Joel Hempel

Machine Learning and Full-Stack Development

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Education

BSc, Computer Science — **Vancouver, Canada**
University of British Columbia — 2022–2026

- **GPA:** 4.20/4.33

Transfer Credits — **Vancouver, Canada**
Langara College — 2020–2022

- **GPA:** 4.17/4.33
- **Awards:**
  - Ernest E. Livesey Memorial Prize in Mathematics
  - LSU Faculty of Science Award (highest cumulative GPA)

Technologies

Languages: Python, Java, C, C++, JavaScript, TypeScript, HTML, CSS, Erlang
Frameworks & Libraries: PyTorch, React, Next.js, FastAPI, CUDA
Web/Databases: Supabase, SQL, Tailwind, PHP
Tools: Git, Docker, AWS, Google Cloud, JUnit, Google Colab
ML: Traditional Models, Neural Networks, Computer Vision, LLMs

Experience

SWE Intern — **Vancouver, BC**
Checker Software — 05/2025 – Present

- **Shipped 10+ full-stack features/bug fixes and reviewed 15+ pull requests for Diffchecker.com (≈60 k daily users) in the first two months**, boosting UI/UX quality and catching critical ML-related regressions.
- **Prototyping an in-house image-comparison engine** using Meta's Segment Anything (SAM).
- **Technologies:** Next.js, React, TypeScript, PostgreSQL, Docker, GitHub Actions

Software Sub-Team — **Vancouver, BC**
UBC Subbots — 09/2024 – Present

- Building an autonomous underwater vehicle (AUV) for the RoboSub 2025 competition.
- Implementing **trajectory-generation algorithms** to guide the AUV around buoys.
- Improving IMU reliability by evaluating hardware options and refining data extraction for real-time sensor fusion.
- **Technologies:** C++, ROS2, Gazebo, Arduino

SWE Intern (ML & Full-Stack) — **Vancouver, BC**
Metrized Consulting Inc. — 09/2023 – 08/2024

- **Built and deployed an alpha version of a computer vision powered cost-estimation web-application** to **reduce contractor estimation time by around 80%.**
- Co-created a distributed back-end solution for separate training, inference, and core servers—allowing for easier scaling.
- Engineered a ground-truth dataset of **10,000 images**, reduced synthetic data generation/augmentation time by **95%**, and trained a **top-performing computer vision model with 95% test-set accuracy**.
- Authored comprehensive documentation (on **20,000+** lines of code across 4 repositories), streamlining new-hire onboarding.
- Expanded an existing **front-end by adding new 10 new features** and improving user-experience.
- Proposed a **breakthrough feature** for AI-assisted symbol labeling **increasing accuracy by 400%**.
- Conducted experimental research on language models for potential future products.
- **Technologies:** Python, PyTorch, Next.js, AWS, Supabase, JavaScript, YOLO, SAM, LLMs

Undergraduate Research Assistant — **Vancouver, BC**
Systopia Lab — 05/2023 – 12/2023

- Researched spring-onset detection using satellite data and flower proxies combined with machine learning.
- Developed a data pre-processing pipeline to transform temperature data and built the highest-performing model for the paper **reducing the in-region error of the state-of-the-art first-bloom index by 16.9%**.
- **Co-authored and presented a paper at NeurIPS 2023**
- **Technologies:** Python, scikit-learn