Brandon Lim

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Education

University of Utah   **August 2021 – May 2025**

- B.S. Mechanical Engineering | Emphasis in Aerospace Engineering
- GPA: 3.752 | Dean's List Fall 2021, Spring 2022, Spring 2023, Fall 2023, Spring 2024

Skills

- **Programming:** MATLAB, Arduino C
- **3D Modeling/CAD:** SolidWorks – Certified SolidWorks Associate 2021, CAD
- **Manufacturing:** Mill Certified, Lathe Certified, Basic Hand Tool and Machining Certified, 3D Printing, Green Sand Molding, Shell Core Manufacturing, Silica Sand Core Manufacturing

Experience

Department of Defense | Process Engineering Intern   **May 2024 – August 2024**

- Worked for the United States Air Force as a process engineering intern supporting the overhaul and maintenance of the F-16 weapons system.
- Designed and developed 2 custom ratchets that improved the time efficiency of the F-16 leading edge taper lock nut removal process by over 50%.
- Designed and implemented a custom press-fit bushing to repair an oversized and damaged hole in a custom lathe tool, resolving a work stoppage issue by restoring secure, concentric alignment for precise machining operations.
- Digitized over 50 engineering files containing processes and designs for custom tools, streamlining access to information by uploading them to a digital repository and organizing them with Excel spreadsheets.

Valley Machine and Manufacturing Inc. | Freelance Engineering Drafter   **May 2022 – August 2022**

- Led the design and development of 3 variations of concrete cutting blades using the CAD software SolidWorks.
- Implemented metrology practices and design tolerances to accurately incorporate existing tungsten carbine teeth into the design of concrete cutting blades.
- Drafted blueprints for pre-existing aluminum cast parts used in the mining industry for machinists and customers to utilize.

TSB Foundry | Manufacturer   **May 2017 – August 2023**

- Molded closed green sand molds on patterns for the manufacturing of aluminum cast parts.
- Operated permanent closed molds for the manufacturing of aluminum cast parts.
- Operated shell mold machines and expandable silica sand molds to create cores used in the casting process.
- Cut and grind aluminum cast parts as a finishing step in the aluminum casting process.

University of Utah Mech. Eng. Research Lab | Undergraduate Research   **August 2023 – May 2024**

- Worked with professor A.K Balaji as an undergraduate research assistant to investigate the effects of automated surgical cutting techniques.
- Designed a testing machine to research the effects of cutting angles and speeds on 3D printed organic tissue.
- Used the CAD software SolidWorks alongside engineering design process to create a testing machine model and communicated design decisions with Professor Balaji weekly as checkpoints for success.

Projects

F16 Tie-Bar Taper Lock Nut Custom Ratchet   **May 2024 – August 2024**

- Project was to design and develop a custom ratchetting tool, using the CAD software SolidWorks, to remove taper lock nuts from the leading edge of the F-16 wings more efficiently
  - Performed tolerance stack-ups and stress analysis in the design process to ensure the designs met the product requirements.
  - Sourced materials and designed the tools to meet a budget of $100 while still meeting quality standards.

- o Prototyped each iteration of the tool using FDM 3D printing and conducted design reviews with a team of process engineers by presenting my designs and decisions via Power Point.
- o Created official Air Force engineering drawings using geometric dimensioning and tolerancing to ensure accurate manufacturing for assembly.

Mechatronics Robot Competition   **January 2024 – May 2024**

- Robotics competition to engineer a robot that could collect various colored blocks from a dispenser, navigate to a chassis, and magnetically fuse each block to the chassis in various patterns to earn points.
  - o Worked with a four-man team to design, build and code an autonomous robot that won first place out of 30 teams.
  - o Designed and built multiple electrical components such as sensor breakout boards, power distribution boards, various sensors, and electrical wiring.
  - o Coded the robot using Arduino C and implemented PID classical control to accomplish competition tasks accurately.

Concrete Cutting Blade   **May 2022 – August 2022**

- Project was to design a concrete cutting blade to be laser cut from steel.
  - o Using various metrology tools like calipers, micrometers and protractors, I dimensioned and modeled pre-existing tungsten carbide teeth to be used in the blade design as an assembly piece.
  - o Designed and developed 3 variations of a concrete cutting blade using the CAD software SolidWorks while communicating with machinist on the tolerancing requirements of assembly surfaces.
  - o Created professional engineering drawings for manufacturing and engineering reference.

Research Testing Machine   **August 2023 – May 2024**

- Project was to design and build a testing machine that would be responsible for studying the differences in various cutting angles on organic tissue for surgical robots.
  - o Used an engineering design process to address a research concern of surgical robots and their most optimal cutting angles.
  - o Designed a cutting tool mechanism that could alter its rake and edge cutting angle.
  - o Created full SolidWorks models of an operable testing machine as a final step before building a prototype.