

Jacob Mattie

Curriculum Vitae

Vancouver

778-710-7554

j_mattie@live.ca

<https://github.com/qimbet>

Summary

Mathematician with vocational expertise in mechanical engineering and software development. Automation-focused skillset. Passionate about communication.

My academic goals are to pursue a Master's Degree and a PhD in Molecular Physics.

Skills

Programming Languages:

Python

SQL

C++

Bash

Frameworks & Tools:

Django

Git

Redis

AWS

Fabrication:

Microcontrollers, Electronic Design, & Assembly

Plumbing, Pumps, & Valves

Sensors, IoT, Device Networking

120+ VAC Electronics

Data Engineering:

Data Structures

Data Analysis

Algorithm Design

Software:

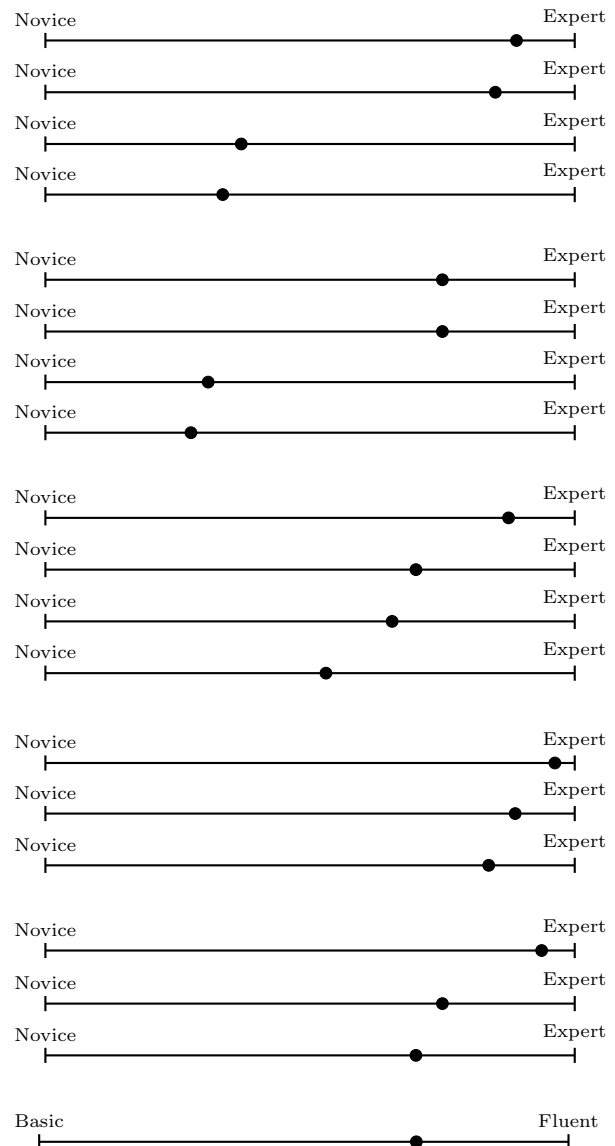
Microsoft Office (Excel, Word, PowerPoint)

SolidWorks, FreeCAD, AutoCAD

Linux

Languages:

French



Work Experience

Investment Analyst

Aligned Capital Partners / River Wealth

Vancouver, BC
11/2024 - Ongoing

- Built an end-to-end **data pipeline** to extract, clean, and load data from over 15 heterogeneous sources (**files, APIs, web scraping**) into a custom-designed SQL schema, laying the foundation for scalable data analytics.
- Configured and maintained a **Linux-based server stack** (Fedora, Gunicorn, Nginx) to platform a Django application, making a roster of data analytics, reporting, and automation tools accessible to non-technical staff.
- Founded the company's **data assets program** by engineering a time-series repository of key performance indicators (KPIs) across 23,000 securities, enabling portfolio analysis and quantitative modeling.
- Automated recurring tasks in Python, eliminating over 20 hours of manual work per month and reducing the likelihood of human error.

General Contractor

Independent

Calgary, AB
6/2024 – 8/2025

Fair's Fair Books

Retail Clerk

Calgary, AB
1/2024 - 8/2024

Liquid Energy

Co-Founder

Calgary, AB
3/2024 – 8/2025

- Researched the advent of intermittent energy sources (i.e. wind, solar) on the power grid, and the global market reaction.
- Pitched a low-cost/low-efficiency compressed air energy storage method to investors, power plant owners, and grid administrators.

