Rhydian Windsor

Trevalyn House, Field House Drive, Shrewsbury, Shropshire, SY3 9HL
Website: http://rhydianwindsor.com
Email: windsorrhydian@gmail.com
Mobile: 07403 434384 Home: 01743 289561
LinkedIn: https://uk.linkedin.com/pub/rhydian-windsor/bb/656/97a
GitHub Username: rwindsor1

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1 Abstract

A graduate physics Master's student looking to embark on a career in the field of machine learning and data science.

I am interested in using machine learning and artificial intelligence to solve complex problems, in particular in the field of medicine. I consider myself a diligent worker as well as an effective communicator, both in a scientific sense and more generally.

2 Education

- **(Oct 2018 -): DPhil, AIMS CDT, University of Oxford**

  - Awarded the CRUK Oxford Centre Prize Studentship in AIMS, my project will focus on the application of machine learning and artificial intelligence to the treatment of cancer.
  - This is preceded by a series of taught modules, listed at http://aims.robots.ox.ac.uk/cdt-taught-modules/.

- **(Sept 2014 - July 2018): MPhys, Physics, University of Manchester**

  - Studied for a Masters degree in physics (MPhys), graduating with a first class degree (78.9%).
  - Active member of several societies, including Manchester University Mountaineering Society, University of Manchester Chess Society, University of Manchester Physics Outreach, University of Manchester Physics Rugby (see Other Interests).
  - Member the JBCA Machine Learning group. At the end of my final year I became part of the organising committee, arranging events and writing machine learning challenges for PhD students at the centre. See my website for an example of a challenge I wrote (Deep Learning for Hurricanes).
  - Awarded a funded summer studentship at the School of Physics and Astronomy, researching the development of a footfall mapping system using security camera footage at the V&A Waterfront in Cape Town (see Research Experience & Selected Projects).

- **(Sept 2009 - June 2014): Wrekin College**

  - A2 levels in Mathematics (A*), Physics (A*), Chemistry (A*) and Advanced Mathematics (A) as well as an AS level in Biology (A).
  - Elected Head Boy in final year of study.
  - 11 GCSEs (7 A*s, 4As).
  - Bronze, Silver and Gold Duke of Edinburgh Awards.
  - Extended Project Qualification (EPQ); 'Is Nuclear Power a viable alternative to Fossil Fuels?'(A).

3 Research Experience & Selected Projects

- **(2017) Summer Research Studentship, University of Manchester School of Physics and Astronomy**

  - Awarded at the end of the academic year 2016-17, this project was a collaboration between Axillium Research and the University of Manchester School of Physics and Astronomy.
  - I was commissioned by the V&A Waterfront in Cape Town, South Africa to develop a prototype footfall mapping system using computer vision techniques on footage from security cameras at the Waterfront.

- This involved using machine learning techniques in order to identify and track pedestrians frame-by-frame in the raw footage. This information was used to build up customer analytics.
- The project was a success, with my system outperforming current methods of footfall mapping employed at the Waterfront. The paper I wrote on the subject is available from: https://rwindsor1.github.io/assets/pdfs/waterfront-report.pdf.

- **(2017) MPhys Project, University of Manchester School of Physics and Astronomy**
  - My MPhys project explores the link between changing lung cancer tissue density during radiotherapy and whether tumours are shrinking or eroding.
  - This involves using image processing techniques on CT scans to measure tissue density and then using data from this to develop a statistical model to give indications about the mode of cancer decay.
  - The project has taught me a great deal about programming with large datasets, as well as statistical modelling. My first report on this will be on my website from January 2018.

4 Positions of Responsibility

- **(Academic Year 2014 - 2015) Head Boy, Wrekin College**
  - I had to co-ordinate a group of prefects to work as a team to assist with many aspects of school life. This required excellent leadership skills.
  - I also had to deliver bulletins to the entire school every Monday about the events of the coming week. This involved researching what was happening and then presenting the information on short notice.
  - At the end of the year I had to deliver a fifteen minute speech to a room of around a thousand people. This took several weeks to prepare and I learnt a great deal about public speaking in this period.

- **(Academic Year 2016 - 2017) Captain, Manchester Physics Rugby**
  - I have played for the team since I began at university and was elected captain at the end of my second year.
  - As captain, I was expected to organise all aspects of the team including training, matches, finances, player recruitment and communicating with the league co-ordinators.
  - This position has given me great experience not only in terms of leadership and organisation but also in terms of managing and motivating a team.

5 Programming & Computation Skills

- Large amount of experience with Python 2 & 3. I have done several personal projects in this area including making a program which draws watercolour-style pictures using Markov chains and developing the back-end of a website which calculates the cheapest place to meet a friend on the other side of the world using Skyscanner flight prices.
- Broad knowledge of C++, having taken a module in this in my third year of university, "Object-Orientated Programming in C++". For my final project I developed a command-line based chess game which can be seen on my GitHub.
- Experience with a range of machine-learning focused Python modules such as scikit-learn, Keras and Tensorflow.
- I have taught myself web programming and maintain my own personal website, http://rhydianwindsor.com. This includes HTML5, CSS, Javascript and several related libraries (Bootstrap & jQuery).
- Some experience with Lua, R and MATLAB.
- Experience using Windows and UNIX-like operating systems (Ubuntu, Scientific Linux, Debian/Raspian).

6 Other Interests

- I am a keen sportsman and particularly enjoy bouldering and rugby. I have played for my school, local clubs at home and at university, and also my department team at university. I feel sport has been particularly key in developing my teamwork and motivation.

- I participated in the University of Manchester Physics Outreach. This is a scheme where myself and other students visit schools and science events and talk about science to the general community. As a result of this scheme I am now a STEM ambassador.

- I enjoy chess and am also a member of the Manchester University Chess society, as well as playing for Shropshire Chess when I was younger. I believe chess has been key to improving my problem-solving skill and critical thinking.

References available on request.