Anthony Stephenson | *PhD Student* | *Senior Data Scientist*

A postgraduate researcher investigating Gaussian processes with 5+ years of industrial experience as a data scientist and numerous teaching roles. I am interested in research scientist roles in industry within the data science / statistics / machine learning space.

EMPLOYMENT

Tutor | Self-employed ***September 2022 - Present***

I am currently tutoring the Chief-of-Staff at a quantum technology company in general machine learning, statistics, quantum theory and mathematics.

Senior Data Scientist | Pythia Sports ***January 2019 - June 2020***

As a Senior Data Scientist my work was broadly the same as it was as a Data Scientist; as such, the summary below covers most of the relevant information. The primary difference is the relative weight of my authority on project progression and priorities, as well as oversight of internship projects and ownership of fledgling projects (tennis, in-play Soccer).

Data Scientist | Pythia Sports ***January 2015 - December 2018***

Pythia Sports is a small, privately owned company focusing on developing effective predictive models for sporting events. The effectiveness of the models is rigorously assessed by direct competition with the bookmaker's own models.

Since joining the company at its inception in 2015, I have been involved in many aspects of the company's continued growth and development. My focus has been on the creation and improvement of our football models, but I am also responsible for much of the infrastructure critical for carrying the model from hypothetical, simulated scenarios to a real trading environment.

My work is largely self-driven within the context of an agile team environment enabling fast, efficient experimentation. My contributions to the company include:

- Assessing current literature on relevant models and choosing an approach suitable for our needs.
- Constructing a codebase from scratch to build, validate and test our predictive models in a simulated environment.
- Adapted and added to existing infrastructure code to analyse data for use in the model.
- Contributed to a live platform built in Python.
- Analysed, checked and cleaned raw real-world data sources using SQL server, MATLAB and Python.
- Built statistical models in Python, C++ and MATLAB.

During my time at Pythia Sports, football trading has grown in both volume and markets traded, as well as model complexity and success. More recently, I have been involved in developing in-play football trading and a tennis model.

We are always on the lookout for new ideas to improve our edge on the market. This means I spend much of my downtime reading current literature on research in statistics, machine learning and related fields and filtering this into the most relevant material to feed back to my team.

Previous | Assorted employers ***Before Januray 2015***

- Private Tutor in Mathematics, Physics and Biology (GCSE, A-Level).
- Clerk at Ecclesiastical Insurance

EDUCATION

PhD - COMPASS CDT | University of Bristol ***September 2020 - Present***

Fast Bayesian Inference at Extreme Scale - My research aims to improve the current state-of-the-art in non-linear Bayesian methods at large scale. This is generally assumed to mean either improving the scalability of Gaussian processes or the calibration of Bayesian Neural Networks. To date, my work has been focussed on comparing the efficacy of existing GP approximations and generating synthetic data from GPs at scale (paper submitted to NeurIPS 2022 workshop).

Training Statistical computing - R, RCpp; implemented a variety of models and techniques including GAMs, GP regression, Hamiltonian Monte Carlo and Sequential Monte Carlo.

Training Statistical methods - classical statistical techniques in regression, classification, dimensionality reduction etc. Including modern methods such as INLA.

Teaching Running tutorials of 10-15 first year undergraduates for a course in Probability and Statistics.

BA, MSci Natural Sciences (Experimental and Theoretical Physics) | Class I,II.i | University of Cambridge

- Master's Project: Stochastic dynamics of algae populations in flows
  - ⋆ Involved constructing a computational model in both MATLAB and C++ to simulate the dynamics of large numbers of algae under conditions found in the laboratory bioreactor. Results subsequently analysed in MATLAB to investigate the distributions of the algae as relevant quantities were varied.
- Courses taken in 3rd year: Soft Condensed Matter, Relativity, Thermal and Statistical Physics, Advanced Quantum Physics, Astrophysical Fluid Dynamics, Theoretical Physics (I & II), Optics and Electrodynamics
- Courses taken in 4th year: Quantum Field Theory, Gauge Field Theory, Quantum Condensed Matter Field Theory, Relativistic Astrophysics and Cosmology, Soft Matter and Biophysics, Particle Astrophysics, Quantum Information.
- Achieved 100 % in QFT (Part III Mathematics)
- Samuel Taylor Scholarship - awarded for academic achievement in my 2nd and 3rd years.
- Lab experiments in quantum tunnelling and computational experiments of interacting galaxies (C++).

A - level: 4A* (Maths, Chemistry, Physics, Biology)

TECHNICAL EXPERIENCE

Python Exploratory scientific computing, data analysis, modelling and building production code for serving a time-sensitive webservice.
NumPy, SciPy, Pandas, PyTorch, GPyTorch, scikit-learn.

C++ Computational modelling where speed of calculations becomes a significant bottleneck.
OpenMP, RcppParallel, Eigen.

R Implemented various statistical methods (GAM, GP, SMC).
TidyVerse, Rcpp, RcppParallel.

MATLAB Used for both modelling and production code.
mex}.

SQL *Constructed and queried data structures as needed for modelling and production purposes.*

OTHER

Outside academic and work interests I enjoy a range of sports (with a current emphasis on climbing), and I like to spend my leave on adventurous trips. Past trips include a motorcycling and hiking tour of Ladakh, India; hiking in Kyrgyzstan; cycle tours of Iran, Cuba, Turkey, Georgia, Azerbaijan and more. At university I captained my college hockey and squash teams, and played various other sports at college and university level.

Contact

ant.stephenson@bristol.ac.uk
https://github.com/ant-stephenson
https://www.linkedin.com/in/anthony-stephenson-691a757a/