

Asrar ul Haq

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Education

Purdue University, West Lafayette, IN Expected May 2027
B.S. Mechanical Engineering, Minor: Design & Innovation

Experience

Teaching Assistant – Manufacturing Design (ME 264) Jun 2025 – Dec 2025
Purdue University

- Trained 100+ students weekly in CNC machining, sheet metal, and additive manufacturing.
- Guided projects applying DFM/DFA to functional prototypes.

Teaching Assistant – Metrology Lab Aug 2025 – Present
Purdue University

- Instruct precision measurement (CMM, profilometry, hardness) and GD&T inspection.
- Led labs applying SPC and tolerance analysis for quality control.

Autodesk Design & Make Ambassador Mar 2025 – Present

- Led CAD workshops (Fusion 360, AutoCAD) and organized campus design events.

Systems Engineer – NASA L'SPACE MCA Dec 2024 – May 2025

- Designed Venus aerobot concept; developed Science Traceability Matrix under constraints.

Projects

Airfoil Roughness & Aerodynamic Performance Study

- Engineered controlled surface roughness on 3D printed airfoils via layer height and slicer settings.
- Quantified roughness using profilometry and correlated with aerodynamic performance.
- Conducted wind tunnel testing; applied dynamic similarity to evaluate effects on lift-to-drag ratio.
- Modeled leading-edge erosion to analyze degradation in aerodynamic efficiency.

Higgs Boson Classification (ML Research)

- Built binary classifier (signal vs. background) using PyTorch.
- Presented results at Purdue Research Expo.

Automated Snowplow & Salter

- Designed and prototyped automated snow-clearing system with integrated control and safety.

Skills

CAD/Simulation: Siemens NX, CATIA, Fusion 360, Mastercam, FEA, Simulink

Manufacturing: CNC, milling, turning, additive manufacturing, DFM/DFA

Metrology/QA: CMM, profilometry, GD&T, SPC, hardness testing

Programming: Python, MATLAB, C, PLC, PyTorch (Machine Learning)

Quality: FMEA, root cause analysis, corrective actions

Certifications

- Siemens NX CAD Certification
- Finite Element Analysis (FEA) – Purdue University
- Geometric Dimensioning & Tolerancing (GD&T) – Purdue University
- Failure Modes and Effects Analysis (FMEA)
- Machine Learning Certification – National Institute of Technology, India
- 45-Day AI & Robotics Training Program