Carter Conboy

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Objective

Computer Engineer (Queens '24) currently enrolled in MEng in Applied Data Science at the University of Victoria. I am eager to contribute to and grow alongside a highly motivated and intelligent team, building cutting-edge positive impact AI technology.

Highlights

- **Machine Learning:** Theoretical and applied experience with classical ML techniques. Built cancer cell diagnosis tool and card game semantic similarity model. Implemented and leveraged regression analysis, k-NN, K-means, PCA, FLD, gradient descent variations, PageRank and Bayesian Classifiers in Python.
- **Computer Vision:** Experience implementing prototype computer vision systems in Python. Led the development of a CNN based on ResNet-18 for classifying spectrograms of marine mammal vocalizations, and have implemented basic object classification, object recognition, feature extraction, style transfer and generative models.
- **Neural Networks:** Designing, training and evaluating neural networks, including data collection and processing. Led re-development of a hybrid RNN/CNN for predicting DNA function, adding support for training on low memory systems.
- **Software Development:** Brought several impactful projects through the software development process at previous internships (requirements analysis, design, implementation, testing, deployment and maintenance). Used Git for collaboration as a tech coordinator for the Queen's Hackathon and a full stack developer for the Queen's Vertical Farming Team. Good fundamentals with Linux CLI through operating systems and distributed computing courses.
- **Hardware Interfacing:** Experience with C, assembly language, microcontrollers and embedded systems in undergraduate course work (A+ in Microprocessor Systems). Lab TA for third year microprocessors and embedded systems course at UVic. Built a simple autonomous robot and electric motor with Arduino.

Work Experience

IT Developer **04/2023 – 08/2024**
Queen's University IT Services Kingston ON (Hybrid)

- Designed and built a user-focused MFA management application for network administrators (relied upon for a 3K+ user base).
- Programmed several key automation projects for identity management tasks including data collection and migration.
- Developed skills in hybrid IT infrastructures, command shell programming and REST APIs.

Junior Developer - Cyber Security **04/2021 – 01/2022**
DND Information Management Engineering Ottawa ON (Remote)

- Led the redesign and full-stack migration of a large .NET web application and relational data model to meet a variety of stakeholder requirements.
- Held Top Secret Security Clearance.

Machine Learning Projects

Marine Mammal Vocalization Analysis **01/2024 – 05/2024**

- Built a highly performant solution for multiclass classification of Marine Mammal Vocalizations with a convolutional neural network.
- Developed parallelized data collection and transformation pipeline in Python.
- Explored the combination of signal processing and computer vision techniques for feature extraction and data visualization.

DNA Function Prediction Model **09/2024 – 12/2024**

- Re-engineered hybrid neural network for the prediction of non-coding DNA function in Python.
- Matched performance (0.932 AUC ROC), eliminated 3 deprecated dependencies, and reduced required training memory by 94%.

Education

MEng Applied Data Science **09/2024 – Present**
University of Victoria Victoria BC

- Notable Coursework: Algorithms and Data Models for Data Science, Advanced Topics in Bioinformatics, Optimization for Machine Learning, Systems for Massive Datasets, Data Analysis and Pattern Recognition. Final academic term ends August 2025.

BASc Computer Engineering **09/2019 – 04/2024**
Queen's University Kingston ON

- Notable Coursework: Comp Vision with Deep Learning, Machine Learning & Deep Learning, Microprocessor Systems, Mechatronics Project. Graduated First Class Honours.

Interests

- Immersion into the natural world through climbing, hiking, camping, bikepacking and foraging. Biked across two countries and spent a summer planting trees (rookie planting record).
- Avid designer and enjoyer of tabletop and strategy games. Made it to the moon in Kerbal Space Program!

References

Lauren MacLean

- Senior App Administrator | Email & M365 Team | Queen's IT Services
- Supervisor and Mentor at Queen's IT Services
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Major Edward Li

- Science Officer | Defence Research and Development Canada | Canadian Armed Forces
- Supervisor and Mentor at DND
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