

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

Poster Award, *Fractals and Stochastics 6* October 2018
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, <i>University of St Andrews</i>	2012-16
The University Scholarship for Research and Leadership, <i>University of St Andrews</i>	2015
The Deans' List for Academic Excellence, <i>University of St Andrews</i>	2012-16
Gold Duke of Edinburgh Award	2013

TALKS

Foundations and applications of fractal geometry	January 2019
<i>Postgraduate Interdisciplinary Mathematical Symposium, Glen Esk</i>	
Dimension drop and inhomogeneous self-affine sets	October 2018
<i>Pure Analysis Seminar, St Andrews.</i>	
The dimensions of inhomogeneous self-affine sets (poster presentation)	October 2018
<i>Fractals and Stochastics VI, Bad Herrenalb, Germany.</i>	
A brief note on the dimension of inhomogeneous attractors	September 2018
<i>Dynamic Days Europe, Loughborough.</i>	
A universal upper bound on the dimension of inhomogeneous attractors	June 2018
<i>British Mathematical Colloquium, St Andrews.</i>	
How big are inhomogeneous attractors?	May 2018
<i>Edinburgh Mathematical Society PG Student Meeting, The Burn, Glen Esk</i>	
On the dimension and measure of inhomogeneous attractors	April 2018
<i>Pure Analysis Seminar, St Andrews.</i>	
An introduction to inhomogeneous attractors	April 2018
<i>Pure Postgraduate Seminar, St Andrews.</i>	
An introduction to iterated function systems	February 2018
<i>Postgraduate Interdisciplinary Mathematical Symposium, Glen Esk</i>	
Dimension of inhomogeneous self-conformal and self-affine sets	January 2018
<i>School Research Day, St Andrews.</i>	
Inhomogeneous attractors and upper box dimension	December 2017
<i>Insitut Mittag-Leffer, Stockholm, Sweden.</i>	
Trace contrast methods in acoustic space	January 2017
<i>African Institute of Mathematical Sciences, Cape Town, South Africa.</i>	
An introduction to trace contrast methods	January 2017
<i>University of Cape Town, Cape Town, South Africa.</i>	
Sequential Monte Carlo in population dynamics	April 2016
<i>School of Mathematics and Statistics, St Andrews.</i>	
Artificial intelligence and Gödel's incompleteness theorems	February 2015
<i>School of Mathematics and Statistics, St Andrews.</i>	

OUTREACH

Sundials, dimensions and fractal projections	February 2019
<i>The Royal College of Physicians and Surgeons, Glasgow</i>	
Positive problem solving	February 2019
<i>First Chances Scheme, University of St Andrews</i>	
The journey to a PhD in Mathematics	July 2018
<i>UWS Summer STEM Academy, Glasgow.</i>	
Fractal geometry in nature and art	February 2018
<i>The Royal Society of Edinburgh, Edinburgh.</i>	

CONFERENCES

Fractal Geometry and Stochastics VI	October 2018
<i>Evangelische Akademie Baden, Bad Herrenalb, Germany</i>	
CMI at 20	September 2018
<i>Clay Mathematics Institute, Oxford.</i>	

Dynamic Days Europe <i>University of Loughborough, Loughborough.</i>	September 2018
Thermodynamic Formalism in Dynamical Systems <i>International Centre for Mathematical Sciences, Edinburgh.</i>	June 2018
British Mathematical Colloquium <i>University of St Andrews, St Andrews.</i>	June 2018
Fractals and Dimensions <i>Insitut Mittag-Leffler, Stockholm, Sweden</i>	December 2017
ODSC (Machine Learning/Deep Learning) London.	October 2016

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 E = 1.09, O = 1.33, A = 1.0	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 E = 1.62, O = 1.65, A = 1.17	Autumn 2017
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 E = 1.17, O = 1.15, A = 1.17	Autumn 2016
MT2000 Introduction to Python, Demonstrator, University of St Andrews	Autumn 2016

WORKSHOPS

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

PROFESSIONAL RESPONSIBILITIES

Carnegie Trust Scholars Network , <i>Event organiser</i>	2019 - Present
Postgraduate Interdisciplinary Mathematical Symposium , <i>Organiser</i>	2018 - 2019
Scottish Mathematical Sciences Training Centre Council , <i>Student Representative</i>	2016 - 2017