Collin A. Joseph

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Summary

- Proficient in **C++** from work experience.
- Proficient in **Python** from work and research experience.
- Substantial knowledge of **machine learning** and **digital signal processing** from work and research.
- Substantial knowledge of **algorithms** and **optimization** from research and coursework.

Work Experience

wrnch AI — **Montreal, Quebec, Canada**
Developer, Production Team — *Nov. '19 – Mar. '20*

- Owned, implemented and improved new features of computer vision inference server using **C++**.
- Prototyped new CNN models and updated existing ones using Tensorflow and Caffe.
- Automated data pre-processing pipeline and model benchmarking using **Python**.
- Implemented watchdog client using **Python** for server monitoring and control.

Technology Used: C++, Python, OpenCV, Git, Linux

McGill University — **Montreal, Quebec, Canada**
Graduate Student Researcher, Master's Thesis — *2017–2019*

- Implemented ensemble cost-sensitive SVM classifier for microwave radar scans using **Python**.
- Reduced ensemble training time using genetic algorithms, particle swarm optimization and simulated annealing.
- Improved predictive performance by proposing new time-frequency decomposition features.
- Performed extensive statistical analysis on radar scans.

Technology Used: Python, Matlab, Git, Linux

ON Semiconductor — **Waterloo, Ontario, Canada**
Signal Processing Algorithm Developer (co-op) — *Sept.'16 – Dec.'16*

- Prototyped an environment classification algorithm for low-resource digital hearing-aids.
- Optimized an acoustic noise reduction algorithm extensively, decreasing power consumption by 20%.
- Executed rigorous regression testing on algorithm to ensure performance equaled or exceeded previous iteration.
- Leveraged fixed point arithmetic operations to maximize algorithm efficiency.

Technology Used: Matlab, **Assembly Language**, Jira, CVS version control

ON Semiconductor — **Waterloo, Ontario, Canada**
Signal Processing Algorithm Developer (co-op) — *Jan.'16 – Apr.16'*

- Prototyped a digital equalizer firmware module in **assembly language**.
- Simulated and performed experimental analysis on digital equalizer using **Matlab**.
- Executed and documented extensive test procedures for acoustic feedback cancellation algorithm.

Technology Used: Matlab, Assembly Language, Jira, CVS version control

ON Semiconductor — **Waterloo, Ontario, Canada**
Signal Processing Algorithm Developer (co-op) — *May'15 – Aug.'15*

- Evaluated performance of an static noise reduction algorithms using **Matlab**.
- Developed functional simulations to evaluate performance of various digital signal processing algorithm configurations.
- Performed experimental analysis on multiple noise estimation methods for enhancement of noise reduction algorithm.
- Developed and executed automated acoustic tests for directional noise reduction algorithm using Matlab & C.

Technology Used: Matlab, Assembly Language, C, Jira, CVS version control

University of Waterloo **Waterloo, Ontario, Canada**
Teaching Assistant, Fundamentals of Programming *Sep.'14–Dec.'14*

- Tutored engineering students in **C#** programming fundamentals.
- Presented course content to students on an individual basis and in classes of up to 100.
- Consistently completed administrative tasks ahead of deadlines.
- Cooperated effectively with teaching team of 18 members to ensure smooth running of the course.

Technology Used: C#, Windows

University of Waterloo **Waterloo, Ontario, Canada**
Research Assistant, (4 months full-time, 4 months part-time) *Jan'14–Aug.'14*

- Developed and evaluated a ray tracing simulation tool for radio wave propagation using **C++** and Matlab.
- Reduced runtime by over 60% using **CUDA** parallel computing platform on Nvidia GPU hardware.
- Designed an electromagnetic simulation GUI using Matlab.

Technology Used: C++, Matlab, Windows

Volunteer Experience

Couple Six Inc. **Bridgetown, Barbabdos**
Developer *Jan.'15 – Jul.'15*

- Collaboratively developed adventure game prototype using Unity game engine and **C#** scripting.
- Coordinated development remotely with project team using Git version control.

Technology Used: C#, Unity, Git, Windows

Education

Coursera **Online**
Deep Learning Specialization *Sept. 2019*

- Completed **Python**-based assignments using Tensorflow and Keras to implement **deep-learning** architectures.
- Relevant Coursework: Structuring Machine Learning Projects, Convolutional Neural Networks, Sequence Models

McGill University **Montreal, Quebec, Canada**
Masters of Engineering in Electrical Engineering (with thesis) *2017–2019*

- GPA: 3.3
- Relevant Coursework: Applied Machine Learning, Optimization, Generalized Linear Models

University of Waterloo **Waterloo, Ontario, Canada**
Bachelor of Applied Science in Electrical Engineering (with co-op) *2012–2017*

- GPA: 3.3
- Relevant Coursework: Adaptive & Cooperative Algorithms, Algorithm Design & Analysis, Digital Signal Processing

Awards

Faculty of Engineering, University of Waterloo **Waterloo, Ontario, Canada**
Sandford Fleming Foundation Award, Co-op Proficiency *Jul.'17*
For outstanding performance during co-op work terms.

Faculty of Engineering, University of Waterloo **Waterloo, Ontario, Canada**
Sandford Fleming Foundation Award, Work Report Proficiency *Jul.'16*
For excellence in written communication.

Hobbies & Interests

- Interest in video game design and development
- Athletics and martial arts enthusiast.