Dominic Rousseau (he/him)

github.com/itsdombo contact@dominicrousseau.com linkedin.com/in/rousseaudominic/ (604) 618-3504

Education

University of British Columbia *September 2022 - April 2027*
Bachelor of Applied Science, Computer Engineering

Work Experience

- **Captain** - UBC Biological Internet of Things (BIoT) *May 2024 - Present*
  - Led 30+ member team through full structural transition, establishing independent operations (email, Discord, website) after the unexpected collapse of UBC Envision, enabling continuous project development and smoother administrative workflows
  - Secured **$5.5K+** in funding through successful grant applications and partnerships (PAF, Walter Gage, AMS Events, breweries), ensuring all subteams received critical resources to complete long-standing technical milestones like the BrewBox and Glow-in-the-Dark Beer
  - Revamped outreach and hiring, reviewing 80+ applications, onboarding new members, launching a sponsorship package, and securing a showcase booth at **AMS Brewfest** with 25K+ reach, elevating BIoT's public profile and professional partnerships
  - Established an industry collaboration with **Tydra Labs**, initiating a $2–5K bioreactor instrumentation project to offer students resume-building experience and potential co-op opportunities through applied fermentation R&D
- **Instrumentation Lead** - UBC Biological Internet of Things (BIoT) *September 2022 - April 2024*
  - Directed an 8-member instrumentation team, doubling project velocity by restructuring **GitHub** workflows and implementing weekly sprints for clearer ownership and accountability
  - Built modular, low-cost instrumentation tools to monitor fermentation stages, enabling remote data visualization
  - Networked multiple Raspberry Pi units to central node for real-time sensor data collection and dashboard display using **Grafana** and **TimescaleDB**
- **Volunteer Instrumentation Associate** - Tydra Labs, UBC *February 2024 - May 2024*
  - Developed and validated custom bioreactor program using python for 1L scale custom bioreactor
  - Utilized factorial design to optimize system for maximal bacterial growth and density
  - Assisted with design and documentation of fermentation system for recombinant protein production of designer protein fibres

Projects

- **Simple RISC Machine** - UBC
  - Independently designed and implemented a single-cycle Simple RISC Machine in **SystemVerilog** using **Quartus**, integrating a custom datapath and control logic
  - Supported execution of 10+ instructions including **ADD, MOV, LDR, STR, CMP, B** using a finite-state control machine mapped to an **FPGA board**
  - Thoroughly validated datapath functionality with custom waveform-based testbenches in **ModelSim**, ensuring correct register and memory operations
- **Self-Hosted Cloud & Game Server Infrastructure** – Personal + UBC ECESS
  - Enabled secure, remote access to 100GB+ of files across devices by repurposing a PC tower to run a **Nextcloud** instance on **Ubuntu Linux**
  - Replaced third-party hosting by deploying a self-managed Minecraft server for 20+ UBC ECESS members, reducing hosting costs by 100% and improving reliability during peak hours
  - Automated server boot, backups, and crash recovery using **Bash scripting**, while managing **port forwarding**, DNS configuration, and firewall rules for 24/7 uptime
- **Cluck Guard** - Personal Project
  - Engineered a battery-powered chicken door in **C++**, opening and closing through a pulley mechanism powered by a servo and photoresistor
  - Published comprehensive open-source build guide on **GitHub**, enabling replication and reuse by hobbyists and makers
  - Reduced manual monitoring by enabling autonomous door control based on ambient light thresholds, improving reliability during dawn and dusk transitions
- **Homebrew Instrumentation Device Mach 1 & 2** - UBC BIoT
  - Developed a low-cost brew sensing device in **C/C++** and **JavaScript** allowing a Raspberry Pi to broadcast sensor data to a web client
  - Prototyped several atlas scientific sensors with an **ESP32** to create a working IoT prototype

Skills

- **Software:** Java, Python, C/C++, Arm Assembly, SystemVerilog, JavaScript, HTML/CSS, Git, Arduino, LaTeX
- **Design:** Fusion360, Quartus, ModelSim, TimescaleDB, Blender, Figma, Photoshop, Illustrator
- **Libraries:** NumPy, Pandas, Matplotlib
- **Languages:** English (Fully Fluent), French (Professional Working Proficiency), German (Elementary Proficiency)