

# NATHANIEL DAVID BURTNETT

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## EXPERIENCE

### Vibrations Lab Assistant

Cal Poly SLO

December 2022 – Present, US, Cal, San Luis Obispo

- Developed a Carbon Fiber B2 Bomber Model to demonstrate the practical determination of an object's center of gravity.
- Created a Saturn 5 Vibratory Modes model to provide a tangible understanding of vibration modes in real-world structures.
- Constructed a Taipei 101 Tuned Mass Damper with Base Displacement demo unit, illustrating the properties of a tuned mass damper on a system.

### System's Engineering Intern

Lam Research

June 2022 – September 2022, US, CA, Fremont

- Designed a metal additive cryogenic coolant manifold with vacuum sealing to enhance a semiconductor manufacturing process.
- Validated thermal and fluid models with Finite Element Analysis (FEA) processes in Siemens NX.
- Tested the performance of a significant semiconductor manufacturing tool using a custom thermal analysis system.
- Authored a metal additive manufacturing guide, documenting best practices to enhance team knowledge and performance.

### Manufacturing Intern

Wasco Inc

June 2019 – December 2021, US, CA, Santa Maria

- Redesigned a manufacturing process to enhance usability, reducing scrapped inventory and improving productivity.
- Explored international outsourcing through research, identifying cost-saving options.
- Optimized a shop layout design based on lean principles to streamline operations and improve resource utilization.
- Implemented machine maintenance and part salvaging procedures, increasing equipment longevity.

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## EDUCATION

### Bachelors Mechanical Engineering (Mechatronics)

Minor in Mechatronics, Certified FE • California Polytechnic State University • US, Cal, San Luis Obispo • 2023 • 3.591

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## SKILLS

**PCB Design:** Leveraged Eagle for the design of PCBs integral to motor control and robot communication.

**CNC:** Operated advanced machinery including large table routers, 5-axis machines, and lathes.

**Additive Manufacturing:** Metal Additive, FDM, SLA, Industry experience with process design

**Programming:** Python for robotics and simulations, MATLAB for control systems, C++ & Assembly for robotics

**Composites:** Executed the design and manufacturing of composite molds using Carbon Fiber and Fiberglass

**CAD:** Skilled in using Autodesk Fusion 360, Inventor, Solidworks, Siemens NX, and nTopology.

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## HIGHLIGHTED PROJECTS

### Microfabrication Oxidation Furnace Upgrade

Cal Poly SLO • September 2022 – June 2023

- Designed a fluid delivery system for the oxidation furnace upgrade in the microfabrication lab, utilizing clean room-certified components for high-purity gas delivery to the furnace.
- Engineered a safe electrical distribution system and assembled an oxidation steam generator to expand lab capabilities.

### Nerf Turret

Cal Poly SLO • January 2023 – March 2023

- Built a Nerf turret that used an infrared camera to track and shoot targets.
- Used Python and STM32 platform along with ESP32 and C++ for camera feed, improving the framerate by 3000%.
- Used and tuned a PID control loop to track targets, while also implementing damping-reducing improvements on the system.