Test Technologist

IBC Technologies

Burnaby, BC
6/2022 – 9/2023

- Enabled regulatory compliance by designing and implementing test processes, making use of high-powered pumps, power sources, and sensors.
- Set up dozens of boilers; safely connecting to gas lines, 120VAC power supplies, and near-boiling water circuits.
- Automated testing with IoT microcontrollers and PLC devices, creating **cloud-connected data pipelines** to send controls and receive data from validation units.
- **Automated data analysis** of high-volume datasets using MATLAB, reducing processing time from 20 minutes to under 3 minutes per iteration.
- Engineered, manufactured, and deployed laser-based obstruction sensors and a responsive control upgrade to an **assembly line**, boosting station turnover speed by 25% while simultaneously enhancing operator safety.

Opinions Editor, Contributor

The Peak Publications Society

Burnaby, BC
10/2020 – 6/2022

- Managed the Opinions Section of a weekly newspaper, **coordinating a team** of 5 rotating student contributors and staff writers to each publish 500 words in face of strict production deadlines.
- **Mentored and coached** writers of varying experience levels with editorial feedback, thematic guidance, and structural training to develop their voice and orchestrate their work with the greater section.

HD Concrete

Skilled Labour

Surrey, BC
2/2021 – 1/2022

IT Technician (Internship)

BC Cancer Research Centre

Vancouver, BC
09/2018 – 01/2019

- Diagnosed and **resolved technical issues** across Windows, Mac, and Linux environments in a large-scale research facility, training adaptability with diverse technology stacks.
- Configured and maintained network infrastructure (switches, routers, cables) to ensure **cybersecurity** compliance and preserve data channels across research departments.
- Wrote internal **documentation** standardizing daily operations and foundational knowledge, closing a knowledge gap and facilitating uptake of future students.

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| Steamworks Brewpub <i>Expeditor Lead, Busser</i> | Vancouver, BC 09/2017 – 09/2018 |
| Vision Built Homes <i>General Labour</i> | Vancouver, BC 4/2016 – 9/2016 |
| The Charles Bradlaugh <i>Bartender</i> | Northamptonshire, UK 4/2015 – 8/2015 |
| White Spot Restaurants <i>Line Cook</i> | Burnaby, BC 4/2014 – 4/2015 |
| JB Hi-Fi <i>Retail Clerk</i> | Sydney, AUS 10/2013 – 3/2014 |
| Hunter Roofing <i>General Labour</i> | Surrey, BC 4/2013 – 8/2013 |
| Price Smart Foods <i>Clerk</i> | Burnaby, BC 5/2011 – 8/2012 |

Projects

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| Hydroponics <i>Independent Project</i> | 04/2025 – 08/2025; Ongoing |
| <ul style="list-style-type: none"> • Designed and assembled a modular hydroponics system able to grow 36 spinach plants from seed to harvest with no manual input. • Engineered esp32-based circuitry with relays, sensors, and power converters to control grow lights, watering pumps, and fertilizer dispersion systems. • Planning integration of a robotic arm to automate strawberry pollination using computer vision techniques. | |
| ROV – Underwater Surveying <i>Collaborative Project</i> | 02/2025 – Frozen (09/2025) |
| <ul style="list-style-type: none"> • Researched market potential for underwater surveying vehicles by talking to marine professionals in marine and regulatory industries, qualifying design requirements and constraints. • Designed a scalable, low-cost, modular carrier and relay vehicle for the ROV, enabling radio-frequency control for an underwater vehicle. • Sourced off-the-shelf components and used FreeCAD to design 3D printable parts to develop an assembly model for the carrier boat. • Modelled mission electrical system requirements by calculating power load and mission parameters to optimize battery type and capacity against cost. | |
| Brewing <i>Hobby</i> | 05/2018 - 09/2023 |
| <ul style="list-style-type: none"> • Produced over 1,000 bottles of beer over 22 batches, using self-developed recipes. • Optimized heat exchangers, pumps, airlocks, and valves to monitor and control the temperature, chemical composition, and filtration of beer throughout the stages of brewing. | |

Map the System

Research Competition

01/2021 – 03/2024

- In a team of 4, published a 15-page report and multimedia presentation on the difficulties in accessing healthcare throughout BC.
- Sourced data through interviews with pharmacists, doctors, and healthcare dependents from different backgrounds to understand the problem landscape.

