

# Viru Gurudath

## EDUCATION

**B.A.Sc. Integrated Engineering** – University of British Columbia Vancouver, CA 09/2020 – 05/2025  
**Specializations:** Mechanical and Electrical Engineering

**Awards:** Degree with Distinction (2025) | Dean's List (2021-22 / 2020-21) | Outstanding International Student Award (2020)

**Relevant Coursework:** Vibrations | Materials in Design | Mechanics of Materials | Thermodynamics II | Applied Electronics and Electromechanics | Electronic Materials and Devices | Systems and Control | Digital Systems and Microcomputers

## EXPERIENCE

**Mechatronics Intern – Log9 Materials** Bangalore, IN 06/2024 – 08/2024

*Log9 Materials, India's "Best Energy Start Up" (2022, The Economic Times), focusses on cutting-edge energy storage solutions.*

- Reduced BESS enclosure deflections by 83%, via linear static Ansys Mechanical FEA, validating enclosure strength
- Validated forklift cell configuration and optimisation with charge-discharge cycle MOSFET current trend analysis
- Decreased BESS surface temperature gradient by 21% validating cooling strategy using Ansys Fluent CFD
- Trimmed UPS manufacturing costs by 18%, optimising Manufacturing BOM, by evaluating alternative electrical parts
- Optimised UPS manufacturability using DFMA and standardised GD&T across SolidWorks drawings, reducing fit issues

**HVAC Research Assistant Co-op – Hynes Group** Vancouver, CA 05/2023 – 12/2023

- Developed Datacenter HVAC loop model using OpenStudio, simulating 12% energy savings with power-scheduling
- Designed Human Machine Interface monitoring pressure while controlling fan and AC states with TwinCAT 3 and C++
- Created 3D models of server arrangement in SolidWorks for Ansys Fluent CFD airflow analysis and optimisation
- Identified thermal hotspots with OpenFOAM CFD using C++ and Bash to plan future Datacentre AC installation zones
- Built thermodynamic performance model in MATLAB and found ideal electrical operating point under variable load

**Research and Development Project Intern – Log9 Materials** Bangalore, IN 06/2022 – 08/2022

- Analysed motor control architectures and regenerative braking to design India's 1<sup>st</sup> EV Skateboard Platform
- Evaluated EV braking methods to ensure compliance with IP ratings and thermal performance via product research
- Mapped ECU I/O to evaluate PWM control and diagnostics, ensuring ASIL-D compliance for modular EV integration
- Authored report, for India's 1<sup>st</sup> EV Skateboard Platform, with technical / procurement data and integrated layouts
- Received recognition from CEO and VP of Design for elite quality and timeliness

## SKILLS

**Mechanical Design / Simulation:** SolidWorks | Fusion360 | AutoCAD | Revit | Ansys Fluent CFD | Ansys Mechanical FEA

**Embedded Systems / Firmware:** Arduino / Teensy | ESP32 | C / C++ | PWM Generation | Hall-Encoder Feedback | Bash / Linux

**Control Systems / Automation:** Beckhoff TwinCAT 3 (HTML5 / JavaScript) | PID Controller Design | MATLAB / Simulink

**Digital FPGA Logic / Circuit Design:** Quartus Prime (VHDL) | Intel 8051 | Oscilloscopes Multimeters | SMT / THT Soldering

## PROJECTS

**Autonomous Solar Panel Cleaning Robot – UBC 4<sup>th</sup> Year Capstone (AMS Funded)** 09/2024 – 04/2025

*Designed and built an Autonomous Robot to clean rooftop solar panels, increasing energy yield in environmentally harsh places.*

- Designed Chassis, Dual Cleaning Rollers, and Rope-Rail system on SolidWorks, stabilizing robot on > 40° rooftops
- Engineered multi-rail power system for motors, pumps, and ESP32, enabling Hall-Based Dead-Reckoning navigation
- Optimised pathfinding and mechanics to achieve 8 panels/hr cleaning efficiency, exceeding goal of 3 panels/hr

**Arduino Robot Muscle (A.R.M.) – UBC 2<sup>nd</sup> Year Capstone** 09/2021 – 04/2022

*Built a Master-Slave robotic A.R.M. that replicates human motion via joint-mounted potentiometers and Arduino PWM control.*

- Constructed Master A.R.M. – Slave A.R.M. linkage, mapping potentiometers to Arduino PWM, using SolidWorks to design 3D prints, delivering < 300ms response, enabling > 400g payloads at full extension with ± 1cm positioning
- Enhanced PWM signal stability and reduced voltage drops by designing a damped power rail with bulk capacitors