

# Brandon Lim

[in linkedin.com/in/brandonlim28](https://www.linkedin.com/in/brandonlim28) | [385-315-1485](tel:385-315-1485) | [BrandonLim1228@gmail.com](mailto:BrandonLim1228@gmail.com)

## Skills

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- **Engineering Design Skills:** Matlab | C++ | Simulink | LTSpice | Solidworks | 3-D Printing | Cura | Arduino | Metrology
- **Manufacturing Skills:** Welding | Cutting and Grinding | Green Sand Molding | Shell Core Manufacturing | Silica Sand Core Manufacturing
- **Technical Skills:** Excel | Word | Powerpoint | Outlook | Problem Solving | Communication | Teamwork | Leadership

## Experience

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### Engineering Drafter

#### Valley Machine and Manufacturing Inc

Salt Lake City, UT, USA

05/2022 - Current

- 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 parts into the assembly of the CAD designs
- Worked alongside Machinist and CAM technicians to maximize manufacturing efficiency by creating design tolerances in concrete cutting blades that would limit waste from pre-existing parts in the assembly process that achieved 100% pre-manufactured part utilization
- Drafted blueprints for pre-existing aluminum casted parts used in the mining industry for machinists and customers to utilize

### Manufacturer

#### TSB Foundry

Salt Lake City, UT, USA

05/2017 - 08/2023

- Molded and poured aluminum closed green sand molds on patterns for the manufacturing of casted parts accounting for 20% of production each day
- Operated and poured closed permanent molds for aluminum castings
- Operated shell mold machines and expandable silica sand molds to create cores used in the casting process

## Projects

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- **Concrete Cutting Blade:** Led the design and creation of 3 various concrete cutting blades through the CAD Program Solidworks.
  - Worked alongside a machinist to accurately measure pre-made tungsten carbide teeth to consider in the designing of the cutting blades as an assembly piece
  - Created the CAD models for 3 different variations of concrete cutting blades that would then be manufactured by laser cutting
  - Created design solutions for the cutting blades to allow for 100% utilization of pre-made tungsten carbide teeth that had poor dimensional consistency
- **Water Pump:** Created a rope water pump that was powered by a DC motor and placed 4th overall in a water pump design competition
  - Led a 4 man team and allocated each member with specific tasks throughout the engineering design process
  - Created prototypes using cardboard and 3-D printed final parts for the assembly
  - Troubleshooted issues when prototyping and found solutions for better efficiency
- **Ping Pong Ball Launcher:** Coded a ping pong ball launcher that could change its location/shooting angle to precisely hit targets placing 2nd overall in a competition of 40 teams
  - Worked with a partner to code using C++ inside Arduino IDE to drive a pre-built ping pong ball launcher that changed its launch angle and location to precisely hit targets
  - Coded kinematic equations and projectile motion physics into Matlab that computed launch angles that communicated with the Arduino C++ code
  - Tested and collected data from multiple different ping pong ball launchers to identify discrepancies between machines and made changes to the code to account for differences in non-controlled variables.
- **Air-Powered Train Design:** Designed an air-powered train built for optimization based on mathematical modeling of train motion that fit into a set of engineering constraints
  - Analyzed and modeled train motion in Matlab using ordinary differential equations and physics to optimize speed and travel time
  - Incorporated engineering constraints that included budget, dimensional constraints, physics restrictions, and required conditions to design and source parts for the train.

## Education

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### Bachelor of Science In Mechanical Engineering (In Progress)

#### University of Utah

Salt Lake City, UT

08/2021 - current

- Cumulative GPA: 3.66

## Accomplishments

2nd Place Robotic Ping Pong Ball Launcher Competition | 4th Place Water Pump Engineering Design Competition | University of Utah Dean's List 3 Semesters | 2020 & 2021 Varsity Soccer Team Captain | 2020-2021 Hunter High School Outstanding Academic Male Athlete | National Honors Society | AP Scholar | 2019, 2020, 2021 Varsity Letter | 2019 JV Soccer Team Captain | 2021 6A Soccer Region Champion