Norman Khan PhD, MPhys (Hons)

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PERSONAL PROFILE

Postgraduate astrophysicist with 4 years of research experience, seeking to transition into industry where I can apply my mathematical and technical knowledge to solve real-world problems. Specializing in Python, I have both experience via academic research and industry work, I am excited to bring my expertise to a collaborative team in a new and challenging environment.

SELECTED IT PROFICIENCIES & EXPERIENCE

Programming Languages - Python, C, Bash, Javascript
Python Modules - Matplotlib, Pandas, SymPy, ctypes and pytest
Machine Learning - scikit-learn, PyStan, Prophet (Facebook) and Tensorflow (Keras)
Other - Linux, Git, Docker, Amazon EC2 and Microsoft Azure

WORK EXPERIENCE

Shell - Forecasting Solar and Wind Power *2021 (3 months)*
- Implemented and compared a variety of machine learning models using scikit-learn to forecast power output over a 48h window for a solar farm based upon historical trends and forecasts from numerical weather prediction models
- Experience with numerical weather models WRF using GFS input
- Experience with various ML regression models, dimensionality reduction, feature extraction and hyperparameter tuning

Senseye - Characterising Anomalous Behaviour in Time Series *2019 (3 months)*
- Worked on predictive maintenance on industrial assets using predictive condition monitoring
- Developed a predictive algorithm built on Facebook's Prophet that calculated the probability of a sensor measure having crossed a specified threshold over time
- Experience with unit testing using pytest
- Worked on algorithms that would identify quasi-flat lines in time sensor data
- Familiarity with Agile workflow using Atlassian, Scrums, Leaps, Epics, etc

UBS - Data Control Services *2013*
UBS - Regional Control and Accounting *2011*

EDUCATION

University of Southampton - PhD Astrophysics: Accretion onto Compact Objects *2018 - 2022*
- Thesis: Testing Precession of Super-Eddington Flows in Ultraluminous X-ray sources
- Developed pipelines using bash and Python for the data reduction and analysis of astronomical sources
- Combined pre-existing C code with hand-crafted Monte-Carlo Python code for efficient in-memory execution using the ctypes module
- Created custom algorithms to calculate conic-spherical intersections and projected areas, accounting for edge-cases and self-obscuration
- 5 semesters of Python teaching experience in undergraduate computer laboratory courses
- Studentship via STFC-funded DISCnet Centre for Doctoral Training, receiving interdisciplinary training in data-intensive science, big data handling, and data analytics: https://www.discnet.co.uk/
- Publications and other work may be found at my personal website: https://nx1.info

University of Southampton - MPhys Physics with Astronomy: First Class *2014 - 2018*

TRAINING COURSES

DISCnet - PyStan Probabilistic Programming Course *07/2020*
DISCnet - HPC and Scalable Programming *05/2019*
DISCnet - Machine Learning Course *04/2019*
DISCnet - Introduction to Big Data *03/2019*
DISCnet - Statistics and Data Analysis *01/2019*

HACKATHONS & DATADIVES

DISCnet - Cardiovascualar datadive at King's College London *03/2020*
DISCnet - Lifeboat (RNLI) datadive *02/2019*

CONFERENCE PRESENTATIONS

New Results in X-ray Astronomy, University of Leicester *2022*
eROSITA Time Domain Astrophysics, Max-Planck Institute for Extraterrestrial Physics *2020*