

Key Achievements

- Learnt and applied advanced imaging/data analysis techniques to understand the physical properties of protein fibrils through microscopy. Presented my results in peer reviewed articles and in person at national and international conferences (1st prize at Manchester Biomaterials Workshop 2018).
- Designed and developed predictive models for electric car charging usage at Evergreen Smart Power.
- Managed and delivered safety critical equipment upgrades to telecommunications equipment on oil platforms in the North Sea in accordance with national and international standards whilst at BP.
- Mentored and coached my peers after being voted captain of the University of Manchester Water Polo Men's Second team for two years running.

Qualifications

2015 - Present The University of Manchester – Biological Physics PhD

Awards: Best presentation – Manchester Biomaterials Characterisation Workshop 2018

Primary research project: Direct imaging of self-assembled peptide fibrils and networks.

My research project has focussed on recording and analysing images and videos of synthetic peptide fibrils using state-of-the-art fluorescence microscopy and data analysis techniques.

Led the research direction of my PhD and responsible for the creative ideas, development of relevant previous work and problem solving needed to draw novel scientific findings from the data I have collected.

Learnt and applied advanced image processing and statistical analysis techniques to enhance image contrast, track objects/features in my videos and identify sub-populations within my data.

Gained familiarity and understanding of a wide range of techniques to probe soft matter and biological systems on the nano- or macro-scale such as rheology, micro-rheology, neutron/x-ray scattering, atomic force microscopy, electron microscopy, dynamic light scattering, Fourier transform infrared spectroscopy, circular dichroism and ellipsometry.

Collaboration and communication of research:

Worked on and co-authored an article about a novel method for coating Graphene Oxide films onto glass coverslips to enhance fluorescence microscopy image contrast which has been filed as a **patent**.

Defended my work in writing to journal review panels resulting in the publication of my work in two articles as first author; one which featured on the **front cover** of *Biomacromolecules*, (DOI: 10.1021/acs.biomac.7b00465) and another which has just been accepted for publication in *Langmuir*.

Exposed to and helped with the projects of other PhD students studying Graphene Oxide, anti-microbial peptides, therapeutic biomaterials, pesticides, bacterial bio-films and drug-resistant bacteria. This collaboration has resulted in seven further articles I have co-authored; three published (DOI: 10.1021/acsami.6b04939, 10.1021/acsami.6b03770 and 10.1038/s41598-018-35297-4), one accepted, one submitted and two in preparation.

Frequent attendance at international and national research conferences in the fields of biological physics, soft matter physics, regenerative medicine, self-assembling systems and machine learning.

Sept 2017 Stanford University (online) – Machine Learning
Linear and logistic regression, neural networks, anomaly detection, recommendations.

2010 - 2014 The University of Manchester – Master of Physics (Hons) - 1st Class (79%)
Gained understanding of many fundamental physical laws/principles and applied them to diverse areas of physics and modern science.
Dissertation project used dual polarisation interferometry to test new methods of formulating immunoassays such as pregnancy tests to improve performance.

2006 - 2010 Frome Community College
A levels: Physics (A), Maths (A*), Further Maths (B); **AS levels:** ICT (B), German (C)
GCSEs: Maths (A*), English Lit/Lang (A/A), Science Double Award (A*/A), ICT (A*), History (A), Geography (A), Religious Studies (A), German (B).
BTEC Diploma: Media Studies (Distinction)

Work Experience

Sept 2018 Evergreen Smart Power – Junior Data Scientist

Worked with a technical development team to develop Python code to model and predict domestic car charging behaviour.

Selected and applied the appropriate statistical tools and presented the main results to non-technical company directors through an interactive 1 hour live demo in Python notebooks.

Documented the technical aspects of the project.

2015 - 2018 The University of Manchester – Laboratory Demonstrator

Responsible for up to 9 pairs of students simultaneously, spread over 4 different types of experiments.

Taught the students and conducted interview assessments, giving constructive feedback.

Developed my managerial skills; guiding students towards solutions and helping new demonstrators to find their feet.

2014 - 2015 BP North Sea – Operations Critical Telecommunications Engineer

Supported the operations and safety-critical telecommunications equipment installed on BP North Sea assets.

Developed and implemented an equipment dashboard to ensure that safety-critical maintenance procedures were being completed in compliance with BP, national and international standards.

Managed the installation of safety critical telecoms equipment offshore, which included arranging contractors and completing engineering documentation to ensure the job was delivered on time.

Travelled offshore to find the optimum solutions to problems which arose as the practical work was completed.

Organised a technical poster competition which featured over 100 entrants and 20 judges from within BP. Completed as part of my involvement with the BP Graduate scheme.

2013 BP Exploration - Operations Critical Telecommunications Intern

Assessed the use of collision avoidance radar onboard BP oil rigs across the world and compared it with the current state of modern radar technology, by learning about the new technology and applying industry and BP standards.

Applied my knowledge during radar factory acceptance tests and assisted with drafting BP standards on the use of collision avoidance radar on marine installations.

2011 Bath Royal United Hospital - IT Support Officer

Supported the delivery of a new patient and care management system at the Bath Royal United Hospital that was replacing paper based records.

Coached all levels of staff on a one-to-one basis to help them overcome any problems they had once the system went live.

2009 - 2010 Drivetech Ltd. – Go-kart Instructor and Marshal

Responsible for customer safety and enjoyment, instructed on the basics of go-karting and managed any disputes between customers.

2007 - 2009 J. Sainsbury's – Customer Service Assistant

Primarily based on the tills, serving customers at a large supermarket.

Professional Development

Regularly attend the Data Science Institute seminars of the University of Manchester and meetups such as the Hadoop and Big Data, MancML, and Python user groups.

Actively seek out opportunities to learn and have organised an external industrial mentor which led to my role at Evergreen SmartPower.

Additional Skills

IT:

Microsoft Office, Graphic Design (Corel Draw), LaTeX, Markdown, MacOS, Windows, Linux.

Programming:

Proficient: Python, MatLAB, Bash, Git/GitHub.

Familiar: Ruby, SQL, CSS, HTML.

Languages:

Native: English

Basic: German (AS level), Spanish and Mandarin (self-taught).

Full clean UK Driving Licence

Interests and Activities

Completed my first sprint triathlon in 2017 with Manchester Triathlon Club.

Completed the Manchester 10k for the last two years.

Enjoy playing 5-a-side football.

Follow the Premier League and keen Fantasy Football player.

Enjoy travel and recently went on a two week road trip around the south-west USA following a research conference I attended in Los Angeles.

Played Water Polo for four years during my Masters and was voted second team captain for two of those years.

References available upon request.