# Abhinav Saini

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## SKILLS

**Mechanical**
- Design, FEA (SOLIDWORKS, AutoCAD, Granta)

**Software**
- C++
- MATLAB/Simulink
- LabVIEW
- Arduino IDE

**Electrical**
- Soldering
- Multisim, LTSpice, Proteus
- Circuit Analysis – Oscilloscope, DMM

## TECHNICAL WORK EXPERIENCE

**LAEC – Laboratory for Alternate Energy Conversion** **Surrey, BC**
*Research Assistant* May 2024 – September 2024

- **Open Sorption System - Heat Exchanger and Storage Device**
  - Wired and calibrated various sensors ensuring accurate data collection.
  - Developed LabVIEW and MATLAB programs to provide an easy-to-use interface and to input data from sensors onto excel files.
  - Processed raw data in MATLAB using pre-programmed formulas and presented findings to the team.
- **Material Research – Battery Housing**
  - Performed Thermomechanical Analysis (TMA) tests to evaluate material thermal expansion for battery housing purposes and wrote detailed technical reports summarizing findings and implications.
- **Closed Sorption System - Heat Exchanger and Storage Device**
  - Designed a cylindrical vacuum chamber for a closed sorption system by creating detailed CAD designs and drawings using SolidWorks, ensuring clarity for the manufacturing team.

**SFU Team Phantom** **Surrey, BC**
*Inboard Dynamics* January 2024 - Current

- Constructed the pedal box, suspension mounts, steering components and APPS sensor housing for SFU's Formula SAE club in accordance with the provided rules.
- Applied FEA and failure analysis to optimize part geometry, reduce weight/cost and validate component strength prior to manufacturing.
- Machined several components using lathe, mill and waterjet cutters.

## EDUCATION

**Simon Fraser University** **Burnaby, BC**
*Bachelor of Applied Sciences - Mechatronic Systems Engineering* Expected 2027

## TECHNICAL PROJECTS

**ESCAPE ROOM PUZZLE DESIGNER -** Richmond, BC August 2022 - Present

- Designed and implemented microcontroller-based puzzles using Arduinos to control electromagnetic locks, triggered by button presses, object placements and laser interactions.
- Troubleshoot existing microcontroller-based systems ensuring uninterrupted puzzle functionality and smooth business operations.

**DOG BALL LAUNCHER -** Vancouver, BC January 2023 – May 2023

- Designed and built a custom ball launcher that attaches to the user's wheelchair, allowing for adjustable launch range using an Arduino, off shelf motors and speed controllers.
- Implemented a potentiometer-based dial used to control motor speed to vary range.

## VOLUNTEER ACTIVITIES

- Tutor for Mathematics and Physics
- Packaging – BC Children's Hospital