

# Jacob Mattie

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Software developer with a **mathematics** background building **backend** systems, data pipelines, and **Linux**-based infrastructure. Focused on reliable **production software**, automation, and scalable **data processing** systems.

| Languages       | Data Pipelines | Backend       | DevOps      | Infrastructure |
|-----------------|----------------|---------------|-------------|----------------|
| Bash            | BeautifulSoup  | Celery        | CI/CD       | Agentic AI     |
| C++             | JSON           | Celery-Beat   | Git         | Claude Code    |
| HTML5 / SCSS    | PostgreSQL     | Django        | Debugging   | Docker         |
| MATLAB / Octave | Redis          | ETL pipelines | journalctl  | esp32          |
| Python          | Requests       | Gunicorn      | QA/Testing  | GPIO           |
| SQL             | Selenium       | Nginx         | Refactoring | Linux          |
|                 |                | REST APIs     | rsync       | SELinux        |
|                 |                |               |             | SSH            |
|                 |                |               |             | systemd        |
|                 |                |               |             | UART           |
|                 |                |               |             | Windows        |

BSc. Mathematics, 2022, Simon Fraser University

## Work Experience

### Investment Analyst — Data Architecture & Backend Systems

Aligned Capital Partners / River Wealth

Vancouver, BC

11/2024 - Ongoing

Q: What data exists that might let us predict stock growth and market behaviour?

- Developed production data pipelines supporting investment **analysis workflows** for a portfolio manager with \$220M+ in assets under management, providing reliable time-series financial data for decision support systems.
- Engineered **distributed ETL pipelines** using Selenium, Requests, and file-based ingestion, orchestrated via Redis-backed Celery workers, capturing and processing 45,000+ daily financial data points.
- Implemented **stateful retry and validation** logic across ingestion workflows, ensuring fault tolerance, deduplication, and data consistency under unreliable external data sources.
- Configured a **headless Linux**-based server stack (Fedora, Gunicorn, Nginx) to host a Django application, enabling internal access to data analytics and automation tools.
- Designed and operated a **CI/CD-like deployment** pipeline using Git-based workflows, automated validation tests, and SSH/rsync-based artifact synchronization to a headless Linux environment.
- Automated 20%** of company-wide workload through Python scripting and process standardization.

### Test Technologist

IBC Technologies

Burnaby, BC

6/2022 – 9/2023

Q: How can we safely optimize heat transfer from a boiler's combustion chamber?

- Automated hardware validation processes by leveraging IoT microcontrollers and PLC systems, streaming test data into **cloud-connected repositories** for analysis.
- Built high-throughput data analysis workflows in MATLAB for multi-million-point datasets, **reducing validation time by over 600%**.

### IT Technician (Internship)

BC Cancer Research Centre (BCCRC)

Vancouver, BC

09/2018 – 01/2019

Q: How much digital freedom can we grant researchers without compromising network security?

- Managed user access controls and permissions within a segregated research network, enforcing data isolation and **cybersecurity** policies across multiple user groups.
- Assisted in network recovery during facility-wide outage caused by a malware incident, supporting administrators in restoring connectivity and validating **system integrity** across endpoints.

## Volunteering

### Automation Technologist

TRIUMF - Canada's Particle Accelerator

Vancouver, British Columbia

05/2025 - Ongoing

Q: What modern technological advances have resolved longstanding engineering problems?

- Contributed the **technical foundations** of 3 scientific publications (in preparation) on distributed control systems in nuclear physics laboratories.
- Developed a containerized EPICS **deployment pipeline** (Docker + Bash), leading a modernization initiative for a legacy control software operating over \$1.5B in infrastructure.
- Coded a Raspberry Pi-based stepper motor control system, merging hardware wiring, driver design, and Python-based interface through a transistor array for **automated and repeatable** experimental control.