Henry Cox

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About me

I am excited about technology and the future and I want to use my knowledge and skills to help improve peoples lives. I relish a challenge and enjoy working outside of my comfort zone and learning new skills. I like to meet new people and I endeavor to improve the work of myself and my colleagues, through good working relationships. 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 just give me a call/email.

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 analyzing 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 feedback. I enjoyed this role as I like getting to know and building rapport with new people. It has been a good opportunity for me to begin developing my experience as a leader, guiding students towards solutions and helping new demonstrators to find their feet in the role.

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 captain of the Water Polo 2nd Team for 2 yrs and organised team fixtures for 1 year.

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 criticism 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 managed, planned and oversaw 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. During the work, I discussed with the installation managers to ensure problems that arose did not compromise safety offshore.

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

I also organised a technical poster competition which featured over 100 entrants and 20 judges from within BP. At BP I attended training such as on continuous improvement practices as well as offshore safety training.

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 learned 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 used my new 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 the next year.

IT Support Officer

Bath RUH NHS Trust – June 2011 to Sept 2011

I worked in a major hospital in Bath and supported the IT department as a new patient and care management system was deployed across the hospital. First, I had to quickly become familiar with the system and learn how all the different types of user interacted with the system (e.g. checking in patients, ordering prescriptions). I was then stationed in sections of the hospital where I worked 1-1 with all levels of staff there to ensure they did not come into problems when using the system. I learned to manage my relationships with staff carefully as they were already in a very stressful environment and so changing the way they were doing the majority of their paperwork was not going to be easy for them. Overall, it was an amazing experience to see how these health professionals work and the system was deployed successfully.

Analysis

I have learned and used many different analytical tools and methods such as:

- Regression
- Fourier analysis
- Correlation functions
- Machine Learning
- Non-linear modelling
- PCA
- 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 2015

Obtained a first class degree with an average mark of 79%. Learned to formulate and solve complex technical problems by identifying the correct means to do so and making appropriate simplifications to obtain a solution. Learned and used 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)