

Dominic Rousseau (he/him)

github.com/itsdombo

contact@dominicrousseau.com

linkedin.com/in/rousseaudominic/

(604) 618-3504

About Me

UBC Computer Engineering student with technical development and project management experience. Managed both agile and waterfall projects for design team, and implemented back-end and database code for team projects along with UI/UX mock-ups. I am a competitive hockey player which has helped me become a strong team player, perform well under pressure, and build strategic thinking skills.

Education

University of British Columbia

September 2022 - April 2027

Bachelor of Applied Science, Computer Engineering

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)

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
- **Startup Competition** - Innovation on Board, UBC *September 2023 - January 2024*
 - Pitched my startup idea to a panel of judges, competing against 53 other teams for the \$5,000 prize
 - Carried out market and competition analysis, conducting 20+ in-depth interviews
 - Conducted in-person strategy consultations with Avenue Intelligence's CEO to gain operational insights and refine our startup model

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
 - **Recycled Raspberry Pi Smart Mirror** - Personal Project
 - Crafted and integrated a smart mirror from recycled parts using open-source software
 - Ensured mirror can sync with Google Calendar, Spotify API, local weather, and news casts
 - Mirror can be controlled from an external computer outside of a local network via SSH/screen-sharing
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Volunteer Experience

- **Server Infrastructure Manager** - Electrical and Computer Engineering Student Society *November 2024 – Present*
 - Self-hosted and maintained a Minecraft server for 20+ ECESS members, replacing paid third-party hosting and improving reliability during peak usage
 - Automated boot, backup, and crash recovery processes using Bash scripting and systemd on Ubuntu
 - Managed network configuration including port forwarding, firewall rules, and DNS to ensure 24/7 secure remote access
- **Creative Manager** - Engineering Undergraduate Society (UBC) *September 2022 - April 2024*
 - Composed patches, sports team logos, magazine covers, and posters for the Engineering Undergraduate Society using Photoshop and Illustrator
 - Originated and produced the organization's bestsellers, catalyzing sticker sales by 200
 - Advised EUS's Finance Executive in planning drop sales for special edition items
- **Computer Electronics Repair Volunteer** - SPEC Repair Cafe *February, 2023 - Present*
 - Cooperated in a repair café alongside UBC's Director of Computer Engineering
 - Fixed and serviced several electronic devices including computers and furniture
- **First Year Social Coordinator** - Engineering Undergraduate Society (EUS) *September, 2022 – May, 2023*
 - Organized 8 events for first-year faculty of applied science under a constrained budget
 - Reorganized UBC engineering's biggest first-year *favourite* event after half a decade by booking venues and DJs, advertising tickets, and calculating estimated costs, upwards of \$5,000