Dr Stuart Burrell

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Curriculum Vitae

stuartburrell.github.io

Experience

Featurespace Cambridge, UK
Senior Research Engineer 10/2023 – Present
Research Scientist 11/2022 – 10/2023

- Designed and built deep generative models for tabular and time-series data synthesis
- Created an LLM powered retrieval augmented generation system for internal knowledge-base Q&A
- Lead performance and profiling work yielding a 3x increased throughput of our deep learning data pipeline
- Championed high-standards of engineering best practices through regular code-review and TDD
- Mentored junior team members and research scientists and took a significant role in recruitment processes
- Lead a weekly AI reading group exploring advances and open problems in AI safety, fairness and alignment

University of St Andrews St Andrews, UK
Postdoctoral Researcher in Mathematics 12/2020-9/2021

- Funded in part by a highly competitive London Mathematical Society Early Career Fellowship
- Research on stochastic processes, geometric measure theory and metric geometry

Education

University of Cambridge	MPhil	*Machine Learning and Machine Intelligence*, Distinction	2021-2022
University of St Andrews	PhD	*Mathematics*, Carnegie Scholar	2016-2020
University of St Andrews	MMath	*Mathematics*, First Class Honours, Graduate Medal	2012-2016

Publications

ICDM Data Mining in Finance (Oral)	*Locally Differentially Private Embedding Models in Distributed Fraud Prevention Systems* I. Perez, J. Wong, P. Skalski, S. A. Burrell, R. Mortier, D. McAuley and D. Sutton	2023
Int. Conf. for AI in Finance (Oral)	*Towards a Foundation Purchasing Model: Pretrained Generative Autoregression on Transaction Sequences* P. Skalski, D. Sutton, S. A. Burrell, I. Perez and J. Wong	2023
Monatshefte für Mathematik	*The fractal structure of elliptical polynomial spirals* S. A. Burrell, K. Falconer and J. Fraser	2022
Journal of Theoretical Probability	*Dimensions of fractional Brownian images* S. A. Burrell	2021
Journal of Fractal Geometry	*Projection theorems for intermediate dimensions* S. A. Burrell, K. Falconer and J. Fraser	2021
Journal of Number Theory	*Digit expansions of numbers in different bases* S. A. Burrell, and H. Yu	2020
Annal. Acad. Sci. Fenn. Math.	*The dimensions of inhomogeneous self-affine sets* S. A. Burrell, and J. Fraser	2020
Real Analysis Exchange	*On the dimension and measure of inhomogeneous attractors* S. A. Burrell	2020

Open-source Software

GAP Semigroups package	Methods on the torsion and order problems of natural & tropical matrix semigroups	2016
GAP Digraphs package	Methods for efficiently computing the simple circuits of a digraph	2016

Skills

Tools and Languages	Python, Tensorflow, PyTorch, Git, AWS, TeX, UNIX, SQL, Clickhouse
Certifications	Associate Fellow of the Higher Education Academy (AFHEA), Data Structures and Algorithms Nanodegree (Udacity), Future Leaders Programme (Carnegie Trust)
Teaching	Over 1000+ hours of Mathematics and Statistics tutoring experience in higher education
Communication	Presented at a variety of international conferences and venues, including Dynamic Days Europe, Fractals and Stochastic VI and the Royal Society of Edinburgh

Awards and Scholarships

Early Career Research Fellowship, London Mathematical Society 2021
Cambridge Trust and Corpus Christi College Scholarship, University of Cambridge 2021
University Teaching Awards: Best Postgraduate Tutor, 3x Nominee, University of St Andrews 2020
Carnegie Trust PhD Scholar, The Carnegie Trust for the Universities of Scotland 2016
Arthur Hinton Read Memorial Prize for best grades in pure mathematics, University of St Andrews 2016
Duncan Prize for best final year research project, University of St Andrews 2016
Sanderson Prize for best overall degree achievment, University of St Andrews 2016
The Principal's Scholarship for Academic Excellence, University of St Andrews 2015