

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.

EDUCATION

Bachelors Mechanical Engineering (Mechatronics)

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

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.

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.