

# EDWARD PEARCE

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## EDUCATION

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**The University of Sheffield, PhD in Mathematics**

October 2016 - March 2021

*Generalized core-quotient decomposition for partitions and applications in algebraic geometry*

**University of Warwick, MMath Master of Mathematics**

October 2012 - July 2016

First Class Honours. 92.8% overall; top 2% in a class of  $\approx 300$ .

## EXPERIENCE

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**Liberty Specialty Markets**

June 2022 - Present

*Pricing Analyst*

*London, UK*

- Delivering actuarial pricing and portfolio analytics across specialty and commercial insurance and reinsurance lines of business in multiple continents, including European PI, D&O, and Marine Hull
- Full-stack web development of reinsurance contract pricing application using simulated loss distributions
- Leading digital transformation group project translating Excel rating tools into Python/React web applications for underwriters and actuaries; organising and running Agile retrospective sessions
- Conducting comprehensive peer review for predictive modelling projects, covering documentation practices, data quality, statistical modelling assumptions, and technical code review; Creating evaluation framework including checkpoints, required outputs, and review checklists for each stage of model R&D
- Running training sessions on software development best practices, unit testing, and version control; coaching junior team members in programming, and project line management for graduate rotation

**Munich Re (GrovesJohnWestrup Private Clients)**

March 2021 - June 2022

*Pricing Data Scientist*

*London, UK*

- Building and managing the company's data analysis and visualization infrastructure end-to-end using Python, R, SQL, Power BI, including data engineering, API enrichment, and dashboard production for daily monitoring of sales funnel, claims, premium adequacy, broker performance, AML compliance, etc.
- Collaborating across functions to understand business requirements and create automated tools saving hours per week on BAU processes (7.5% of one team's time) and enabling more data-driven approach
- Developing, testing, and deploying machine learning models to enhance pricing and portfolio management in home insurance and pet insurance contexts

**Health Data Insight**

July 2019 - September 2019

*Cancer Data Analyst*

*Cambridge, UK*

- Building a framework to analyse synthetic datasets of patient tumour records
- Using Python and SQL for data extraction, automating statistical tests, visualization
- Presenting results to HDI board members and Public Health England stakeholders
- Chairing Analysts East team meeting; organising social events (group meals, punting)

**TAS Services Ltd**

July 2016 - September 2016

*Research Analyst*

*Hong Kong*

- Using Python for web scraping, data analysis and interfacing with SQL and mongoDB
- Automating data comparison across multiple sources for accurate data management
- Linking databases and preparing data for statistical modelling to inform investment strategies
- Discovering a new culture through international work experience

## TEACHING EXPERIENCE

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### Graduate Teaching Assistant

October 2016 - December 2020

*University of Sheffield:* Face-to-face and online teaching experience leading tutorials on topics including Core Mathematics, Engineering Mathematics, Scientific Computing, and Statistical Data Science. Programming labs and mathematics tutorials with class sizes ranging from 15-40 students.

### Supervisor

October 2015 - July 2016

*University of Warwick:* Small group teacher for 2x5 1st year mathematics students plus marking.

## PROJECTS

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### *Physics Simulation: n-body system*

Spring Semester 2020

Extracurricular course assignment for COM4521 Parallel Programming with GPUs. Comparing performance of serial and parallel programming techniques using C, OpenMP, and CUDA. Source code: <https://github.com/edwardmpearce/COM4521>

### *PyParti: Python for Partitions*

July 2020

Python/SageMath package for integer partitions, combinatorics calculations and visualization. Automated testing with GitHub Actions workflow. Cloud-hosted notebooks with Docker and Binder. Source code: <https://github.com/edwardmpearce/pyparti>

### *Simulacrum Test Suite*

July 2019 - September 2019

Software for calculation and visualisation of statistical tests comparing a synthetic dataset with its training set, written using Python, Oracle SQL. Presented at HDI Symposium (Cambridge, Nov. 2019)

### *Personal Website*

Spring 2019 - Present

Website for online resume, teaching material, mathematical puzzles, web development practice. Written with Hugo (Go-based web framework). Continuous Integration with Travis CI.

### *Partitions Lab*

Spring Semester 2019

Tutorial website about integer partitions, with interactive code cells using SageMath computer mathematics software. Written with Hugo, LaTeX, TikZ, HTML, JavaScript.

### *Artificial Intelligence and Earth Observation for the Prediction of Malaria Outbreak Risk*

May 2019

Data science project for isardSAT using satellite data on soil moisture and land temperature. Source code: <https://github.com/edwardmpearce/cardiff-study-group-ai-in-healthcare>  
Presented at Innovate UK AI in Health & Care Study Group with Industry at Uni. of Cardiff.

### *Sporadic Finite Subgroups of $SL(3, C)$ and their McKay Quivers*

July 2015 - September 2015

Funded by grant through the Undergraduate Research Scholarship Scheme, supervised by Professor Miles Reid, University of Warwick. Source code: <https://github.com/edwardmpearce/urss-project>  
Presented at Warwick Imperial Autumn Meeting (Uni. of Warwick, Nov. 2015)

## ADDITIONAL SKILLS

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### Computer Languages

Python (PyData stack: pandas, scikit-learn, matplotlib, Plotly), C (OpenMP, CUDA), R, Power BI (Power Query M, DAX), Java, Matlab, Mathematica, Magma, Excel VBA

### Databases

MySQL, Oracle SQL, MongoDB, MSSQL Server, T-SQL, Snowflake

### Tools and Frameworks

LaTeX, git, bash, Hugo, Flask, React JS, Docker

### Languages

English (native), Mandarin Chinese (Limited working proficiency)

### Interests

Indoor Bouldering, Yoga, Urban Cycling, CS50x, Advent of Code