Shajia Fatima Rizvi

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Mechanical Engineer

CAD Modeling | Simulation | Design Analysis

PROFESSIONAL SUMMARY

Mechanical Engineering student with strong interest in mechanical design, CAD development, and applied problem-solving. Experienced in translating conceptual ideas into detailed 3D models through hands-on involvement in robotics, rover design, and innovation-based engineering projects. Brings a solid foundation in CAD modeling, simulation tools, and technical documentation, with a collaborative mindset and a structured, detail-driven approach to engineering work.

TECHNICAL SKILLS & KNOWLEDGE

- Mechanical design and CAD modeling using Siemens NX, SolidWorks, and Autodesk Fusion 360. Parametric part and assembly design, motion studies, and DFMA principles
- Engineering analysis, simulation, and computation using MATLAB, Simulink, and System Advisor Model (SAM).
- Application of GD&T, tolerancing, and manufacturing fundamentals. Familiarity with machining and fabrication processes.
- Programming and data tools including MATLAB scripting, Arduino Uno, and Excel for engineering calculations and data organization.

EDUCATION

Bachelor of Engineering (Honours), Mechanical Engineering **Sept 2023 – Present**
Ontario Tech University, Oshawa, ON

- Courses Include: Controls Systems | Thermodynamics | Computer-Aided Design | Solid Mechanics | Kinematics & Dynamics of Machines

Seize the Moment: Advanced Manufacturing Certification **September 2024**
Dex Labs

- Completed hands-on training in advanced manufacturing tools and digital fabrication techniques

ENGINEERING PROJECTS & EXTRACURRICULAR EXPERIENCE

Designs Without Barriers Ideathon **February 2026**

American Society of Mechanical Engineers (ASME)

- Placed 1st in an assistive design competition for creating an innovative shoe-fastening device for individuals with limited finger mobility.
- Developed and virtually modeled a low-force, spring-loaded sliding claw system to enable independent Velcro fastening and removal.
- Applied user-centered design principles to convert fine motor tasks into gross motor motion for improved accessibility.

Design Team **September 2025 – Present**

Ontario Tech Robotics (ARC)

- Redesigned protective covers for the standard competition robot to improve structural mounting integrity and internal accessibility for maintenance
- Optimized attachment points to enhance durability while simplifying assembly and disassembly procedures
- Refined geometry and surface profiles to improve aesthetics and achieve a cleaner, more integrated robot enclosure
- Developed parametric CAD models in SolidWorks with attention to manufacturability and tolerance considerations

Mechanical & Design Team **October 2025 – Present**

Ontario Tech Operations on Planetary Surfaces (OTOPS)

- Designed a bogie bracket for a rover rocker-bogie suspension system using NX CAD software, applying spline-based geometry to balance structural strength and mass reduction
- Collaborated on structural FEA to evaluate load paths, stress concentrations, and design safety margins
- Iterated designs to improve manufacturability, fastener accessibility, and integration within the rover chassis

Peer Mentor **September 2025 – Present**

Women in Engineering

- Provide academic and campus-life mentorship to first-year women in mechanical engineering
- Support students with time management strategies and navigation of tutoring, wellness, and career development resources
- Foster an inclusive and supportive learning environment within the engineering faculty

Brilliant Catalyst Innovation Challenge **September 2025**

- Developed a solar-integrated railway power system with photovoltaic panels on stations.
- Proposed smart-grid logic to dynamically allocate power for lighting, HVAC, and auxiliary loads
- Researched and presented a tilting photovoltaic mounting mechanism to improve energy capture efficiency