AMULYA PATHANIA

Manufacturing Engineering Student
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TECHNICAL SKILLS

Computer Skills: SolidWorks, MATLAB, ANSYS Workbench, Microsoft Office Suite, ClickPLC, VTScada, RoboDK
Manufacturing Skills: 3D Printing, Thermoforming, Casting, Deep drawing, Injection molding, Spring winding, Milling, Lathes, Wet layup, Prepreg, Vacuum infusion
Programming Languages: C, C#, Python, Arduino IDE, PLC Programming

EDUCATION

University of British Columbia **Expected Graduation: May 2028**
Bachelor of Applied Science - Manufacturing Engineering
Co-op: Available for 16 months beginning May 2026

ENGINEERING DESIGN TEAM

UBC Rover, Vancouver, British Columbia **September 2024 – Present**
Mechanical Rover Lab Senior Member

- Designed an electro-mechanical carousel system for precision rotation of multiple liquid solution samples to detect life on the UBC Rover using SolidWorks and 3D printing to prototype and refine for optimal performance
- Leading a small team to manufacture a drilling auger for soil life testing applications
- Designing, machining and assembling an aluminum frame for Rover lab integration, ensuring structural integrity, precise alignment, and repeatable assembly
- Collaborated across multiple sub-teams to troubleshoot design challenges, optimize functionality, ensure seamless integration, and meet project deadlines
- Demonstrated adaptability by quickly developing technical skills through practical experience and collaboration

TECHNICAL PROJECTS

RC Car, University of British Columbia **September 2025 – Present**
Designed and fabricated an RC car through multiple manufacturing processes

- Collaborating in a team of seven to research, design, and produce an RC car with manufacturing processes
- Produced aluminum wheels with sand casting and machining, fabricated a thermoformed shell and constructed a composite for a chassis extension
- Prepared a comprehensive technical report detailing design objectives, CAD prototyping, project management, experimental findings from stress tests, and manufacturing performance analysis with ANSYS
- Presented design rationale and technical results through an oral presentation to faculty and peers

Automation & Robotics Systems Lab, University of British Columbia **September – December 2025**
Programmed PLC and HMI control systems for an automated spray-painting robot

- Developed PLC ladder logic and SCADA HMI to control a pneumatic spray-painting system with Modbus TCP communication and PID-based pressure control
- Designed a user-focused HMI with real-time visualization, setpoint control, and valve actuation to control piston location and valve pressure
- Programmed an industrial robotic pick-and-place task in RoboDK, defining reference frames, motion targets, and Python-based robot commands

Finite Element Analysis of Manufacturing Processes, University of British Columbia **September – December 2025**
Performed finite element simulations of sheet metal forming processes to analyze manufacturability

- Analyzed elastic and plastic deformation in tensile testing, deep drawing, and hydroforming using ANSYS Workbench
- Conducted FEA studies on pressure, friction, and material properties to predict yielding, rupture, wrinkling, and tearing
- Applied Forming Limit Diagram analysis to optimize manufacturing parameters to allow for safe forming conditions

Manufacturing Processes Laboratory, University of British Columbia **September 2024 – April 2025**
Gained hands-on experience with a wide range of manufacturing processes throughout a year-long lab course

- Performed thermoforming, casting, deep drawing, injection molding, and spring winding to explore process parameters and material behavior
- Operated industrial equipment including milling machines, lathes, and welding tools to gain hands-on experience
- Fabricated composites using wet layup, prepreg, and vacuum infusion methods followed by mechanical testing to compare tensile strength, stiffness, and failure
- Completed detailed lab reports that analyzed each process' science, experimental results, and performance trends across different manufacturing methods

Rainwater Harvesting System for Van Anda, University of British Columbia **March – April 2024**
Addressed water scarcity issues in remote communities

- Developed and evaluated multiple potential solutions using a Weighted Decision Matrix and a Streamlined Life Cycle Assessment, based on stakeholder needs
- Utilized Excel for system modeling to simulate real life performance, allowing further recommendation for optimal water collection, storage, filtration, pump, and power systems
- Completed an Expression of Interest and presented the final project to peers by defending the system as a reliable and cost-effective solution to water scarcity, and produced a detailed video with specifics

Adaptive Device: Assistive Mouse Clicker, University of British Columbia **December 2023**
Designed and presented a user-friendly device for a client with limited finger and wrist mobility

- Collaborated with engineering students to brainstorm, design, and prototype an adaptive device
- Used a structured design process that included stakeholder/risk analysis, and concept evaluation using a Weighted Design Matrix
- Created a Technical Memorandum that outlined the design process, requirements, and final recommendations

OTHER WORK EXPERIENCE

Gate Gourmet, Calgary, Alberta **July 2023 – August 2023**
Kitchen Helper

- Assembled airline meals for Air Canada and WestJet, adhering to high hygiene standards and safety protocols
- Demonstrated reliability and punctuality by meeting daily production targets

VOLUNTEER EXPERIENCE

My Best Friend's Closet, Calgary, Alberta **July 2022 – August 2023**
Garment Preparator

- Sorted, steamed and prepared donated clothes to empower low-income girls by providing fashionable clothing for a personalized shopping experience
- Upcycled donated clothing by ensuring high quality preparation, contributing to sustainable practices in the community
- Attained effective collaboration skills, ensuring smooth operations and timely completion of tasks

INTERESTS

Sci-Fi Media • Space Exploration • RPG & JRPG Video Games