Henry Truong

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I am a physics PhD student with a focus on data intensive science and machine learning, including 5+ years working with the Python data science ecosystem. I am interested in leveraging my modelling and data analysis skills to tackle practical challenges, and am looking to contribute to a team working on impactful projects.

Education

Doctor of Philosophy, Machine Learning and Particle Physics — Durham, UK
Institute for Particle Physics Phenomenology, Durham University — *October 2018 – Present*

- Designed a deep neural network model to emulate expressions describing scattering probabilities of particles to accelerate Monte Carlo simulations, a crucial part of the Large Hadron Collider physics experiment
- Five papers published in internationally recognised peer-reviewed journals
- Research presented at national and international conferences on physics and ML
- 2020 Physics Department Award for Excellence
- Taught undergraduate students in workshops and tutorials (physics and Python)

Master of Physics, Theoretical Physics — Durham, UK
Durham University — *October 2014 – Jul 2018*

- First Class Honours, comprehensive training in physics and the underlying mathematics
- 2016 Physics Award for Outstanding Achievement

Projects & Experience

FAME: factorisation-aware matrix element emulator — IPPP, Durham, UK
Postgraduate Research Student, ML modelling — *October 2018 – Present*

- Created and developed a deep neural network model to emulate computationally expensive expressions containing singularities, accelerating evaluation speed by up to 10000 times compared to traditional methods
- Proof of concept model embedded into the framework of an established simulation collaboration for the LHC
- Acquired expertise in writing custom software using the Python ML stack, including extensive usage of NumPy, TensorFlow, Keras, scikit-learn, and ONNX
- Became proficient in profiling Python code and interfacing to high performance languages (C++/Fortran) to improve code execution time

JUNE: individual-based epidemiology simulation of England — IDAS, Durham, UK
Data analysis, modelling, and HPC deployment — *March 2020 – June 2021*

- Worked as part of a collaboration between Durham University, UCL, and University College London Hospital to create an agent-based model for simulating the spread of COVID-19 in England
- Developed Python software for large scale deployment of memory intense simulations on supercomputers and grid based computing clusters
- Communicated key findings to interdisciplinary team in a clear and understandable fashion, with use of data visualisation skills
- Model was introduced to UK government's COVID modelling group, and simulations influenced decision making process at UCLH

IBEX Innovations — Sedgefield, UK
Data Scientist Intern — *May 2019 – Jul 2019*

- Developed a multi-scale image post-processing pipeline in Python (OpenCV) to improve visual fidelity of x-ray medical imaging, increasing visibility of key features to aid diagnostic procedure
- Scans processed by pipeline sent to clinical trial, and data pipeline now embedded in company workflow

Technical Skills

Languages : Python, Julia, C/C++, R, SQL, CUDA, Fortran, Bash
Technologies : Git, Jupyter, Linux, Conda, TensorFlow, NumPy, Pandas, SciPy, Matplotlib, sklearn, ONNX