

VIBHAS TALLAPALLI

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EDUCATION

University of Waterloo

Candidate for BAsC in Nanotechnology Engineering

Expected Graduation: May 2030

Waterloo, ON

Sep 2025 – Present

TECHNICAL SKILLS

Mechanical & Manufacturing: SolidWorks, Onshape, CAD Modeling, Tolerances, GD&T, Carbon-Fiber

Fabrication, 3D Printing, Machining (Mill, Bandsaw, Lathe), Assembly

Electronics & Hardware: Microcontrollers (Arduino, ARM, AVR), Circuit Prototyping, Embedded Sensors, Serial Communication, Wiring

Programming & Tools: C++, Python, C, Arduino(C++), MATLAB, Git, Java

EXPERIENCE

Waterloop Design Team (University of Waterloo)

Mechanical Engineering Trainee

Waterloo, ON

Sep 2025 – Present

- Contributed to the design and fabrication of an experimental Hyperloop pod as part of a student-led team building a prototype for the SpaceX Hyperloop Pod Competition.
- Cut and trimmed carbon fiber pod sections based on SolidWorks/Onshape models so both halves aligned correctly during final assembly.
- Designed and machined aluminum clamps and brackets from CAD using a manual mill and bandsaw to mount braking components securely.

Electrium Design Team (University of Waterloo)

Mechanical Engineering Trainee

Waterloo, ON

Sep 2025 – Present

- Built a complete SolidWorks assembly of an existing e bike frame that previously had no CAD reference.
- Collaborated with the electrical subteam to package battery packs and brake controllers given space constraints.
- Updated mounting points and checked clearances in the CAD assembly to ensure electrical components could be installed cleanly.

Biomechatronics Design Team (University of Waterloo)

Mechanical Engineering Trainee

Waterloo, ON

Sep 2025 – Present

- Supported a student design team building a lower-body exoskeleton for the Applied Collegiate Exoskeleton competition, helping with early CAD concepts for strap integration and adjustment.
- Researched strap materials and padding options to balance comfort, flexibility, and durability.

Integra Youth

Executive Coordinator

Greater Toronto Area

June 2024 – Present

- Coordinated volunteer scheduling and tutor student pairings for community tutoring programs.
- Helped plan and run workshops by organizing volunteers and supporting event organization.

PROJECTS

Smart Study Focus Timer

Python, SolidWorks, Arduino

Winter 2026

- Designed and 3D-printed a SolidWorks enclosure, adjusting the layout to fit sensors and wiring.
- Used IR sensors to detect user presence, writing the control code in Arduino (C++) and Python.
- Developed a Python app that logs focus sessions and allows users to adjust study and break timers.

E-Bike Speed Control Simulation

C++, Python

Fall 2025

- Built a C++ simulation to model e-bike speed and battery discharge under varying loads.
- Tuned a PID controller to reduce speed overshoot and improve stability during load changes.

Energy Collecting Turbine

CAD, Mechanical, Electrical

Fall 2025

- Modeled a vertical-axis wind turbine, selecting PVC and Nylon to balance structural rigidity with rotational inertia.
- Fabricated rotor components, validating mechanical fits to ensure smooth rotation with minimal friction.
- Interfaced the mechanical turbine with a generator circuit, successfully powering a DC load during wind tests.