Jason Dominguez

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Education

University of Manchester — Manchester, UK
Cmp Sci. PhD in Generative Deep Learning for Music Composition — *Sep. 2021 – Mar. 2025*

University of Manchester — Manchester, UK
1st class MPhys in Physics (82%) — *Sep. 2017 – June 2021*

Thomas Hardye Sixth Form — Dorchester, UK
A levels: Maths (A), Physics (A*), Music Tech (A), AS Further maths (A)* — *Sep. 2015 – June 2017*

Technical Skills

Languages: Python (4+ years), C/C++ (4+ years), SQL/MySQL (Beginner), MATLAB (2+ years)
Deep learning frameworks: TensorFlow, Keras, PyTorch
Libraries: Pandas, NumPy, Matplotlib, Scikit-Learn, OpenCV

Experience

Programming And Machine Learning In My Degree — Sep. 2017 – Present
University of Manchester — *Manchester, UK*

- Achieved 91% in "Machine Learning and Optimization" course from the Electrical and Electronic Engineering department, with coursework on creating neural networks in Python and MATLAB.
- Familiarity with implementing linear regression, logistic regression, SVM, Fisher LDA, PCA, decision trees and naive Bayes models.
- Took "Object-oriented programming in C++" module to enhance my coding skills. My final project included creating a chess game from scratch using advanced C++ features, including polymorphism, smart pointers, move semantics and class inheritance.
- I took a Python and C++ module (80%) and I use python frequently for data analysis for experiments.
- Achieved a high first in a statistics module, covering topics such as the central limit theorem, Bayesian statistics and Gaussian, Poisson and Binomial distributions.

Deep Learning Specialization — Jun. 2020 – Sep. 2020
deeplearning.ai — *Coursera*

- I completed three online deep learning specialization consisting of 15 courses. These courses involved implementing algorithms from current research to different applications, such as image classification and generative deep learning.
- I gained familiarity with Keras and Tensorflow in Python, to create train and test VAEs, GANs and RNNs.

Projects

Can Machine Learning Identify Liquid Crystal Phases | *Python, CNNs, YOLO, Keras* Sept. 2020 – Present

- I am applying machine learning algorithms, CNNs and Inception networks, to identify different liquid crystal phases from the structure of their textures.
- I also extended this to apply trained networks to videos to detect liquid crystal phase transitions.
- Additionally gained familiarity with leading object detection algorithm, YOLO, to detect nematic defects textures.
- This is novel in the field of soft matter physics, so we plan to publish two papers on this machine learning application in the coming months.

Non-academic interests

Music | *Drums, Guitar, Vocals, original compositions*

- I am a musician, with 10 years experience playing drums and 5+ years experience playing guitar, bass, Canarian timple and singing.
- I achieved a distinction in grade 5 drumming and a merit in grade 2 singing.
- In my spare time I compose original music both by myself and as part of my band, a newly formed Indie rock band based in Manchester.
- I have contributed to original songs which have been semi-professionally recorded. Currently, original songs which I contributed to when I was 16 years old are available on Spotify - Band: The Salt, EP: Not the plan.