Greenhouse Gas Emissions Audit

Comissioned by: Gabriola Island Futures

08/2020 – 04/2021

- Quantified Greenhouse Gas Emissions for the island community of Gabriola by surveying retail sources, productive sites, and utilities providers.
 - Delivered an emissions footprint calculator, summing consumption emissions across the supply chain CO2-equivalent values.
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Education

Simon Fraser University

B.A.Sc Mathematics

01/2019 - 05/2022

Key Coursework:

- Real Analysis
- Probability & Statistics
- Linear Algebra
- Algebra II: Rings and Fields

Simon Fraser University

B.A.Sc Engineering - Not Completed

09/2017 - 12/2018

Key Coursework:

- Process of Professional Writing
- Graphical Communications

Langara College

Associate Of Science Certificate - Not Completed

01/2015 - 05/2017

Key Coursework:

- Calculus III
 - Engineering Mechanics
 - Electromagnetism & Optics
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Certifications

Nuclear Energy Worker

Canadian Nuclear Safety Commission

09/2025 - 09/2030

Ocean AI and Technology Foundations

Canada's Ocean Supercluster

Attained: 06/2025

Occupational First Aid - Level 1

Metro Safety Training

10/2021 - 10/2024

Fall Protection

Metro Safety Training

06/2019 - 06/2022

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|---|-------------------|
| Occupational First Aid - Level 1 <i>Metro Safety Training</i> | 10/2014 - 10/2017 |
| Class 5 Driver's License <i>ICBC</i> | 03/2012 - 04/2025 |

Volunteering & Leadership

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| Triumph - ASPIRE Astrochemistry Lab <i>Automation Technologist</i> | Vancouver, British Columbia 05/2025 - Ongoing |
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- Contributed to the publication of 2 papers:
 - Astrochemistry; In Preparation
 - Control Systems; In Preparation
- Developed a Bash-based installer for EPICS, an industry-standard **lab control framework** for physics laboratories, mitigating a significant entry labour barrier for new students and staff.
- Integrated a Python motor controller into the laboratory control system, **eliminating effective experimental variance** and reducing need for active engagement with the experiment over its hours-long runtime.

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| Beaty Biodiversity Museum - Vertebrate Lab <i>Laboratory Assistant</i> | Vancouver, British Columbia 09/2025 - 11/2025 |
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- Performed necropsies on animal carcasses, gathering tissue samples and recording specimen data.
- Leveraged cross-departmental knowledge to bolster data quality (e.g. arthropod/plant identification from stomach contents).
- Acted as caretaker to several dermestid beetle colonies while monitoring their cleaning of sample skeletons.

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| Epic Fencing Club <i>Facilities Improvement, Athlete</i> | Calgary, Alberta 4/2025 – 8/2025 |
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- Soldered, crimped, and assembled 40 wiring harnesses for electric reels and pistes.
- Installed infrastructure for custom ceiling-mounted cable reels, dramatically reducing wire clutter.
- Validated and repaired weapons, body cords, and other equipment during tournaments.

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| IBC Technologies <i>Employee Committee – Engineering Representative</i> | Burnaby, British Columbia 03/2023 – 09/2023 |
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- Boosted workplace morale by setting up a community garden near the parking lot.
- Boosted workplace morale by organizing a company-wide plant giveaway.
- Organized and facilitated monthly company lunches, feeding over 200 employees.

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| The Peak Publications Society <i>Board of Directors – Collective Representative</i> | Burnaby, British Columbia 06/2021 – 12/2021 |
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- Collaborated with financial advisors to manage a \$1.5 million investment account, finding a balance between financial and ethical values.
- Researched, presented, and voted on governance issues, including operating budgets and long-term strategy.

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| SFU Fencing Team <i>Team Administrator, Athlete</i> | Burnaby, British Columbia 09/2018 – 12/2021 |
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- Raised \$500 for a nascent student athletics team by advertising and running a fencing tournament.

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| SMA Negeri 5 Palangka Raya <i>English Teacher</i> | Central Kalimantan, Indonesia 1/2013 - 3/2013 |
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- Taught English to high-school-level students who had little prior English language exposure.