

Rhydian Windsor

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1 Personal Statement

A final year physics Master's student looking to embark on further research in machine learning and data science.

I am particularly interested in using machine learning methods to navigate large datasets to gain key insights into complex systems and develop intelligent systems. I consider myself a diligent and effective researcher as well as an effective communicator, both in a scientific sense and more generally.

2 Education

• (2014 -): University of Manchester

- In my final year of studying for a Masters physics degree (MPhys).
- Average of 80.4% (1st class) across all exams so far, coming in the top 30 every year.
- Awarded a scholarship on entry to the university for my A-level results.
- Active member in several societies, including Manchester University Mountaineering Society, University of Manchester Chess Society, University of Manchester Physics Outreach, University of Manchester Physics Rugby (see Interests).
- 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).

• (2009 - 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 am 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 Skills

- Coding experience in Python and C++ (strongest languages) as well some experience in Lua, MATLAB, Javascript and HTML/CSS and \LaTeX markup languages.
- Large experience in public speaking, presentation and leading a team from being Head of School.
- Fully clean UK driving licence (2012-2017).
- Experience in a wide range of software and operating platforms, including Microsoft, iOS and Linux (Ubuntu, Linux Mint, Debian/Raspian)

6 Interests

- I enjoy coding outside of my studies and have participated in several hackathons as well as Kaggle competitions. Details of my latest personal projects can be found on my website.
- I am a keen sportsman and particularly enjoy running 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 participate 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 analytical thought abilities and critical thinking.
- Since school I have enjoyed learning languages, including French and in particular German which I studied at GCSE and have returned to recently in an online course. I hope to be fluent in this one day.

References available on request.