HARRY COPPOCK

PhD candidate, Teaching PGCert student, MSc, MEng

Masters of Engineering, Masters of Computer Science graduate and PhD candidate

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EDUCATION

Imperial College London, Artificial Intelligence (MSc) Sept 2019 - Aug 2020

- **Award: Distinction** (82%) with **Distinguished** Individual Project
- **2019 course content:** Reinforcement learning, Introduction to Machine Learning, Mathematics for Machine learning (e.g. PCA, SVM, regression), Symbolic AI and Python programming.
- **2020 course content:** Natural Language Processing, Advanced Deep Learning, Machine Learning for Imaging, AI Ethics and Privacy, 3 month Software engineering group project and a 6 month Individual Research project.

The University of Manchester, Materials Science and Engineering (MEng) 2015-2019:

- **1st** (84.1%) (**top of the year** every year through 4 year course)
- Specialised in **nanotechnology** (energy storage devices)**, solid state physics** (solar cells and computer transistors), **composites** and **nanocomposites**

The University of Stanford in partnership with the deeplearning.ai, Artificial Intelligence: 2018-2019

- Neural Networks and Deep Learning (grade: 97.2%)
- Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization (97.6%)
- Structuring Machine Learning Projects(87.5%)

Queen Elizabeth's Hospital School, Bristol 2007-2014:

- **A2:** A*A*A **AS:** 4As **GCSE**: 8A*s 1A 1B

ACHIEVEMENTS

- The Imperial College London's **Distinguished Individual Project Prize** for work on Vector Quantised Variational Autoencoders for representation learning. 2020
- The University of Manchester's **Outstanding Academic Achievement** award - made to 0.5% of the graduating cohort for students who have demonstrated exceptional achievement in their undergraduate academic career.2019
- The School of Materials' **"Faculties Prize for Highest Performance in Fourth Year"** 2019
- **"The Tin Plate and Rolls Royce Workers Prize"** for top performance in third year 2018
- **"The Robert Warner Scholarship":** A national award by the Worshipful Company of Founders of the City of London, decided by competitive application, screened for performance and chosen through an interview process 2017
- The School of Materials' **"Faculties Prize for Highest Performance in Second Year"** 2017
- The School of Materials' **"Faculties Prize for Highest Performance in First Year"** 2016
- **"The British Steel Prize"**: for highest marks in Metallurgy 2016
- School of Materials' Scholarship for **"Outstanding Home and Overseas Application"** 2015
- **The Captain's Prize:** for my service as Head Boy at QEH school 2014
- Commendation for **high performance at A level** 2014
- Commendation for **high performance at GCSE**

ROLES OF RESPONSIBILITY:

- **The PhD Equality and Diversity Representative** for the computing department at Imperial. In this role I act as an Ally, working to ensure that all voices are heard in the department. 2020-current
- **Teaching Scholar** at Imperial College London. Course Support Lead for the following Master level modules: Deep Learning, Ethics Privacy and Law in AI, Python Programming and Introduction to Machine Learning. In this role I assist lecturers in writing and marking coursework and tutorials along with student project supervision.2020-current
- **Teacher's Assistant** at UoM for a 3rd year module: Modelling and Data Tools Analysis in Python 2018-2019
- **Elected Year Representative** (2nd, 3rd and 4th year): acted as link between students and supervisors 2016–2019
- **Nominated for "Student Rep of the Year"** at The University of Manchester 2017
- **PASS Leader:** Role awarded by tutors: I took a weekly class of 25 year-below students to help them with problems and challenges in their studies. The aim was to stimulate academic discussion and debate 2017–2019
- **Elected Head Boy at QEH School:** This role developed my presentation and administrative skills and proved my capacity for hard work and ability to lead. 2013-2014
- **Pack Leader of the First XV at QEH:** 2013-2014
- **School Council Year Representative:** 7 years representing the interests of pupils 2007-2014
- **Peer Supporter:** Mentored a group of year 7 boys. 2013-2014

COMPUTER SCIENCE SKILLS:

- **Language:** Python **(**Level: Advanced)
- **Experience** in the areas of**:**
  - **Machine Learning Techniques**: Deep Neural Networks (NNs), Recurrent NNs, Generative Adversarial Networks, Variational Autoencoders, Transformers, Convolutional NNs, Autoregressive models, Random Forests, Gaussian Mixture Models, Graph Neural Networks, and Evolutionary Methods.
  - **Machine Learning Libraries**: PyTorch, TensorFlow, Keras, Scikit-learn
  - **General Libraries**: NumPy, Pandas, Json, matplotlib and many more
  - **Computer Science techniques for Science:** Materials Simulation, Data Analysis and Visualisation
- **Projects:**
  - [**First author paper**] End-2-End COVID-19 Detection from Breath & Cough Audio. Developed a novel ML model for COVID-19 classification from crowd sourced breath and cough audio clips recorded on every day devices. (paper in review at BMJ innovations)
  - Developed novel regularisation technique for state of the art **Vector Quantised Variational Autoencoder** which yielded superior representations. (Master's Thesis, Imperial College London) awarded The Distinguished Project prize.
  - 3 month group project using **Deep Reinforcement Learning** in medical imaging for landmark detection and automatic view planning in 3D MRI scanning (team of 6)
  - As Materials Science Project Manager, simulated the electrical conductivity of graphene aerogels
  - As Materials Science Project Manager, created a Monte Carlo Simulation in Python to assess the impact of risks and tasks on productivity, with the aim of maximising project efficiency and avoiding failure

MATERIALS SCIENCE AND ENGINEERING EXPERIENCE:

- **Recyclable and repairable** carbon fibre, graphene reinforced vitrimer composites**.** Individual research project developed a novel composite which is uniquely fully recyclable and repairable. 2018- Feb 2019
- **Graphene aerogels**: Project Manager for a team of 5, investigating the effects of processing methods on the characteristics and multifunctional properties of graphene aerogels. First team to successfully produce graphene aerogels in Manchester, with team-mates and I going on to secure funding to set up a company, Nanoplexus, to commercialise it. 2018

WORK EXPERIENCE AND VOLUNTEERING

- **Shepherd:** Spent my summer months herding and milking sheep, making cheese, topping the fields for hay, sheep care (vaccinating and worming), manual labour and assisting with the general up-keep of the farm.
- **Client Support Agent at Hargreaves Lansdown**: During university holidays, I assisted clients, topped up their accounts, placed deals in shares, funds and ETFs and trained several new employees. Sept 2014 - April 2015
- **Volunteered weekly at Southmead Hospital, Bristol:** Assisted cardiac and respiratory patients and following training performed more complex tasks including ECGs and feeding patients Sept 2012 - July 2014
- **NHS Organ Donation Campaigner:** Organised a series of talks (by myself and a Transplant Surgeon) at sixth-forms across Bristol, enabling students to sign up to the NHS Organ Donor Register. Sept 2012 – July 2014
- **Independent travel to Arizona at age 15:** Volunteered at a nature reserve. We were on call to remove venomous snakes from private property and return them safely to the wild. I also assisted undergraduates in the collection of scientific data, including the collection of Gila monster venom for medical applications. July 2012