Prerak Mahajan

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Education

University of Waterloo Sept. 2025 – Present
BASc. Honours Mechatronics Engineering (GPA: 3.94) Waterloo, ON
- **Relevant Coursework**: Mechatronics Design (SolidWorks, AutoCAD), Circuits, Algorithms and Data Structures

Skills

CAD & Design: SolidWorks, AutoCAD, engineering drawings, facility layouts, GD&T, DFM, tolerance analysis.
Industrial Engineering: material flow optimization, time studies, workflow analysis, ergonomics, V&V, SAP.
Technical Tools: 3D printing, machining, fixture fabrication, soldering, multimeter diagnostics, Python, Linux.

Experience

Incoming Industrial Engineering Intern Jan 2027 – Apr 2027
Tesla Austin, TX

Industrial Engineering Intern Apr 2026 – Aug 2026
ZF Group Windsor, ON
- Redesigned and maintained **top-down 2D AutoCAD production layouts** across a **4-acre automotive manufacturing facility** supporting **10 production lines** producing BEV and ICE chassis components including front/rear corners, steering gear assemblies, rear mains, and strut systems supporting manufacturing updates.
- Accumulated **500+ hours in AutoCAD** creating and revising engineering floorplans using **layers, xrefs, reusable blocks, title blocks, and dimensioning tools**, updating facility layouts not fully revised in over **3 years**.
- Remapped and optimized **150+ material locations**, repositioned **80+ operator work areas**, and redesigned flow rack placements to reduce operator walking distance and improve ergonomics across manufacturing lines.
- Redesigned forklift and pedestrian routes while conducting **time studies** with stopwatch tracking and Excel analysis, improving safety clearances, reducing congestion, optimizing aisle accessibility for material handling operations, and presenting before-and-after layout proposals to supervisors, engineering managers, and line leaders.
- Collaborated cross-functionally with **75+ operators, forklift drivers, maintenance personnel, and staff** to validate layouts physically on the production floor and integrate approved revisions into master facility drawings.
- Contributed to an estimated **$500K in operational savings** through labor optimization, improved material flow, reduced operator travel distance, enhanced accessibility, and workflow efficiency across manufacturing operations.
- Supported **SAP** rack-label and workstation workflows to improve inventory visibility and material accessibility.

Hardware Engineering Intern Jun 2025 – Apr 2026
Prandtl Dynamics Richmond Hill, ON
- Designed **10+ mechanical components in SolidWorks** for a patent-pending counter-UAS system, iterating through multiple revisions and delivering finalized prototypes used in professional demonstrations with clients.
- Collaborated with engineers to **refine CAD models and engineering drawings**, documenting design changes, maintaining revision records, and supporting manufacturing preparation and prototype integration.
- Conducted **500+ validation tests** using high-frequency microphones, oscilloscopes, and FFT analyzers to measure SPL decay across **30 cm–15 m**, identifying overheating and reliability issues that informed housing redesigns.
- Integrated **electromechanical subsystems** including ultrasonic transducers, servo motors, pneumatic actuators, and calibration jigs into prototype assemblies while troubleshooting alignment and performance issues during validation.

Machine Learning Engineering Intern Jun 2024 – Aug 2024
Amazon Web Services Toronto, ON
- Led a **4-student engineering team** to achieve **Top 6/30** in an AWS ML competition while mentoring teammates, coordinating deliverables, and presenting technical findings to senior Amazon leadership.

Projects

Machined Mechanical Keychain | ***SolidWorks, machining*** Sept 2025
- Modeled a **mechanical keychain assembly** in SolidWorks using parametric design, producing **engineering drawings** with tolerancing, section views, and dimensioning while validating clearances through assembly mates.
- Machined using a **lathe, mill, and drill press**, validated tolerances between CAD design and manufactured parts.