Henry Cox

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About me

I am excited about modern technology and I want to use my knowledge and skills to make a positive difference. I collaborate well and build trusting relationships with my peers. I thrive when presented with a challenge as I enjoy working outside of my comfort zone; problem solving; and, learning new skills. I am looking for a challenging technical role with room for growth, where I can implement my problem solving and analytical skills in state-of-the-art technology applications. You can find out more about me below, at my website or please contact me directly.

Experience

PhD Student – Biological Physics

The University of Manchester – Sept 2015 to present

Since starting my PhD I have worked with a synthetic peptide (I_3K) which forms long fibrils and networks. My work has focused on recording and analysing images and videos of fibrils using state-of-the-art microscopy and data analysis techniques – which I had no prior experience of before starting.

The first major piece of work I completed used a super-resolution microscopy technique called STORM to image the structure of networks formed by I_3K fibrils. I developed sample preparation techniques specifically for the experiment, recorded millions of images and processed them to identify information in the images. Next, I wrote data analysis scripts necessary to interpret the large data set. The culmination of this work was my first publication as first author which featured on the front cover of the peer-reviewed journal *Biomacromolecules*, (DOI: 10.1021/acs.biomac.7b00465).

Since then, I have focused on the dynamic motion of these filaments in their networks by recording and analysing videos of filaments in the network. Throughout this work I have learnt image processing and filtering techniques and developed scripts to perform Fourier decomposition, nonlinear curve fitting and apply mixture models to identify sub-populations in my data – which I used to show that the filaments in the network are under stress. This work is currently in submission.

I also collaborate with other researchers by sharing my knowledge and expertise to help solve a common problem. This has resulted in two further published articles as co-author (DOI: 10.1021/acsami.6b04939 and DOI: 10.1021/acsami.6b03770), and three more which are currently in the peer-review submission process.

Junior data scientist

Evergreen SmartPower – Sept 2018

I worked with a technical development team to develop Python code to model and predict domestic car charging. I decided on the appropriate statistical tools to use, applied them and presented the results to the wider team, of which none typically perform data science.

Undergraduate laboratory demonstrator

The University of Manchester – Sept 2015 to June 2018

Alongside my PhD I also held a teaching role in the 2nd year undergraduate teaching labs. I was responsible for up to 9 pairs of students simultaneously, spread over 4 different physics experiments. As well as teaching the students, I also conducted interview assessments and gave constructive feedback. I enjoyed building rapport with the students and developing my managerial skills; guiding students towards solutions and helping new demonstrators to find their feet.

Team work

A PhD can be an individual piece of work, however, I enjoy working in a team and have experience working with a wide range of people.

At BP I worked with technicians and oil rig managers offshore as well as onshore planners and specialist contractors to ensure the safe installation of new equipment offshore.

At Bath RUH, I worked with other support officers as we helped and taught all levels of hospital staff on the new IT system.

As a student, I was voted by the University Water Polo team to be the captain of the Men's Water Polo Second Team for two years running. Within this role, I mentored other university students and helped provide a support network within the team.

Development

I enjoy learning and love the feeling of making progress and bettering myself, through structured learning and personal projects.

I actively seek out opportunities to learn and have organized an external industrial mentor which led to my role at Evergreen.

Throughout my PhD I have met my supervisor weekly, where I am happy to receive constructive feedback in order to further my work. I frequently attend research conferences and, among others, presented at the 2018 RSC Biomaterials Group meeting.

Operations Critical Telecoms Engineer
BP North Sea – Sept 2014 to Sept 2015

I worked for a year in Aberdeen supporting the operations- and safety-critical telecommunications equipment installed on BP North Sea assets.

I developed and implemented an equipment dashboard which was used by the onshore telecoms compliance team to ensure that the safety-critical maintenance procedures were being completed in compliance with BP, national and international standards.

I also managed the installation of safety critical telecoms equipment offshore, which included arranging contractors and completing engineering documentation to ensure 'gate-criteria' were met, and the job was delivered on time. This involved travelling offshore and finding the optimum solution to problems which arose as the work was completed.

As part of my involvement with the BP graduates, I organised a technical poster competition which featured over 100 entrants and 20 judges from within BP.

Operations Critical Telecoms Intern
BP Exploration – June 2013 to Sept 2013

As an intern at BP I completed a project assessing the use of collision avoidance radar onboard BP oil rigs across the world and compared this with the current state of radar technology. I learnt industry and BP standards, and developed my understanding of the technology through discussion with my colleagues and specialist external vendors.

I attended the factory acceptance test for new radar and applied my acquired knowledge to ensure the test was representative of real-world use (height above sea level for a radar is critical to performance). I presented the results of my work to senior BP engineers in a global telecoms meeting and following my internship I was offered a permanent role as a graduate engineer to start in September 2014.

IT Support Officer
Bath RUH NHS Trust – June 2011 to Sept 2011

I worked at the Bath Royal United Hospital to support the IT department in delivering their new patient and care management system. Firstly, I learnt how to use the system and had to understand how the different types of users interacted with the system (e.g. checking in patients, ordering prescriptions). I then worked one-on-one with all levels of staff to teach them how to use it and transition over to the more technical computer system, when they were used to dealing with physical hard copies of patients records. The system was deployed successfully across the hospital through working collaboratively as a team and overall it was an amazing experience to see how technology can modernise the health sector and improve patient care.

Analysis

I have learned and used many different analytical tools and methods such as:
- Regression
- Fourier analysis
- Correlation functions
- Machine Learning
- Non-linear modelling
- Anomaly detection
- Statistical inference
- Optimisation algorithms
- Advanced image analysis and object detection
- Monte Carlo simulations

Programming

I began my PhD with no programming experience, since then I have self-taught in MatLab and produced hundreds of scripts featuring state-of-the-art analysis techniques.

I am familiar with git and developed a library of data analysis tools in Python at my time at Evergreen.

Community

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

I also enjoy 5-a-side football and completed my first sprint triathlon in 2017 with Manchester Triathlon Club.

Qualifications

Master of Physics – MPhys
The University of Manchester – Sept 2010 to Sept 2014

Obtained a first class degree with an average mark of 79%. I learnt to formulate and solve complex technical problems by identifying the correct means to do so and making appropriate simplifications to obtain a solution. I learnt and implemented mathematical methods to describe and model a wide range of physical problems. Gained experience in technical open-ended investigations and the critical analysis of the results, with particular focus on the significance of the results and how they compare with theoretical predictions.

Machine Learning
Stanford University – Sept 2017

A-Levels
Frome Community College – Sept 2009 to Sept 2010

Physics (A), Maths (A*), Further Maths (B)