Nate Nethercott

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EDUCATION

POLITECNICO DI MILANO
MSc in Engineering Mathematics
Estimated: Sept 2023 | Milan, IT

QUEEN'S UNIVERSITY
BASc in Engineering Mathematics
Sept 2021 | Kingston, CA
Dean's Scholar
Cum. GPA: 3.93 / 4.3

COURSEWORK

GRADUATE
Natural Language Processing
Artificial Neural Networks
Optimization
Bayesian Statistics
Streaming Data Analytics
Deep Learning
Data Mining

UNDERGRADUATE
Stochastic Control
Calculus I-III

EXTRACURRICULARS

MERLIN NEUROTECH 2019-21
Worked with consumer-grade EEG measurement devices, open source repos, and Python to design brain-computer interfaces.

QUANTT 2020
Developed and implemented time-series models for algorithmic trading in Python.

QUEEN'S FORMULA SAE 2018-20
Automated CFD simulations in STAR-CCM+ using Java and validated results with wind tunnel testing.

SKILLS

PROGRAMMING
Languages
Python • C++ • R • Matlab • SQL
Data Science & ML
PyTorch • Tensorflow & Keras • scikit-learn • transformers • pandas
Systems & Tools
Linux • Docker • Jupyter • wandb • MPI • Git • MySQL

EXPERIENCE

HUMAN TECHNOPOLE | Visiting Researcher
Feb 2023 - Present | Milan, IT
- Developing variational autoencoders (VAE's) in PyTorch for applications in genomics research.
- Improved the utility of proprietary datasets by creating a GAN-like procedure to identify and remove technical noise in data-scarce settings.

QUEEN'S UNIVERSITY | developer
April 2021 – Aug 2021 | Kingston, CA
- Refactored Matlab code for simulating multi-agent system dynamics as a didactic tool for the undergraduate APSC 200 course.
- Developed a primer outlining the Matlab language basics and structures for student reference.

GUELPH CLIMATE DYNAMICS LABORATORY | junior researcher
April 2020 – Aug 2020 | Guelph, CA
- Implemented numerical solvers and wrote object-oriented Matlab to model systems of PDEs for climate change dynamics in the Arctic.
- Web-scraped third party sources using Python and Selenium to build out internal datasets.
- Published results in **IC-Msquare** 2020 technical conference.

PROJECTS

MOX LABORATORIES | Visiting student
May 2022 - Feb 2023 | Milan, IT
Wrote a set of Python bindings for **life**^{x}, a C++ finite element library for cardiac system modelling. Added parallel support on the Python side using mpi4py to realize 7x reductions in simulation runtimes.

MERLIN NEUROTECH | Data science lead
Sep 2019-21 | Kingston, CA
Created **Alpha-light**, a brain-controlled smart light which changed hues based on real time updates of user concentration levels using the strength of alpha brain waves as a trigger mechanism.

QUEEN'S UNIVERSITY | BASc Thesis project
Dec 2020 - April 2021 | Kingston, CA
Designed **LesionTrack**, a Python-based optimization algorithm which reliably labels brain lesions in MRI/CT scans faster than conventional by-hand methods.

AWARDS AND SCHOLARSHIPS

2023	2^{nd}/40	Oliver Wyman European Hackathon
2022	1^{st}/10	Data Scientist Career Hackathon, Politecnico di Milano
2021	Scholarship	Full-ride Gold Scholarship, Politecnico di Milano
2017	Scholarship	Entrance Scholarship, Queen's University

PUBLICATIONS

[1] K. L. Kypke, W. F. Langford, N. Nethercott, and A. R. Willms. Topological climate change with permafrost feedback. *Journal of Physics: Conference Series*, 1730(1):012090, jan 2021.