

Henry Charlesworth

45 Waverly Road, Leamington Spa, CV31 2DE
07904491993 • H.Charlesworth@warwick.ac.uk

GitHub: <https://github.com/henrycharlesworth>
Personal Website/Blog: <https://henrycharlesworth.com>

Education

PhD based in the Centre for Complexity Science, University of Warwick

(October 2015 – Present)

- Thesis title: “Future State Maximization: Theory and Applications”.
- Project has involved building large scale numerical models in C++ and running these on the university’s high-performance cluster.
- Also involved training neural networks using Keras and Tensorflow.
- Taught support classes for all first year undergraduate Physics modules and the first year Maths module “Maths by Computer”.

Mathematics of Systems MSc, University of Warwick

(October 2014 – October 2015)

- Passed with distinction. Modules included Data Analysis, Networks and Random Processes, Computational Methods for Complexity Science, Dynamical Systems and Numerical Methods.
- Conducted mini-projects on “Mathematical Modelling of the Spread of Foot and Mouth Disease” and “Molecular Modelling of Polymer-Graphene Nanocomposites” (which involved running large scale molecular dynamics simulations using LAMMPS).

Physics MSci, University College London

(September 2009 – July 2014)

- First-class honours and included on the Dean’s List for Academic Excellence for achieving the highest exam results during my final year. Final year modules included Advanced Quantum Theory, Electromagnetic Theory, Order and Excitations in Condensed Matter, Statistical Mechanics and Quantum Computation and Communication.
- Final year research project was on “Entropy Production in Small Systems” and supervised by professor Ian Ford.

Seaford Head Community College, East Sussex

(2001 – 2009)

- A-Levels: Mathematics (A), Physics (A), History (A). GCSEs: 5 A*s, 6As.

Publications

- “Stochastic entropy production arising from nonstationary thermal transport”, Phys. Rev. E, 92, 042108 (2015)
- “Intrinsically motivated collective motion” (in preparation)
- “Threat avoidance by active particles” (in preparation)
- “Freedom maximization and maze solving” (in preparation)

Programming Languages/ Software

- Extensive experience using C++, Python (including the deep learning packages Keras, Tensorflow and PyTorch), MATLAB, Mathematica, HTML and CSS.
- Extensive experience using both Windows and Ubuntu operating systems.
- Some experience using the BOOST C++ libraries, Javascript (including D3.js and Node.js), PHP and MySQL
- Some experience using Microsoft Visual Studio.
- Some experience using Adobe Photoshop.
- Proficiency with LaTeX.
- Working knowledge of Microsoft Office.

Conferences/ Summer Schools

- Fundamental Problems in Statistical Physics Summer School, 16-29 July 2017, Bruneck.
- Introduction to Machine Learning Summer School, 21-23 June 2017, University of Warwick.
- Nonequilibrium Statistical Physics and Active Matter Summer School, 8-20 August 2016, Chinese Academy of Sciences, Beijing.
- Principles of Biological and Robotic Navigation, 29-31 August 2016, Max Planck Institute for Complex Systems, Dresden.

Additional Research Experience

Summer project at the Research Complex at Harwell

(June 2014 – August 2014)

- Conducted a 10-week research project looking at using a coherent diffraction imaging technique known as “Optical Ptychography” to study the growth of birefringent calcite films. Supervised by professor Ian Robinson (UCL).

Hobbies & Interests

I am a big fan of a variety of sports including Rugby, Football, Cricket and Snooker. Back in 2008 I founded and administrated a Football team who competed in a local league and who are still playing today. This involved managing the club's finances and keeping in constant communication with the league officials.

References

References are available upon request.