.057 µm

***SafeBase.AI Sensor Housing* | Ironsite Construction Innovation Challenge** May 2026
- Designed, prototyped, and assembled a hard-hat sensor housing in 2 weeks; team placed 3rd, won $10k

***Lightweight Bracket for Metal 3D Printing* | IME 432 Additive Manufacturing** Fall 2026
- Made a 316L bracket 35.6% lighter with **Fusion 360 generative design**; Ansys deflection within 2.6%

***FIRST Robotics* | FTC 15281, FTC 4143, FTC 8176, FRC 6831** 2018 to 2022
- Designed and machined the FTC 15281 robot: a **4-DOF arm** and a latch that lifted the 30 lb robot
- Developed FTC 8176 ring launcher (Inspire 3rd, 2021 OR State); FRC 6831 went to 2019 Worlds

ADDITIONAL EXPERIENCE

Metal Artist and Welder, self-employed
- Sold metal art for up to $700 and did contract MIG and SMAW welding on tables, trailers, and hitches

Personal Interests: Backpacking, guitar, skiing, sci-fi books, DIY 3D printing projects, automotive