Nate Nethercott

MASTERS CANDIDATE AT POLITECNICO DI MILANO

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Experience

Human Technopole *Milan, Italy*

VISITING RESEARCHER *Feb. 2023 – **Present***

- Developing variational autoencoders in PyTorch with applications in the preprocessing of proteomics data to facilitate downstream applications as a thesis internship experience.

Queen's University *Kingston, Canada*

COURSE DEVELOPER [MATLAB] *Apr. 2021 – Sept. 2021*

- Wrote MATLAB code for simulating multi-agent system interactions and visualizing group dynamics as a didactic tool for APSC 200 undergraduate course at Queen's University.

University of Guelph | Guelph Climate Dynamics Laboratory *Guelph, Canada*

JUNIOR RESEARCHER [MATLAB, PYTHON] *Apr. 2020 – Sept. 2020*

- Implemented numerical solvers and wrote object-oriented MATLAB to model systems of PDEs driving the evolution of temperatures in the Arctic under climate change effects.
- Published results in IC-MSQUARE 2020 technical conference. [Paper | Code]

Education

Politecnico di Milano *Milan, Italy*

M.SC. IN MATHEMATICAL ENGINEERING AND STATISTICAL LEARNING [GPA 25.7/30] ***Expected Fall 2023***

- *Relevant Coursework*: Artificial Neural Networks and Deep Learning, Data Mining, Computational Statistics, Bayesian Statistics, Natural Language Processing, Streaming Data Analytics
- Full-ride Gold Scholarship recipient for academic merit.

Queen's University *Kingston, Canada*

B.SC. IN ENGINEERING MATHEMATICS [GPA 3.94/4.3] *Sept. 2017 – Jun. 2021*

- *Relevant Coursework*: Control of Stochastic Systems, Probability, Advanced Calculus
- Dean's Scholar distinction.

Programming Languages/Technologies

- C++, Python (data science stack: NumPy, scikit-learn, Tensorflow & Keras, PyTorch, Pandas), R, SQL, LaTeX, Git, Jupyterlab

Projects

pyfe^x

C++, MPI, PYTHON, PYBIND11 *Feb. 2022 – Jan. 2023*

- Wrote Python bindings to convert C++ FEM modules for cardiac process modelling into pip installable modules.
- Parallelized the distribution of object meshes across cores to reduce simulation runtime by a factor of 7.

Genome-Based Prediction of Breast Cancer Cell Response [Code]

R, PYTHON *Feb. 2022 – Jul. 2022*

- Implemented embedded feature selection algorithms in the fitting of a GLM predicting drug efficacy from blood protein measurements to reduce the feature space by 2 orders of magnitude.
- Web-scraped and cleaned third-party sources to obtain data concerning drug information for 250+ drug as an enrichment of the provided dataset.

LesionTrack [Code]

PYTHON, JAVA *Sept. 2020 – Jun. 2021*

- Designed a brain tumor identification algorithm minimizing a problem-specific Lagrangian to reliably label MRI/CT brain scans faster than traditional by-hand methods.
- Achieved industry standard area-of-overlap accuracy with algo in the range of 33-77% over the tested scans.

Extracurricular Activities

Merlin Neurotech *Kingston, Canada*

DATA SCIENCE LEAD *Sept. 2019 – Jun. 2021*

- Built-out a Python backend to work with consumer-grade electroencephalography (EEG) measurement devices to develop neurotech projects.
- Created Alpha-light; a brain-controlled smart light which changed hues based on user concentration levels.