Henry Cox

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About Me

I am driven, strive to do my best and enjoy tackling challenging technical problems. I consistently performed at the top of my class during university and I am comfortable handling complex mathematical problems. I have proven written and verbal communication skills and value productive relationships with my peers. These have been developed through a wide range of experiences working with many different people in different situations from hospitals and supermarkets to oil rigs and offices.

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 whilst working as an engineer 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
My research has focussed on recording and analysing images and videos of synthetic peptide fibrils using state-of-the-art microscopy and data analysis techniques. This has led me to learn and develop many different skills including coding in Python and MatLAB:

- Collected, handled and analysed large amounts of data – my microscopy experiments can generate over 100 GB of data daily, which I clean, filter and analyse to extract and draw out relevant conclusions.

- Applied Fourier Decomposition, non-linear curve fitting and correlation analysis in order to reduce experimental noise and understand my data.

- Learnt and applied image processing and filtering techniques to enhance image contrast and algorithms to track objects/features in my videos.

- Used mixture models to identify sub-populations within my data.

- Monte Carlo simulations of my physical system and experiment to understand the underlying causes of my results.

I have published 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 published in *Langmuir* (DOI: 10.1021/acs.langmuir.8b03334).

I often collaborate with other researchers by sharing my knowledge and expertise to help solve a common problem. This 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.

Sept 2017   Stanford University (online) – Machine Learning
Regression, neural networks, ML system design, anomaly detection, recommenders.

2010 - 2014   The University of Manchester – Master of Physics (Hons) - 1st Class (79%)
Learnt to formulate and solve complex technical problems and critically analyse the results of investigations with focus on the statistical significance of them.

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 Jupyter notebooks.

Version control using GitHub, documentation in Markdown.

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 to ensure the results were representative of real-world use (height above sea level for a radar is critical to performance).

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 where I would like to participate more actively in future.

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

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.

Additional Skills

IT:
Microsoft Office, Graphic Design (Corel Draw), LaTex, Markdown, Dropbox, 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 UK Driving License

References available upon request