

Jack Birkin, PhD

Data Scientist



WORK EXPERIENCE

11/22-Present

Postdoctoral Research Associate

TEXAS A&M UNIVERSITY · College Station, TX 

- Developed and applied linear models to analyze high-dimensional datasets and infer underlying system properties from spectral data using Python and Markov Chain Monte Carlo methods.
- Conducted exploratory data analysis using visualizations, histograms, and statistical techniques to identify trends and anomalies in large datasets.
- Applied dimensionality reduction techniques to harmonize multi-resolution datasets for integrated analysis.
- Created an open-source Python module for modeling and enhancing data visualization of 3D structured datasets.
- Developed a Python-based pipeline to aggregate and analyze data from multiple sources, enabling the detection of weak signals. Applied Bayesian methods for model selection to ensure robust interpretation of results.
- Led 2 research papers and contributed to a further 8 as a member of 3 international collaborations.

10/18-08/22

Graduate Researcher

DURHAM UNIVERSITY · Durham, UK 

- Led the planning, data processing and analysis of a 200-hour large program, including the development of a sophisticated Python pipeline for efficient workflow execution.
- Developed models for analyzing emission data from 50 high-dimensional datasets, creating and implementing a method to identify and eliminate spurious signals in 3D interferometric data.
- Designed and executed simulations to validate observed data against theoretical models, improving the robustness of dynamic system interpretations.
- Analyzed large-scale simulations with over a billion data points and implemented inverse modeling techniques to recover signals from initial conditions.

EDUCATION

October 2018-August 2022

Astrophysics

PHD · Durham University

October 2014-June 2018

Physics and Astronomy

MPhys (FIRST CLASS HONOURS) · Durham University

CERTIFICATIONS

November 19, 2024

Machine Learning Specialization

COURSERA · Stanford University & DeepLearning.AI