

VIBHAS TALLAPALLI

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SUMMARY

University of Waterloo engineering student with hands-on experience in mechanical design, CAD, and shop fabrication through Waterloop and Electrium. Have designed and machined components in SolidWorks and integrated mechanical layouts with embedded hardware. Seeking a 4-month co-op to contribute to practical hardware and mechatronics projects.

EDUCATION

University of Waterloo

*Candidate for BSc in Nanotechnology Engineering
Expected Graduation: May 2030*

Waterloo, ON

Sep 2025 – Present

TECHNICAL SKILLS

Mechanical & Manufacturing: SolidWorks, Onshape, CAD Modeling, 3D Printing, 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, MATLAB, Git, Java

EXPERIENCE

Waterloop Design Team (University of Waterloo)

Mechanical Trainee

Waterloo, ON

Sep 2025 – Present

- Fabricated carbon fiber chassis components and helped align pod sections during assembly and brake installation.
- Machined aluminum brackets and small structural parts from CAD drawings using manual workshop tools.

Electrium Design Team (University of Waterloo)

Mechanical Trainee

Waterloo, ON

Sep 2025 – Present

- Modeled the e-bike frame and battery enclosure in SolidWorks, working around packaging and mounting restraint.
- Worked with the electrical team to fit the battery pack into the mechanical layout.

Biomechatronics Design Team (University of Waterloo)

Mechanical Trainee

Waterloo, ON

Sep 2025 – Present

- Created and updated CAD models for the thigh and leg sections of a lower body exoskeleton in Onshape.
- Checked joint range of motion and clearances in CAD to make sure the system fit and moved comfortably.

Integra Youth

Executive Coordinator

Greater Toronto Area

June 2023 – 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 a 3D-printable enclosure with snap-fit interfaces, reducing assembly complexity and screw count.
- Integrated Arduino-based IR sensors to detect user presence, bridging hardware signals with Python logic.
- Optimized internal packaging to ensure proper cable routing within a compact desktop footprint.

E-Bike Speed Control Simulation

C++, Python

Fall 2025

- Developed a physics-based simulation to model e-bike velocity and battery discharge rates under load.
- Implemented a PID control algorithm, tuning parameters to validate system stability and response time.

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 turbine with a generator circuit, successfully powering a DC load during wind tests.