Aditya Panchal

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Education

Sheridan College Institute of Technology and Advanced Learning — Brampton, ON
Bachelor of Engineering (Electrical), Mechatronics Stream — *Fall 2023 – Present*

- Bachelor of Electrical Engineering, Mechatronics Stream candidate (expected 2027), with coursework in mechanics, control systems, manufacturing processes, and machine design.

University of Toronto — Mississauga, ON
Bachelor of Science, Geographic Information Systems, Computer Science, Statistics — *2021 – 2023*

- Completed foundational studies in programming, data analysis, and spatial systems before transferring into engineering.

Technical Skills

Mechanical Design: GD&T, DFM/DFA, prototyping, 3D printing, FEA (structural/thermal), actuator and enclosure design.

CAD/EDA: SolidWorks, Autodesk Inventor, Fusion 360, Onshape, Altium Designer, LTSpice, iLogic.

Programming: Python, MATLAB, C/C++, Java, SQL, VBA, JavaScript.

Engineering Tools & Platforms: ROS, PlatformIO, Git, Docker, MySQL, basic AWS/Azure.

Documentation & PM: LaTeX, MS Project, Office 365, JIRA; SOP/QMS documentation.

Experience

FORM3D LIMITED — Mississauga, ON
Technical Lead — *June 2025 – Present*

- Developed an automated quoting workflow for customer CAD files (.STL, .3MF), building a Python service that extracts key geometry and queries a PostgreSQL database for material and process parameters to standardize pricing inputs.
- Implemented a repeatable pricing algorithm that reduced manual estimation steps and improved consistency of quotes across materials, machine settings, and build orientations.
- Authored SOPs in a Quality Management System for FDM processes aligned to ISO/ASTM 52900, defining critical-to-quality parameters, checkpoints, and documentation for reliable manufacturing handoff.
- Performed Design-for-Additive-Manufacturing reviews on customer and internal CAD (part consolidation, ribbing, wall thickness, anisotropy-aware changes) to reduce rework and improve manufacturability.

Mulock Variety — Newmarket, ON
Manager — *January 2020 – September 2022*

- Managed day-to-day operations and cashier workflows in a high-traffic environment, maintaining cash accuracy and customer service quality.
- Coordinated task priorities, trained new staff, and enforced store policies and health & safety procedures during peak periods.

Selected Engineering Projects

Frameless Inrunner BLDC Direct-Drive Actuator — *2025*

- Designed a compact direct-drive actuator in CAD (shaft, end caps, bearing seats, housing) for structural integrity, thermal performance, and ease of assembly; achieved 91% of rated nominal torque in bench testing.
- Applied GD&T and tolerance stack-up analysis to control critical fits and maintain a uniform 0.5 mm air gap, ensuring stable rotor–stator alignment.
- Integrated an ODrive motor controller and absolute magnetic encoder, executing system integration and closed-loop testing for torque and position response.
- Performed FEA for thermal dissipation, vibration stability, and static loading, and documented verification & validation steps and test results.

Wearable Health Monitoring System for Elderly [GitHub] *2024*

- Led a multidisciplinary team to develop an Arduino-based wearable device using biomedical sensors to monitor vital signs for elderly users.
- Designed the mechanical enclosure in SolidWorks and created detailed drawings with GD&T fundamentals to support 3D printing and assembly.
- Created circuit schematics in Altium Designer and developed embedded firmware (ATmega328P, C++) for sensor integration, data acquisition, and serial communication.
- Implemented data collection and signal analysis workflows in Python and MATLAB, and documented test procedures and outputs for repeatable validation.

Honors & Awards

IDEA Mississauga – Summer Company Program *2025*

- Awarded a competitive grant and mentorship to launch and grow a technology-focused startup, selected based on business plan viability, market potential, and execution strategy.