Devan Singh

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Industry Experience

Alloy Enterprises, *Mechanical Engineering Co-op* – Burlington, MA July 2023 – Dec. 2023

- Created a load spreading element to protect concrete floors from a 30,000 lbs. machine frame.
- Redesigned and built a flow network for a mass production system to increase assembly efficiency by 25%.
- Performed production machine fixes and improvements.

Zaiput Flow Technologies, *Mechanical Engineering Co-op* – Waltham, MA July 2022 – Dec. 2022

- Prototyped primary flow containment for a 40 liter/min chemical separator using a propriety perfluorinated polymer laser bonding machine and pressure blow forming.
- Created a sheet metal jig using SolidWorks to facilitate the production process of a back-pressure regulator and make the assembly more ergonomic.
- Fabricated a cooling system from copper pipe, FEP tubing and swage lock fittings to expedite the most time-consuming portion of the blow forming process.
- Retrofitted a heat press with parts made using SolidWorks to seal off a reactor chamber from coolant channels in a chemical reactor and crystallizer.
- Designed and CNC milled parts for a test stand to suspend a prototype separation cartridge along with a pressure regulator.

Lab Work

DMAS Research Group, *Undergraduate Researcher* – Northeastern University, MA June 2024 – Graduation

- Worked under P.I. Diego Alzate-Sanchez in the Chemistry and Chemical Biology department.
- Received PEAK Ascent Scholarship for research endeavors.
- Designed a machined aluminum mold to cast and mechanically activate thermoset elastomers.
- Synthesized crosslinking molecules with mechanically active dynamic bonds in silicone-based polymers.
- Utilized advanced laboratory techniques such as affinity exclusion column chromatography and NMR while researching environmentally friendly methods of recycling thermosets.

Extra Curricular

Northeastern Electric Racing, *Project Lead* – Boston, MA Sept. 2021 – Jan. 2023

- Redesigned a 3D printed differential case to reduce the dimensions complicating the installation process and increase the exposure of the internals to lubricant.
- Developed a test system to research protective coatings for the interior of the differential case to ensure chemical proofing from gear lubricant.
- Milled and welded 15 + parts for various subsystems, including copper bus bars for high current applications and square steel tube for the motor controller shelf.

Education

Northeastern University – Boston, MA Graduation: Dec 202

B.S. in Mechanical Engineering

Relevant Coursework (*with lab): Organic Chemistry 1-3*, Biology 1*, Cad and Manufacturing, Computation and Design, Systems Analysis and Control, Thermal Systems Analysis, ME Design, Water Filter Capstone

Extracurriculars: Northeastern Electric Racing, Paradigm Hyperloop and Not-A-Boring Competition

Skills and Interests

Chemistry: Organic Synthesis, Affinity exclusion column chromatography, NMR, Wet lab procedures and safety techniques | **Programming:** MATLAB, C++, Excel | **Design:** SolidWorks, Autodesk Inventor, AutoCAD, Tolerance analysis, GD&T | **Manufacturing:** CAM, 3D printing, Manual and CNC Milling, MIG welding | **Languages:** French

Interests in: Medicinal Chemistry, Protein Engineering, Sustainable Materials, Automotive Engineering, Biomechanics and Prosthetics, Pharmacology and Supplementation, General Health and Wellbeing, Violin playing, Weightlifting and Fitness