Dr Michael R K Norman

Research Scientist

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Education

2019 September – 2024 February

Gravitational Wave Physics, *UKRI CDT in Artificial Intelligence, Machine Learning and Advanced Computing, PhD.*

Transformers and genetic algorithms for gravitational-wave science.

2017 September – 2018 September

Distinction in Physics, *Cardiff University, MSc.*

Convolutional neural networks for gravitational-wave detection.

Technical Skills

Programming Languages

- C/C++
- Python
- Rust
- BASH
- SQL

Software Tools

- Git/GitHub
- Valgrind
- GDB
- Vim
- Anaconda

Libraries and APIs

- CUDA
- TensorFlow
- PyTorch
- PySpark
- NumPy

Work Experience

2021 April – 2021 December

Research Placement, *Rutherford Appleton Laboratories, SciML Group.*

VAE-GAN generative models with self-optimising latent space dimensionality.

2019 April – 2019 August

Data Scientist, *Office for National Statistics, VAT team.*

Python tools to aid the VAT team in the process of VAT data cleaning and miscellaneous other tools for adjacent teams.

Projects

2019 September – Present

Developer, *MLy.*

A new transient burst detection pipeline which utilises artificial neural networks to perform rapid coherence detection of gravitational wave bursts. MLy will be the first fully ML-based detection pipeline to be deployed in a live gravitational wave search.

2023 February – 2024 March

Sole Developer, *GravyFlow.*

A package of TensorFlow tools to facilitate gravitational-wave model training, including data acquisition, model training, hyperparameter optimisation, and model validation.

2022 October – 2023 June

Sole Developer, *CuPhenom.*

A GPU-based generator of IMRPhenomD Gravitational-Wave approximants. Written in C++ using CUDA.