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# Shaheen Ahmed-Chowdhury

## Education

Oct '23 - Now **Level 7 Apprenticeship - ML Engineering**, *Founders and Coders*, United Kingdom

Sep '18 - Apr '21 **MSc Mathematical Sciences**, *Utrecht University*, The Netherlands

Sep '13 - Jun '17 **MPhys Theoretical Physics**, *Durham University*, United Kingdom

## Research Projects

Jan '24 - Apr '24 **AI Safety Camp**

Developed a mechanistic interpretability library, aimed at re-implementing Google PAIR's Patchscopes paper via nnsight. We sought to facilitate greater access to such techniques for researchers, via distribution as a PyPI package. See https://github.com/obvslib/obvs.

Mar '20 - Apr '21 **MSc Thesis - High-Dimensional Bayesian Optimisation of ABM Calibration Experiments**

Re-implemented leading academic methods for agent-based model (ABM) calibration upon a large-scale and high-dimensional macroeconomic ABM, which is actively being used for economic research.
Created a novel ABM calibration scheme, and embedded it within a high-dimensional Bayesian optimisation algorithm. Demonstrated consistently improved optimisation over random search.

Jun '20 - Feb '21 **ERIKS Digital - Improving Intermittent Demand Prediction**

Compared existing demand pattern classification to leading academic methods, and implemented literature from Amazon (DeepAR) to improve demand prediction for over 800,000 products in inventory.

Jul '19 - Aug '19 **Oxford University - Institute for New Economic Thinking - Research Assistant**

Processed and visualised open-source data on technological performance.
Applied NLP methods for title quality estimation in patent datasets.

Sep '16 - Mar '17 **MPhys Thesis - The Use of the Ehrenfest and Polya Urn Schemes in an ABM of Financial Markets**

Analysed stock price statistics, fitting statistical physics models to data, producing robust statistical conclusions.
Built an ABM of financial markets, simulating traders' decisions based on global and local interactions.
Attempted to endogenously replicate leptokurtic nature of stock price returns from micro-interactions of agents.

## Professional Experience

Jan '22 - Now **Choreograph (WPP) - Data Scientist**

Develop and maintain complex agent-based models in Numpy, leveraging cloud compute for enhanced scalability.
Won a WPP-wide hackathon, by developing a product for modeling event attendee path distribution.
Migrating modelling methodology to JAX, Ray, and GPU nodes, alongside Poetry to replace Conda.

Oct '23 - Now **Level 7 Apprenticeship - ML Engineering**

MSc-equivalent UK scheme. Completed 8-week intensive, requiring implementation of: Word2Vec for translation; two-tower LSTM for document retrieval; GPT-2; Llama2 fine-tuning via LoRA; YOLOV1 and Stable Diffusion. Training in MLOps (Kubernetes, Docker, data pipelines, multi-GPU training).
Completing aforementioned JAX migration as part of the program.

Jan '19 - Dec '21 **ERIKS Digital - Visualisation Specialist → Junior Data Scientist → Data Scientist**

Led a stock level estimation project within intermittent demand forecasting.
Performed business analyses using Python (Pandas, Numpy, Matplotlib).

Jul '17 - Jul '18 **EuroABS - Software Engineer**

Developed a full-stack system (SQL, C#, .NET) for task logging and alert generation, replacing spreadsheet methods. Redesigned website and maintained it using CSS, JavaScript, and JQuery.
Designed and implemented entire SQL schema.

## Skills (years)

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|---|---|
| Programming | Python (8), Numpy/Scipy/Matplotlib (8), LaTeX (6), SQL (4), Pandas (6), C# (1), PyTorch (0.75), C++ (0.25) |
| Tools | Git (4), Poetry (0.5), HuggingFace (0.5), Pytest (0.5), GPUs/CUDA (0.5) |
| Specialisations | Agent-based modelling (5), Bayesian optimisation (2), mechanistic interpetability (0.5) |