Rhydian Windsor

Computer Vision DPhil Student

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Education

Visual Geometry Group, University of Oxford

Oxford, UK

DPhil

October 2019-

- I am currently working on the use computer vision for automated analysis of spinal disease with a particular focus on cancer. My supervisors are Professor Andrew Zisserman and Dr. Timor Kadir.
- This is a continuation of my 2nd mini project from the AIMS CDT taught course year (see below).
- My studies are funded by Cancer Research UK (Oxford Centre Prize Scholarship, 1 year taught courses + 3 years DPhil).

Autonomous Intelligent Machines and Systems CDT, University of Oxford

Oxford, UK

Taught Course Training Year

2018-2019

- The AIMS CDT programme consists of six months of taught modules followed by two 3 month projects before embarking on 3 year DPhil.
- I took modules on a wide range of topics related to machine learning including; *Computer Vision, Reinforcement Learning, Robotics, Control, Optimization, Verification, Embedded Systems Programming*.
- Completed two 6-week 'mini-projects' at the end of the first year: *'Automated 3-D extraction of vertebral bodies From full spine MRI scans'* (supervised by Andrew Zisserman and Timor Kadir) and *'Neural relational inference of the role of microRNA in gene regulation networks'* (supervised by Yarin Gal and Francesca Buffa).

University of Manchester

Manchester, UK

Master of Physics (MPhys)

2014-2018

- Graduated with a first class degree (78.9% average).
- I took courses across a wide range of topics relevant to physics including Quantum Mechanics, Radio Astronomy, Quantum Computing and Statistical Mechanics amongst others. I also took several courses from the mathematics school including Numerical Optimisation and Inverse Problems.
- My MPhys thesis topic was *Differentiating Shrinkage and Erosion of tumours in Lung Cancer CBCT Scans*. This was done at the Radiotherapy Related Research Group, Christie Hospital. I was supervised by Professor Anna Scaife and Dr. Andrew McWilliam. This work was accepted to ECMP 2018 (see Posters).

Publications & Research Output

Conference Papers

- 'The Ladder Algorithm: Finding Repetitive Structures In Medical Images By Induction', Rhydian Windsor & Amir Jamaludin, *ISBI 2020*, Oral Presentation

Posters

- 'A Novel Methodology To Differentiate Shrinkage versus Erosion in CBCT Images Of Lung Tumours', George Needham*, Rhydian Windsor*, Marianne Aznar, Eliana Vasquez Osorio, Marcel van Herk, William Beasley, Alan McWilliam. *ECMP 2018*, Best Poster Award
- 'Getting Accurate Full Spine Segmentations Without Ground Truths', Rhydian Windsor, Amir Jamaludin, Timor Kadir, Andrew Zisserman. *AIMS Annual Meeting 2019*, 2nd Best Poster Award

*: Indicates authors contributed equally

Skills

Programming Languages	Python (Strong); C++, MATLAB (Moderate but a bit rusty); R, Javascript (Some Experience)
Frameworks	Pytorch, Tensorflow, jQuery, Flask, Reveal.js
Computational Other	LaTeX, HTML/CSS, UNIX, Git, Docker

Experience

JBCA Machine Learning Club

Manchester, UK

Organising Committee

2018 - 2019

- During my final year of university I helped organise several informal talks & hack nights giving astrophysics PhD students hands-on experience in machine learning.
- My role on the organising committee included negotiating budget with JBCA financial committees, deciding future directions for the club and writing tutorials and challenges for attendees.

Axilium Research

Cape Town, SA/Manchester, UK

Research Internship

Summer 2018

- During the summer of my third year at university I undertook an internship as the result of a collaboration between Jodrell Bank Centre of Astrophysics and Axilium Research UK.
- 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 was my first real experience of computer vision. The resulting project report can be found at `https://tinyurl.com/wm5q59j`

STEM Learning

Manchester, UK

STEM Ambassador

2016 - 2018

- During my undergraduate degree I volunteered as STEM ambassador.
- Over 3 years, I attended several science festivals and outreach events across Manchester talking about physics to the general public.

Other Interests

- Outside of work I enjoy sports, in particular running and bouldering. I play chess sometimes and am a member of the University's chess club.
- I also enjoy learning languages and am currently taking a course in French working towards approx. B2 proficiency in CEFR framework (upper intermediate). I also have some experience in German (elementary to lower intermediate proficiency).