

Jack Birkin, PhD

Data Scientist



Contact

✉ jbirkin@tamu.edu
☎ (979)-326-5760
🌐 jbirkin.github.io

Profile

Data scientist utilizing linear modeling and MCMC techniques to carry out cutting-edge astronomy research. Effectively worked as an independent researcher and as part of large international collaborations. Experienced in Python and Jupyter notebooks. Highly skilled in problem solving, data visualization, team working and presenting.

Skills

- Programming (Python, R, SQL)
- Experienced Linux/MacOS user
- Linear modeling of 3-D data cubes, model selection
- Data visualization with Python and Jupyter Notebooks
- Data cleaning
- Basic familiarity with AWS
- Problem solving
- Presenting and communicating technical concepts to a wider audience
- Paper writing

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