

Arsalan Sajjad

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Education

University of Guelph

Bachelor of Engineering, Mechanical Engineering

Guelph, ON

Expected 2028

- Relevant Coursework: Manufacturing Processes, Thermodynamics, Engineering Mechanics II

Skills

- **Mechanical:** SolidWorks (CSWA Certified), AutoCAD, Rhino 8, MATLAB, Geometric Dimensioning & Tolerancing (GD&T), Finite Element Analysis (FEA), Design for Manufacturing (DFM)
- **Machining & Fabrication:** FDM 3D Printing, Lathe Operation, Milling, TIG/MIG Welding, Drill Press
- **Hardware:** PCB Design (Altium, KiCad), Soldering, Circuit Analysis, Oscilloscope, Multimeter
- **Programming & Software:** C/C++, Python, Java, JavaScript, HTML, PHP, MS Office (Excel, Word, PowerPoint)

Projects

Spring-Loaded Fire Truck | *SolidWorks, GD&T, DFM, Motion Simulation, FDM Additive Manufacturing*

- Designed and prototyped a 20+ component mechanical toy in SolidWorks using GD&T, utilizing hollow internal structures and sparse infill to reduce FDM material volume and cost by over 80%.
- Engineered a spring-powered launching mechanism by optimizing spring compression to 75% of its total length, maximizing energy transfer for repeatable 2.5 m launches.
- Produced a comprehensive Bill of Materials (BOM), manufacturing plan, and cost analysis to evaluate production feasibility, safety, and commercial viability for a stakeholder proposal.

Hydraulic Scorpion Model | *SolidWorks, Motion Studies*

- Reverse engineered and modelled 70 mechanical components of a hydraulic scorpion using digital calipers, achieving an accuracy of +/- 0.02 mm.
- Created a 143-component CAD assembly using advanced mates and sub-assemblies to accurately replicate the hydraulic scorpion's mechanical movement.
- Performed SolidWorks Motion Studies and created assembly animations to demonstrate the functionality and motion of the final assembly.

Autonomous Motion-Sensing Wheelchair | *Arduino, C++, AutoCAD, Embedded Systems*

- Designed and built an autonomous wheelchair integrating an Arduino control system and ultrasonic sensors, achieving near 100% obstacle avoidance.
- Integrated an L6205N motor driver, SG90 micro servo, and LED indicators to control motor functions, ball-launching mechanism, reverse operation, and hazard lighting.
- Modelled 20+ custom components in AutoCAD and optimized the wheelchair's centre of mass, reducing tipping risk by 30%.

Experience

IT Support

Smart Affordable Solutions

Cambridge, ON

May 2023 – August 2025 (Seasonal)

- Configured and installed desktops and laptops tailored to client specifications.
- Installed software and performed hardware upgrades to meet user requirements and enhance system efficiency.
- Implemented standardized setup procedures and documentation, cutting setup time per unit by 20%.