

Marnu Kritzinger | Engineering Physics

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PROFILE

UBC Engineering Physics student focused on robotics, UAV systems, and mechanical and electrical design. I have hands-on experience designing, fabricating, and integrating mechanical and electromechanical hardware for multirotor aircraft, robotics, and systems integration, supported by CAD experience, electronics, machining, engineering analysis, and programming. I am interested in developing robotic and UAV systems to one day leave a long-lasting positive impact on the world by saving lives.

SKILLS

Design Skills: CAD (SolidWorks, OnShape), Electrical Circuit Design, Electromagnetics Design, Manufacturing/Fabrication, Engineering Drawings, Mechanical Design, Manufacturing Design, Prototyping, Machining

Engineering Analysis/Tools: Mechanical Systems Analysis (Statics, Dynamics, Fluid Mechanics, Thermodynamics), Circuit Analysis, Electromagnetics Analysis, Excel Sheets and Simulation Design, MATLAB, Jupyter, LaTeX

Programming: Coding (C, C++, Python, Java), Gazebo, ROS2, Computer Vision, System Integration, Sensor Feedback Systems

TECHNICAL EXPERIENCE AND EMPLOYMENT

UBC Uncrewed Aircraft Systems - Aircraft Subteam Member

January 2026-Present

- Design and manufacture the primary competition multirotor airframe using **Onshape**, taking structural requirements, mass, packaging, and manufacturability into account.
- Design and fabricate mechanical components for avionics and software integration utilizing **Machining** and **3D printing**, prioritizing reliable mounting, routing, and onboard systems integration.
- Develop and iterate mechanical and controls-related UAV components from CAD through testing, applying engineering analysis and prototyping to improve system performance.

Autonomous Robot Design Competition - Mechanical Lead (5th Place)

May 2026-August 2026

- Led the **mechanical design, manufacturing, and testing** of an autonomous robot on a four-member team, developing a system for **advanced navigation and interaction-based tasks**.
- **Designed and integrated** mechanical components in **Onshape**, manufacturing parts using **machining (lathe, drill press, waterjet, and grinding), 3D printing, and forming** with task-appropriate materials.
- Designed and integrated key mechanical systems, including a **chain-based lift, lead screw slider, drivetrain, and absolute-positioning system**, within the robot's frame.
- **Troubleshoot mechanical and electrical issues**, including a full drivetrain failure on competition night, and **collaborated** with software and electrical subteams to **resolve integration challenges and meet shared competition goals**.

IMPACT Services Group Ltd. - Electrical Technician

April 2025-August 2025

- Assisted in the installation and testing of **fibre-optic** and **electrical cabling**, reducing setup and inspection time as well and increasing project efficiency by a reported 20-30%.
- Independently installed and set up a variety of **HVAC electric controls**, such as thermostats, switches, timers, and AC actuator controls, allowing other team members to focus on additional tasks.
- Worked across active worksites, residential homes, offices, and university buildings, adhering to the **applicable safety and installation regulations**.

Education

University of British Columbia - BSc. Engineering Physics (83.8%)

Sept 2024 - Expected 2029

Relevant Coursework: Mechanics, Material Mechanics and Properties, Intro to Robotics, Control Systems, Signals and Systems, Digital Systems, Software Construction, Linear Circuits, Fluid Mechanics, Thermodynamics, Electricity & Magnetism, Experimental Techniques, Technical Communications, Instrumental Design