
EDUCATION

- **University of York** London, UK
Computer Science with Data Analytics MSc: Distinction *Jan 2020 - Mar 2023*
- **University College London** London, UK
Chemistry BSc: First Class Hons *2017*
- **City & Islington Sixth Form College** Islington, London
A Level: Physics (A) Mathematics (A) Chemistry (A) AS Level: Further Mathematics (A)* *2011 - 2013*

EXPERIENCE

- **Expedia Group** London, UK
Software Development Engineer III - ML Platform *Apr 2023 - Present*
 - Responsible for a team of 4 engineers. Led the design and development of the ML Platform Workflow, a tool for managing the end-to-end ML Lifecycle, from model training to production deployments for all Data Scientists and Machine Learning Engineers across Expedia. Leveraged GitHub Actions, Backstage templating, Apache Spark and KServe. Used by over 150 colleagues across several teams.
 - Responsible for the use of KServe across Expedia. Managed upgrades across over 50 production Kubernetes clusters. Developed ML Platform integration with Databricks and AWS Graviton, enabling colleagues to use Databricks to train ML models using a range of model frameworks and deploy ML models to ARM nodes using Kubernetes.
 - Led multiple workshops to encourage adoption of ML Platform capabilities. Asked by leadership to instruct fellow engineers on presentation best-practice.
 - Conducted technical interviews for new team members, assessing both technical and systems design skills.
Software Development Engineer II - ML Platform *Dec 2021 - Mar 2023*
 - Resolved bug within KServe which prevented model deployments from scaling beyond 1 replica due to issues with reconciliation. This enabled the completion of a long-awaited migration which unlocked savings of \$15,000 per month. Introduced Helm Chart unit tests to the team to make deployments more resilient.
 - Responsible for the ML Platform Python SDK. Significantly refactored SDK to introduce modern Python tooling including hatch, pytest, and ruff.
 - Contributed to applications across the ML Platform concerned with feature engineering, stream ingestion, as well as the storage and deployment of ML models.
- **Experian UK&I DataLabs** London, UK
Machine Learning Engineer *Dec 2020 - Dec 2021*
 - Developed software to assess the fairness of Machine Learning models for a range of clients across the UK/US. This used a microservices architecture and was written in Python and Java, microservices were networked using gRPC and Redis Pub/Sub approaches. Developed comprehensive unit, load and feature tests. Used a staged CI/CD pipeline to manage promotion to the production environment.
 - Installed and maintained an on-premise Kubernetes cluster for developmental use in the team featuring Istio, Jupyter and Dask. Configured security measures including Docker image vulnerability scanning with Harbor, Gatekeeper network policies and Prometheus for logging.
 - Engineered software to segment addresses for use within the Experian data matching team. Code was managed in a shared mono-repo with Gitflow workflow. Implemented load-testing using Locust. Wrote code to rapidly manipulate data in Java for parallel model inference. Developed PoCs using AWS for batch model inference using S3, Sagemaker and AWS Lambda.
- **Barclays UK** London, UK
Decision Scientist, Assistant Vice President - Barclays UK, Data & Analytics *July 2019 - Dec 2020*
 - Developed software to represent Barclays UK financial products in Python for downstream use cases using Object-Oriented design. This enabled mortgage market simulation and pricing model creation. Software included abstract base classes, decorators, custom exceptions, input validation, and a testing framework with pytest. Deployed this as an frontend and API using streamlit and the FastAPI framework.

- Rapidly implemented a Business Banking Spend Categorisation engine to assess the impact of COVID-19 on the UK economy and our customer base. Independently developed software using Apache Spark for parallel compute on a multicore cluster. Weekly reports were shared with the Barclays Executive board. Responsibilities included: software development, generating the report, test development, and implementing new features.
- Only person to receive a distinction in an internal Associate Data Science programme. Mentored colleagues on the programme whilst participating, ran weekly drop-in sessions to teach colleagues Python functionality and best practice. Regularly gave presentations on technical matters including: git, machine learning pipelines and the Python scientific stack. Developed a comprehensive guide, enabling colleagues to get started with Python in a secure way. Introduced automated documentation standards through the use of Sphinx.
- Implemented a geospatial algorithm using kdtrees to identify cash blackspots for Business Banking customers, this followed planned changes to our Post Office cash offering. Developed an internal Python package, to improve the handling of feature names in pandas/sklearn machine learning pipelines. Documented source code fully and continuously integrated new features with a declarative Jenkins pipeline.

• Barclays UK Graduate Scheme

London, UK

Predictive Analytics, Analyst - Barclays UK, Decision Analytics

Mar 2019 - July 2019

- Designed data preparation scripts in SQL. Developed Python models to predict a customer's propensity to apply for a credit card and to conduct high spend. Used decision trees to segment customer product preferences.
- Wrote Python scripts for use by colleagues for predictive modelling and validation.

Research Analyst - Barclays UK, Analytics Centre of Excellence

Sep 2018 - Feb 2019

- Developed, tested and presented an optimised SQL methodology which enabled colleagues to perform data transformation and extraction. This was over 90% faster and had increased scope compared to previous methods.
- Completed deep dives on Wealth and Business Banking key clients, Relationship Managers, Account Opening and Mandate Change featuring K-means Clustering. Presented to Directors in the business, with recommendations taken forward to the CEO of Business Banking. Introduced Python to the team for research, presented to analysts on statistical methods and best practice.

Digital Analyst - Barclaycard UK, Strategic Analytics

Mar 2018 - Aug 2018

- Responsible for developing the Digital Analytics capability in the team. Built a deterministic matching algorithm in SQL to deal with a technical error which prevented users being tracked across domains. The algorithm used IP Address, device model and timing attributes.
- Developed a method to link web-traffic behaviour to account performance to analyse the links between application browsing behaviour and customer risk performance. Built a report for Marketing colleagues to assess the affect errors had on account conversion.

Data Product Manager - Barclaycard International, Data & Strategic Analytics

Sep 2017 - Mar 2018

- Aided in organising a two-day hackathon with the Office for National Statistics. This was the first event where Barclays data was brought onto an external network for analysis. Developed challenges for participants, uploaded and securely hosted aggregated Barclays data.

• Barclays Summer Internship

London, UK

Spend Engagement Analyst - Barclaycard UK

Jun 2016 - Aug 2016

- Undertook deep dive into the New Customer Engagement programme, which has an annual reach of over 1 million customers. Created a financial model to ascertain the turnover of this programme over the short to medium term.
- Led a team of 5 to design, develop and deploy a spend trigger to 16,000 disengaged customers.

• Boston Consulting Group: Rare Consult Programme

London, UK

12 month mentoring programme organised with Rare Recruitment

2015

- Participated in interactive case studies relating to consultants' experience. One-to-one mentoring featuring case preparation and commercial awareness.

SKILLS

- **Languages:** Python, Java, goLang, SQL.
- **Technologies:** Kubernetes, AWS, GitHub Actions, Jenkins, Databricks, Spark, git.
- **Skills:** Software Development and Testing, Machine Learning Development, CI/CD.

Project Management: AgilePM Practitioner

OPEN SOURCE CONTRIBUTIONS

Crossplane AWS Provider - Added Dax Cluster Resources to v0.27.0.