Nathan Senyard

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Education

University of British Columbia — Vancouver, BC
Bachelor of Arts, Dual Major in Computer Science and Philosophy — *Sep. 2020 – May 2026*

Work Experience

Junior GenAI Developer — May 2025 – Present
UBC Engineering ChatUBC Project — *Vancouver, Canada*

- Developed a Dockerized, full-stack FastAPI-based Python integrated web app and deployed on AWS, using RAG to facilitate conversations between AI assistants and engineering students.
- Deployed a fine-tuned Qwen model using vLLM and supplemented with RAG, achieving sub-6s request latency.
- Built scalable asynchronous Python architecture using asyncio and Redis to generate 1,000+ synthetic conversation datasets using Gemini, Claude, and GPT-5.

Machine Learning Research Developer — May 2025 – Present
UBC Institute for Resources, Environment and Sustainability — *Vancouver, Canada*

- Trained and developed computer vision models in PyTorch for landscape feature recognition, improving over previous performance by 30% to 65% accuracy.
- Engineered a nationwide, 16GB training set by implementing a stratified sampling pipeline that normalized spatial distributions across 280,000+ data points, validating performance across varied landscapes.
- Engineered high-performance data pipeline to export and process 50GB+ image datasets from Google Earth Engine, enabling ongoing remote sensing research.

Machine Learning Research Intern — Sept 2024 – Apr 2025
ENEOS Japan — *Yokohama, Japan*

- Accelerated catalyst discovery by developing TensorFlow neural networks to screen 132,000+ chemical compounds with 87% test accuracy, demonstrating AI's capability for large-scale scientific applications.
- Reduced data preprocessing time by 40% through optimized Python pipelines handling 10GB+ proprietary chemical datasets on Linux servers, saving research team 15+ hours weekly
- Implemented ensemble ML models (Random Forest, SVM, Gradient Boosting) using scikit-learn to predict chemical properties with 92% accuracy.

Software Development Research Assistant — Sept 2023 – Sept 2024
University of British Columbia — *Vancouver, BC*

- Fine-tuned GPT-3.5 models for specialized data retrieval achieving 90% accuracy, enabling automated extraction from unstructured academic sources.
- Developed scalable Python/Java web scraper processing 150GB of online data, increasing regression analysis throughput by 300% and supporting large-scale social science research.
- Engineered SQL database handling 200,000+ records with sub-100ms query times.
- Presented findings at IC2S2, a globally recognized computer science conference.

Software Development Coop — Sep. 2022 – Jul 2023
Alida Vancouver — *Vancouver, BC*

- Performed critical audit logging system refactoring, reducing overhead by 70% and decreasing memory usage by 45MB per transaction.
- Optimized SQL queries, cutting average data retrieval times from 1.2s to 0.7s for 125,000+ daily active users.

Projects

Directed Studies RAG Column Classifier | *OpenAI, LangChain, Python, LangSmith, sklearn*

- Constructed a Retrieval-Augmented Generation (RAG) system to classify heterogeneous datasets with 90% accuracy using base OpenAI models with few-shot learning.
- Experimentally identified optimal HuggingFace text embedding model, reducing computation costs by 40% while maintaining high accuracy.

Certifications

Japanese Language Proficiency Test(JLPT) N1 — Jul. 2025
157/180 Pts. (96.6th Percentile)