STUART BURRELL

Carnegie Scholar ◇ University of St Andrews ◇ United Kingdom
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Languages English, Basic German, Basic Japanese
Programming Python, R, Git/GitHub, GAP, Unix, LaTeX, Maple.

EDUCATION

PhD, Mathematics, *University of St Andrews* October 2017 - Present
Fractal geometry, dynamical systems and dimension theory.

Scottish Mathematical Sciences Training Center,
Graduate courses in Algebra, Analysis, Topology, Probability and Statistics 2016 - 2018

Academy for PhD Training in Statistics,
Graduate courses in Statistics at the Universities of Cambridge, Durham and Glasgow. 2016 - 2017

Machine Learning Engineer Nanodegree, *Udacity* 2016 - 2017

MMath, Mathematics, First Class Honours (93%/GPA 4.0), *University of St Andrews* 2012 - 2016

PUBLICATIONS

The dimensions of inhomogeneous self-affine sets (with J.M. Fraser), arXiv July 2018
submitted.

On the dimension and measure of inhomogeneous attractors, arXiv May 2018
Real Analysis Exchange (to appear).

SOFTWARE CONTRIBUTIONS

GAP Semigroups package 2016
Methods to decide the order and torsion problems of natural and tropical matrix semigroups.

GAP Digraphs package 2016
Methods for computing the simple circuits of a digraph.

EXPERIENCE

Research in Statistical Ecology and Machine Learning 2016-2017
Centre for Research into Ecological and Environmental Modelling, St Andrews.

GAP Software Development Summer 2016
School of Mathematics and Statistics, University of St Andrews, St Andrews.

Laidlaw Internship in Research and Leadership Summer 2015
School of Mathematics and Statistics, University of St Andrews, St Andrews.

Undergraduate Research Summer School Summer 2014
School of Mathematics and Statistics, University of St Andrews, St Andrews.

AWARDS AND SCHOLARSHIPS

Carnegie PhD Scholarship 2016-2020
Duncan Prize, *University of St Andrews* 2016
Sanderson Prize, *University of St Andrews* 2016
The Arthur Hinton Read Memorial Prize, *University of St Andrews* 2016
ODSC Machine Learning/Deep Learning Scholarship 2016
IMA Graduate Prize Winner, *Institute of Mathematics* 2016
Graduate Medal in Mathematics, *University of St Andrews* 2016
The Principal's Scholarship for Academic Excellence, *University of St Andrews* 2012-16

The University Scholarship for Research and Leadership, *University of St Andrews* 2015
The Deans' List for Academic Excellence, *University of St Andrews* 2012-16
Gold Duke of Edinburgh Award 2013

TALKS

The dimensions of inhomogeneous self-affine sets (poster presentation) Octbober 2018
Fractals and Stochastics VI, Bad Herrenalb, Germany.
A brief note on the dimension of inhomogeneous attractors September 2018
Dynamic Days Europe, Loughborough.
A universal upper bound on the dimension of inhomogeneous attractors June 2018
British Mathematical Colloquium, St Andrews.
How big are inhomogeneous attractors? May 2018
Edinburgh Mathematical Society PG Student Meeting, The Burn, Glen Esk
On the dimension and measure of inhomogeneous attractors April 2018
Pure Analysis Seminar, St Andrews.
An introduction to inhomogeneous attractors April 2018
Pure Postgraduate Seminar, St Andrews.
An introduction to iterated function systems February 2018
Postgraduate Interdisciplinary Mathematical Symposium, Glen Esk
Dimension of inhomogeneous self-conformal and self-affine sets January 2018
School Research Day, St Andrews.
Inhomogeneous attractors and upper box dimension December 2017
Insitut Mittag-Leffer, Stockholm, Sweden.
Trace contrast methods in acoustic space January 2017
African Institute of Mathematical Sciences, Cape Town, South Africa.
An introduction to trace contrast methods January 2017
University of Cape Town, Cape Town, South Africa.
Sequential Monte Carlo in population dynamics April 2016
School of Mathematics and Statistics, St Andrews.
Artificial intelligence and Gödel's incompleteness theorems February 2015
School of Mathematics and Statistics, St Andrews.

OUTREACH

The journey to a PhD in Mathematics July 2018
UWS Summer STEM Academy, Glasgow.
Fractal geometry in nature and art February 2018
The Royal Society of Edinburgh, Edinburgh.

CONFERENCES

Fractals Geometry and Stochastics VI October 2018
Evangelische Akademie Baden, Bad Herrenalb, Germany
CMI at 20 September 2018
Clay Mathematics Institute, Oxford.
Dynamic Days Europe September 2018
University of Loughborough, Loughborough.
Thermodynamic Formalism in Dynamical Systems June 2018
International Centre for Mathematical Sciences, Edinburgh.
British Mathematical Colloquium June 2018
University of St Andrews, St Andrews.
Fractals and Dimensions December 2017
Insitut Mittag-Leffler, Stockholm, Sweden
ODSC (Machine Learning/Deep Learning) October 2016

London.

TEACHING

All available student feedback data is included and reported on a scale of 1 (excellent) to 5 (poor) in the cateogires of Explanation (E), Organisation (O) and Availability (A).

Mathematics and Statistics Tutor, *CAPOD, University of St Andrews*, 2016 - Present
MT2502 Analysis, *Tutor, University of St Andrews* Autumn 2018
MT2000 Python, *Demonstrator, University of St Andrews* Autumn 2018
Math Base, *Tutor, University of St Andrews* Autumn 2018
MT1002 Mathematics, *Demonstrator, University of St Andrews* Spring 2018
MT1002 Mathematics, *Tutor/Demonstrator, University of St Andrews* Autumn 2017
E = 1.62, O = 1.65, A = 1.17
MT1003 Pure and Applied Mathematics, *Tutor (temporary), University of St Andrews* Spring 2017
MT2508 Statistical Inference, *Demonstrator, University of St Andrews* Spring 2017
MT2504 Combinatorics and Probability, *Tutor/Demonstrator, University of St Andrews* Autumn 2016
E = 1.17, O = 1.15, A = 1.17
MT2000 Introduction to Python, *Demonstrator, University of St Andrews* Autumn 2016

WORKSHOPS

Postgraduate Interdisciplinary Writing Workshop August 2018
University of St Andrews, The Burn, Glen Esk.
Summer School in Dynamics (Introductory and Advanced) July 2018
International Centre for Theoretical Physics, Trieste, Italy.
Postgraduate Interdisciplinary Mathematical Symposium January 2018
University of St Andrews, The Burn, Glen Esk.
Statistical Methods in Gibbon Conservation August 2017
Centre for Research into Ecological and Environmental Modelling, St Andrews.
Estimating Animal Abundance and Density using Acoustic Data January 2017
University of Cape Town, Cape Town, South Africa.
Scottish Mathematical Craining Center Symposium October 2016
Perth.
CoDiMa software carpentry October 2016
International Centre for Mathematical Sciences, Edinburgh.
Advanced PAMGuard October 2016
PAMTech, Edinburgh.
Spatial Capture-Recapture Methods August 2016
Centre for Research into Ecological and Environmental Modelling, St Andrews.
Laidlaw Leadership Program 2015
endorsed by the Institute of Management, St Andrews.

PROFESSIONAL RESPONSIBILITIES

Scottish Mathematical Sciences Training Centre Council, *Student Representative* 2016 - 2017