Oliver Smith — Curriculum Vitae

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Website/Code: olly.website/sims

Postdoctoral researcher in applied mathematics 2021-present
University of Nottingham

- Researching the dynamics of low-carbon electrical power networks to assess the impact of increasing renewable generation.
- Utilising methods from network science to provide stability bounds for electrical micro-grids.
- Working alongside partners at UK National Grid to develop models and software to gauge the dynamical properties of various network control schemes.

PhD in Applied Mathematics 2016-2020
University of Nottingham

- Researched the resilience of complex networks using techniques from game theory, numerical analysis and nonlinear dynamics.
- Worked with large data sets of electrical power consumption from smart energy meters in UK homes to analyse resilience of power grids.
- Developed high performance code to simulate cascading failures in networks.
- Conducted research on the nonlinear dynamics of neural tissue.

MSc in Scientific Computing 2014-2015
University of Nottingham

- Studied high performance computational models of physical systems, such as fluid dynamic problems.
- Developed numerical algorithms in Fortran and Python.
- Conducted research on models of electrical pattern formation in neural tissue.

BSc in Physics 2010-2014
University of Manchester

Publications

Lead author on:

The Price of Anarchy in flow networks as a function of node properties
O. Smith, J. Crowe, R.D. O'Dea, K.I. Hopcraft, (2019) *Eur. Phys. Lett.,* 127(1).

Cascading failures in networks of heterogeneous node behaviour
O. Smith, E. Farcot, J. Crowe, R.D. O'Dea, K.I. Hopcraft, (2020) *Phys. Rev. E* 101, 020301(R),

Technical skills and training

- Programming languages: C++, Fortran, Python, Julia, Matlab.
- Presentational software: LaTeX, Adobe Illustrator, HTML/CSS.
- Experience developing high performance parallelised code using OpenMP and OpenCL.
- Experience with using HPC facilities and scheduling.
- Experience developing and publishing open-source code and websites.

Outreach experience and awards

- Runner up in national TakeAIM awards 2020 for scientific communication https://www.smithinst.co.uk/takeaim/.
- Presented at numerous international conferences, such as the the "Conference of Complex. Systems" 2018 and 2019 (Greece and Singapore respectively), "Critical and Collective Effects in Graphs" 2019 (France), "IoP Graph Theory and Physics" 2018 (London)
- Experienced with developing interactive software and user interfaces to demonstrate work; see olly.website/sims for an example of an interactive model of neural tissue.

Teaching experience

Graduate workshop coordinator on data visualisation 2016-2019
University of Nottingham

- Responsible for delivering and writing material for graduate students on analysing and presenting scientific data to publishable quality using Python.
- Created interactive lecture slides, to allow participants to interact with code on their own devices during lessons.

References

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