Hashir Ahmad

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Education

University of Waterloo **3rd Year - BASc in Mechanical Engineering** — GPA : 3.9 *Expected April 2028*

Technical Skills

Mechanical Design : SolidWorks • AutoCad • FEA (Ansys, PIPESTRESS) • DFMA • DFMEA

Manufacturing : Machining (Lathe, 3-axis Mill, etc.) • 3D printing • Welding/Metal Fabrication • BOM • Sheet Metal • Engineering Drawings • GD&T • Laser/Waterjet Cutting • P&ID

Programming : C++ • Java • Microsoft VBA • Python • MATLAB

Experience

Mechanical Design Assistant – ***Custom Steam Solutions Inc.*** *September 2025 - December 2025*

- **Standardized** boiler feedwater tank designs by establishing industry-standard design assumptions, completing pipe, valve, and pump sizing calculations, and implementing the results in **configurable SolidWorks assemblies**, enabling **40% faster** drawing package release.
- Designed and modeled **25+** piping assemblies with **500+** parts in **SolidWorks** for client steam-system projects, taking on preliminary design and drafting work from engineers.
- Produced **60+** engineering drawings and P&IDs in **SolidWorks** and **AutoCAD** with BOMs, weld details and manufacturing callouts.

Lead Engineer, Pedal Box – ***University of Waterloo Formula Electric (FSAE)*** *September 2023 – Present*

- Led the **design, manufacturing, and assembly** of the 2025 pedal box, with an emphasis on Design for Manufacturing and Assembly **(DFMA)**, reducing production time of components by **60%**, through updated manufacturing methods, optimized part geometries, and increased use of OEM parts.
- Conducted topolgy optimizations and static structural studies in **Ansys** on pedal system components to minimize weight and validate designs, reducing the mass of the brake pedal by **58%** and mounts by **41%**.
- Designed a jigging and welding procedure to join pedal mounts to the tube chassis, accounting for **weld properties** such as heat warping, material compatibility, and material property changes in the HAZ.

Mechanical Engineering Intern – ***Candu Energy Inc.*** *May 2024 - August 2024*

- Interpreted engineering drawings to **model 3D geometry** and assign boundary conditions for **11** unique pipe layouts using **FEA** in the **PIPESTRESS** software for structural analysis under multiple load cases.
- Validated deformation data from reactor fuel channels using **FEA simulations** to ensure channels do not excessively sag and/or ultimately fail due to delayed hydride cracking.
- Prepared **engineering reports** summarizing the results of deformation simulations to be reviewed by clients.

Projects

Boiler Room Design | *SolidWorks, Engineering Design* *October 2025 - November 2025*

- Completed a set of **15+ engineering calculations** for a boiler room conceptual design, including control valve sizing, pump selection with NPSH analysis, and steam trap sizing across multiple operating cases.
- Designed a steam **power piping** system using minimum thickness and velocity calculations in accordance with **ASME B31.1.**
- Developed a full **boiler room P&ID** in **AutoCAD**, coordinating **four steam utility systems** to support engineering review and conceptual project layout.

Card Dealing Robot | *SolidWorks, C++, Design Process, Robotics* *January 2024 - April 2024*

- **Designed and programmed** a fully autonomous card-dealing robot using **C++**, featuring automatic player detection and the ability to deal cards within **±10 degrees** of player location.
- Integrated ultrasonic, gyroscopic, and photo **sensors** to achieve functionality and ensure reliability of the robot, resulting in a **99% card delivery success rate.**
- Developed a **user interface**, with options to select games, commence player detection, and shut down.
- Drafted models of critical components in **SolidWorks** to be compatible with the LEGO EV3 building system.