Abhinav Jain

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Languages: Python, C++, C, HTML, CSS, Javascript, Java, Kotlin, Swift, Bash, SQL.
Technologies: Android, Linux, Docker, Jenkins, Git, GDB, NumPy, Pandas, TensorFlow/Keras, SKLearn, OpenCV, Networking.
Domains: Deep Learning Model Development, Embedded AI, MLOps, Software Engineering, Test Automation.

Education

University of Waterloo (Waterloo, ON) **September 2020- May 2025**
Bachelor of Computer Science (Co-op) with AI Specialization (4th year) *GPA: 89%*

Experience

Qualcomm (Toronto, ON) **August 2023 - December 2023**
AI Performance Analysis Intern *Python, NumPy, Pandas, Plotly, Android*

- Led development of a software profiling pipeline, analyzing performance of AI workloads running on Snapdragon.
- Increased speed and scalability of analysis tools by over 500%. Added dataset reduction methods to preprocessing.
- Designed a querying system and cache for large performance datasets (50k+ points), removing dataset size limitation.
- Devised and implemented a time-based search engine to enable nanosecond-level analysis of AI workload execution.

Qualcomm (Toronto, ON) **January 2023 - August 2023**
Snapdragon AI Processor Intern *C++, Python, Android, Bash, GDB, Jenkins*

- Enhanced features for an embedded framework that accelerates CNN-based image processing on Snapdragon.
  - Integrated data and parameter propagation into production code. Wrote tests for thread-safety and scalability.
  - Performed Inter-Process Communication (IPC) optimizations, achieving a 50% performance improvement.
  - Added runtime configuration for debugging infrastructure, doubling debugging speed for 40+ engineers.
- Created an MLOps suite to analyze performance of CNN-based workloads running using the embedded framework.
  - Defined 100+ custom KPIs, revealing bottlenecks that led to a 2x performance improvement when resolved.
  - Automated data and KPI retrieval by deploying the MLOps suite's Extract-Load-Transform (ELT) pipeline to Jenkins.

Cisco Systems (Ottawa, ON) **May 2022 - August 2022**
DevOps and Analytics Intern *Python, Docker, Jenkins, ElasticSearch*

- Designed and implemented a Machine Learning (ML) system to recommend code reviewers for pull requests.
  - Employed Collaborative Filtering to make recommendations. Optimized for large datasets with 500,000+ entries.
  - Deployed a Jenkins job to automate recommendations. Integrated results into GitHub, serving 3600+ engineers.
- Optimized the Cisco Networking Bot's Natural Language Processing (NLP) pipeline, increasing its F1 score to 0.99.
- Reduced Cisco Networking Bot's space usage by 90% using Docker image optimizations, saving over $35,000/year.

Cisco Systems (Ottawa, ON) **May 2021 - August 2021**
Segment Routing IPv6 (SRv6) Testing Team Intern *Python, TensorFlow/Keras, InfluxDB, Grafana*

- Developed a Recurrent Neural Network (RNN)-based model to detect anomalies in router telemetry data.
- Wrote unit tests for the Cisco Automation FactorY (CAFY) Test Suite, testing SRv6 performance measurement.
- Constructed RESTful APIs to collect and preprocess 60+ SRv6 telemetry metrics using YANG.

MVS Remote Video (Ottawa, ON) **August 2019 - January 2020**
Software Developer *Python, OpenCV, NumPy, Raspberry Pi*

- Developed a computer vision system to direct autonomous vehicles transporting supplies through minefields.

Extracurriculars

WAT.ai (Waterloo, ON) **October 2023 - Present**
Stock Forecasting Team *Python, TensorFlow/Keras, PyTorch*

- Designing a deep reinforcement learning model to trade stocks using sentiment analysis and price predictions.

Waterloo Data Science Club (Waterloo, ON) **September 2022 - September 2023**
VP of Data Analysis/Reading Group Lead *Python, TensorFlow/Keras, PyTorch, MLFlow*

- Fine-tuned a BERT Large Language Model (LLM) to retrieve 16 emission metrics from climate disclosure extracts.
- Presented papers covering neural network architecture, image processing, and NLP to 100+ club members.
- Prepared resources and hosted workshops on Pandas, NumPy, MatPlotLib, and Tensorflow for 60+ club execs.