Abhinav Jain

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Experience

Qualcomm | ML Architecture and Performance Analysis Intern | August 2023 - Present | Toronto, ON
- **Associated skills: C++, Python, Pandas, Android, Linux, Git, Docker, Jenkins.**
- Enhancing performance analysis models for AI-based processing on Android phones.
- Designing a database to efficiently store and retrieve large volumes of performance data.
- Developing a workflow to convert SystemC hardware models to Verilog via High-Level Synthesis.

Qualcomm | Snapdragon AI Processor Intern | January 2023 - August 2023 | Toronto, ON
- **Associated skills: C++, Python, NumPy, Pandas, Android, Linux, Git, Bash, Docker, Jenkins, GDB.**
- Contributed to an embedded framework enabling smartphone OEMs to run AI workloads on Snapdragon.
  - Enhanced debuggability of the framework by enabling dynamic configuration of debug infrastructure.
  - Integrated data transmission features into production code, wrote tests to verify thread-safety and scalability.
- Conceptualized and implemented an MLOps suite, to analyze performance data collected from AI workloads.
  - Implemented as an Extract-Load-Transform (ELT) pipeline to allow KPI retrieval from running AI workloads.
  - Defined 100+ custom KPIs in the MLOps suite, leading to a 2x performance improvement of the framework.
- Used a data-driven approach to evaluate and improve the performance of the embedded framework.
  - Performed Inter-Process Communication (IPC) optimizations, achieving a 50% performance improvement.
  - Enabled measurement collection for 5+ AI-based image processing use cases on Android and DSP.

Cisco Systems | DevOps and Analytics Intern | May 2022 - August 2022 | Ottawa, ON
- **Associated skills: Python, NumPy, Pandas, Scikit-learn, Linux, Git, Bash, Docker, Jenkins, ElasticSearch.**
- Designed a system to recommend code reviewers for pull requests, serving 3,600+ engineers.
  - Applied collaborative filtering ML techniques. Optimized for large datasets of 500,000+ entries.
  - Deployed as a Jenkins job for CI/CD, and integrated into Cisco's GitHub and Grafana dashboard suite.
- Enhanced the Cisco Networking Bot (CNBot), a customer guidance chatbot with over 1200 monthly users.
  - Reduced CNBot's space usage by ~90% through Docker image optimizations, saving over $35,000/year.
  - Increased CNBot's F1 score to 0.99 using Natural Language Understanding (NLU) pipeline optimizations.

Cisco Systems | SRv6 Testing Team Intern | May 2021 - August 2021 | Ottawa, ON
- **Associated skills: Python, TensorFlow/Keras, NumPy, Pandas, Linux, Git, Bash, InfluxDB, Grafana.**
- Built a deep learning model to detect anomalies in router telemetry data.
- Created test cases for the Cisco Automation FactorY (CAFY) Test Suite for SRv6 performance measurement.
- Configured router topologies for test scenarios and developed RESTful APIs to preprocess network information.
- Wrote platform-agnostic data collection functions for SRv6 features using YANG, achieving 100% coverage.

MVS Remote Video | Project Consultant | August 2019 - January 2020 | Ottawa, ON
- **Associated skills: Python, OpenCV, NumPy, Linux, Raspberry Pi.**
- Developed a computer vision system to direct an autonomous vehicle transporting supplies through minefields.
- Leveraged OpenCV to calculate distance and angle to a target in real time.

Extracurriculars

University of Waterloo Data Science Club | September 2022 - September 2023 | Waterloo, ON
- **Associated skills: Python, TensorFlow/Keras, PyTorch, NumPy, Pandas, MatPlotLib, Jupyter Notebook, MLFlow.**
- Development Leader for a team solving a business challenge for a startup company (Manifest Climate).
  - Fine-tuned a distillBERT Large Language Model (LLM) to get metrics from climate disclosure extracts.
  - Model reached an F1 score of 0.85. Verified performance using MLFlow.
- VP of Data Analysis: Led a team of 20 data analysts generating data science-related content.
  - Prepared resources and hosted workshops on Pandas, Numpy, MatPlotLib, and Tensorflow.

Education

University of Waterloo | Bachelor of Computer Science + AI Specialization | September 2020- May 2025 | Waterloo, ON
- Cumulative GPA: 89%
- Relevant Coursework: Algorithms, Operating Systems, Object-Oriented Programming, Data Structures