# Jay Nelson-Sellers

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#### Education

## University of Washington Bothell

Bothell, Washington, USA

Feb 2021 – May 2021

Bachelor of Science in Computer Science and Software Engineering, GPA: 3.4/4
Sep 2020 – June 2024
Relevant Coursework: Machine Learning, Deep Learning, Computer Systems Architecture, Real-Time Embedded Systems, Big Data, High-Performance Machine Learning, Robot Perception, Object-Oriented Programming

## Projects

#### Brain Tumor Segmentation Pipeline with U-Net and GCP | GitHub

- Developed an automated brain tumor segmentation pipeline (369 MRI cases) using TensorFlow, N4 Bias Correction, Slicing, and Augmentation; deployed on GCP Vertex AI for real-time inference
- Achieved multi-class segmentation accuracy (Dice: 0.83, IoU: 0.76) via U-Net training; implemented AWS S3 for storing datasets, reducing data access time by 26%
- Enhanced model robustness through iterative refinement using TensorBoard, EarlyStopping, and checkpointing; exported model to ONNX for cross-platform compatibility

## Scalable Stock Price Forecasting with Feature Engineering and Deployment | GitHub Jan 2024 – Ongoing

- Constructed a PySpark pipeline reducing data preparation time by 84% on the 1.3GB JPX dataset; deployed the model on AWS Lambda for automated daily forecasts
- Developed an LSTM (PyTorch) and ARIMA forecasting model with AutoRegressive and Spline Regression features, resulting in a 45% better Sharpe Ratio; standardized deployment using ONNX

## End-to-End Image Classification with ResNet and Triton Deployment | GitHub Jan 2024 – Apr 2024

- Developed and trained a ResNet9 CNN in PyTorch for CIFAR-10, implementing data augmentation (crop, flip, rotation, and jitter) to achieve 94% validation accuracy
- Generated 15+ visualizations (loss curves, confusion matrix, model graph) using Matplotlib/Seaborn/Torchviz; integrated with GCP Storage and benchmarked on Triton Inference Server

## EXPERIENCE

## Undergraduate Research Assistant | University of Washington Bothell

Jan 2024 – June 2024

- Developed a machine learning system to train AI models on multi-dimensional data.
- Researched and implemented IGTD: a novel method for data engineering to apply convolutional networks to tabular data.
- Explored full-stack development by creating front-end results displays.
- Demonstrated data analytics and public speaking by presenting research during the University Colloquium.

## Executive Assistant | Wayne's 45s

- Created front-end websites for sales of various collectibles, including vinyl records and metals.
- Promoted to executive role to handle logistics of operations, including website management, inventory control, and delegation of IT solutions.
- Leveraged previous research in stock price analysis to trade Gold and other precious metals for profit.
- Managed procurement and sales of precious metals exceeding 50 thousand dollars.

## TECHNICAL SKILLS

## Languages: Python, C/C++, SQL, Bash/Shell

**ML Frameworks**: TensorFlow, PyTorch, Keras, Scikit-learn, NumPy, Pandas, Matplotlib, PySpark, DeepSpeed, ONNX, Triton Inference Server

DevOps & Tools: Git, Linux/Unix, Docker, Kubernetes, Helm, Hadoop, TensorBoard Databases & Cloud: MySQL, MongoDB, GCP (Compute Engine, Cloud Functions, Vertex AI), AWS (EC2, S3, Lambda)

# Jun 2024 – April 2025