# TOMAZ ZLINDRA

ELECTRICAL ENGINEERING STUDENT

## TECHNICAL SKILLS

**Systems & Software:** Concurrency & Parallelism, Performance-Critical C/C++, TCP/IP Networking (TCP/UDP)
**Programming Languages:** C++, C, Python, SystemVerilog, matlab
**Embedded:** RTOS (FreeRTOS, NuttX), Wireless & Serial Communication, DMA, Timers, Interrupts, Memory
**Tools & Workflow:** Git, GitHub, makefile, Cmake, KConfig, GMock, Docker, Linux/Unix

## RELEVANT WORK EXPERIENCE

**System Simulation Engineering Intern** | Intel Corporation                          September 2025-present
- Built high-fidelity **SystemC (C++17)** models of complex system components, enabling functional validation and architectural exploration **6+ months before hardware availability**, reducing integration risk downstream.
- Improved simulation scalability and reliability by integrating **CI-driven automated test pipelines** with extensive **GMock**-based unit tests, contributing comprehensive unit test coverage (**10–50**-unit tests) for complex modules and enforcing repeatable model validation.
- Designed modular communication interfaces (**socket-based / IPC**) to connect simulation models with external tools, supporting **multiple HW communication protocols** and flexible, loosely coupled system-level integration.
- Collaborated with **cross-disciplinary** engineers (SW, FW, HW) to deploy models into production workflows, uncovering **edge-case failures** early and validating **end-to-end behavior** in distributed system environments.

**Flight Control Firmware Developer** | Genist Systems                          May 2025-Aug 2025
- Developed **PX4 C++ flight control firmware** for an autonomous UAV, integrating LiDAR and custom sensors to enable **real-time path planning** and autonomous navigation over dozens of complex mission scenarios.
- Implemented a winch control system using a **high-speed ESP32**, managing **5-10** high-priority **RTOS** tasks and reliably exchanging commands with the main board **over TCP** to synchronize patient retrieval and deployment.
- Applied model-based design in **MATLAB/Simulink** to generate flight dynamics code, integrated it with PX4 SITL code generation, and **fine-tuned PID** control loops under diverse simulated flight conditions.
- Configured embedded system bring-up and reproducibility by editing **Kconfig** and **NSH** workflows and developing **custom Bash scripts** to automate startup sequencing

## EDUCATION

**Bachelor of Applied Science, Electrical** | University of British Columbia (UBC)     September 2022 – Expected April 2027

## ENGINEERING DESIGN TEAMS

**Software and Firmware Project Lead** | UBC Supermileage                          September 2023-present
- Lead the dynamometer team, mentoring **3+ members** in SW, FW and HW (PCB/circuit design, soldering, wiring) to deliver **vehicle testing systems** on schedule, enabling the powertrain and vehicle mechanics engineering teams to **improve fuel efficiency** and performance.
- Developed **FreeRTOS-based STM32H743 firmware** with message passing, circular buffers, critical sections, and **microsecond-precision timers**, interfacing with **SPI, I2C, USB,** and **SDMMC** for real-time data acquisition.
- Building **multithreaded C++ GUI** for real-time data visualization, parameter control, and continuous logging, using **CMake, Kconfig, and Docker** to support reproducible, production-style workflows.

## PROJECTS

These are listed on my website, if interested: https://tomazzlindra.com/#experience