Tom Blain

I am interested in working in the data science and machine learning field. I have strong skills implementing ML algorithms in Python, with experience in both Bayesian and frequentist inference and a solid foundation in mathematical and statistical principles. I am passionate about using machine learning approaches to solve real-world problems, with a focus on developing and applying advanced ML algorithms to drive real world change.

Proficient in *Python, R, JAGS, C#, LaTeX*
Skilled in Pandas, Scikit-learn, PyTorch
Experience applying machine learning to a breadth of data science tasks, such as computer vision, natural language processing and big data.

EDUCATION

University of Bristol Sept 2019 - Jun 2023
MSci in Mathematics [2:1]

Relevant units including Markov Chain Monte Carlo Methods, Data Science, Bayesian Modelling, Theory of Inference, Artificial Intelligence, Mathematical Programming, Stochastic Optimisation, Statistics and Probability, Complex Networks, Multivariate Analysis.

PREVIOUS PROJECTS

Previous projects are available to view on my data science portfolio

Masters Thesis: Advancements in Variational Inference *Sept 2022 - May 2023*

- *Large literature review surrounding variational inference, an optimisation based method for finding an approximation for a posterior.*
- *Topics contained including Adaptive learning rate gradient descent and variance reduction methods for GD, Reparameterization trick and automatic differentiation.*

Brain tumor MRI detection (Python) *March - May 2023*

- *CNN model to detect and identify brain tumors from MRI images, with a focus on scalability.*
- *GPU parallelization via processing mini batches, model checkpointing, efficient pytorch data structures with data loaders. ResNet50 and VGG16 deep convolutional networks for image recognition.*

IMDb Rating Prediction (Python) *Jan - Feb 2023*

- *Creating a database using BeautifulSoup web scraper and IMDb API requests.*
- *Encoding actor data, pre-trained transformer embedding for plot and title, LDA topic allocation, XGBoost regression model.*
- *Additional personal project: Variational Autoencoder to generate realistic movie plots.*

Porto Seguro's Safe Driver Prediction (Python/R) - Kaggle *Oct - Dec 2022*

- *Bayesian optimization of LightGBM boosting algorithm to predict probability of driver filing an insurance claim*
- *Exploratory data analysis to deal with difficult to interpret data.*

Automatic Playlist Continuation on the Spotify platform (Python) *Jan - Apr 2022*

- *Extracting features from a large dataset using Spotify API and NLP vectors.*
- *ANNOY Approximate Nearest Neighbours Model with an angular distance metric. Generates playlist of song recommendations based on input playlist.*

Code Breaking with Statistical Physics (Python) *Jan - May 2021*

- *Analysing frequency of n-grams in various languages*
- *Metropolis–Hastings MCMC Algorithm to solve difficult given ciphers*

EXPERIENCE

Airbus *Oct 2018 - Jan 2019*

· *Designing and developing an AI system for frequency allocation with a professional team.*

House of Lords *Nov 2018*

· *Participating in a discussion on the future of cybersecurity in the modern world led by industry professionals.*

BAE systems *Jun - Jul 2019*

· *Taking part in a work experience scheme with the cybersecurity department.*

PREVIOUS ROLES

Front of house *Jun - Nov 2021*

· *Worked with an acclaimed chef to design a social enterprise community supermarket to support local producers, funds for the project are being raised from selling a restaurant cookbook which I helped edit and photograph. As the only member of the waiting team, I improved my design making under pressure and gained valuable skills communicating with guests.*

Supercell/The Diana Award Youth Board *2016-2019*

· *Working closely with charity The Diana Award, I visited Helsinki on numerous occasions to work with popular gaming company Supercell on safety measures for children in the online world. During this role I also worked with MP's to promote UK wide anti-bullying campaigns, and worked with Facebook as part of a small focus group launching a national campaign with aims to decrease online bullying on Facebook platforms.*

A level Mathematics (A), Further Mathematics (A) and Computer Science (A)*