HARRY COPPOCK

No. 10 Downing Street AI Fellow | Research Scientist | Visiting Lecturer
PhD, HEA Fellow, PGCert, MSc and MEng graduate

harrygcoppock@gmail.com https://harrycoppock.com Google Scholar
www.linkedin.com/in/harry-coppock

EMPLOYMENT

No.10 AI Fellow (Deputy Director level)

No. 10 Downing Street Nov 2023 - present

AI Fellow for 10 Downing Street. In this role I advise and lead AI projects which address Prime Minister priority issues. My working day is made up of meetings with ministers and key civil servant stake holders, directing technical and delivery teams and hands on research and engineering. Currently I am leading a project exploring the possibilities of agentic AI to address issues related to polypharmacy in the NHS.

Research Scientist

The UK AI Safety Institute (AISI) Nov 2023 - present

Research, develop and implement new evaluation methods for emerging foundation model capabilities with a focus on robustness, mapping the uneven capability landscape and agentic systems. Experience evaluating numerous pre-deployment foundation models. Currently AISI is not publishing research however, we have recently released our AI evaluation tool, inspect, of which I helped develop.

Visiting Lecturer - Deep Learning

Imperial College London Dec 2023 - present

Co-deliver the Deep Learning Course in the Department of Computing. Topics cover generative models, attention mechanisms, foundation models, prompt engineering, efficient finetuning (e.g. QLoRA) and foundation model evaluation. I also lead the coursework. Lecture 1Lecture 2

Founder

Maat 2023 - 2023

I founded an AI biomedical consultancy company, Maat. Having witnessed many companies falsely claiming to utilise advanced AI in the biomedical space, Maat provided AI due diligence services. We developed state-of-the-art evaluation suites and best practices for measuring the quality of AI technology and opportunities. Within six months, we had hired two employees and secured multiple high-profile clients, including Pfizer, Candesic, and Tachyon Ventures. Maat was closed down in November 2023 with a net positive cash flow to avoid a conflict of interest with my new role in government.

Research Scientist

The Alan Turing Institute 2021 - 2023

40% secondment, evaluating the potential of bioacoustic analysis for a digital mass test for COVID-19. Conducted a nationwide study involving over 70,000 participants yielding conclusive results, First author Nature Machine Intelligence paper. Worked with a diverse, multidisciplinary team of policy makers, civil servants, researchers and industry leads.

AWARDS AND PRIZES

- Imperial College London **Faculty of Engineering's Graduate Teaching Assistant (GTA) of the Year Award - Runner-up** as chosen by an interdisciplinary review panel evaluating each Department's nominee.
- **Imperial College London's annual Award for Well-Being** for my contributions to the improvement and promotion of well-being in the Department of Computing. 2023
- Nominated and shortlisted for **The Old Centralian's Trust: John and Francis Jones Prize for postgraduate students in engineering**. The Prize is awarded to the postgraduate student who has made the best all-round contribution to College *Award waiting final decision from shortlist* 2023
- Nominated for **Imperial College London's Award for Outstanding Achievement**. For my work with the UK Government on combating COVID-19 and for my positive impact on the Department's working environment. 2022 and 2023
- **AIHACK 2022 challenge winners**. Our team of 4's solution of Generative Hamiltonian Neural Networks for Microfluid Dynamics Modelling came top. 2022
- **Best Student Paper** award at IEEE CBMS 2021
- 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 - awarded to 0.5% of the graduating cohort for students who have demonstrated exceptional achievement in their academic career 2019
- The Engineering "Faculties Prize(s) for **Highest Performance** in {Year 1, Year 2, Year 3 and Year 4}" 201{6,7,8,9}
- "The Tin Plate and Rolls Royce Prize" for top performance in Third year 2018
- "The Robert Warner Scholarship" a national scholarship for academic excellence in Materials Science and Engineering 2017
- "The British Steel Prize" for top performance in metallurgy 2016
- The School of Materials Prize for **Outstanding Home and Overseas Application** 2015
- The Captain's Prize for my service as Head Boy at QEH school 2014
- Commendation for top performance at A level and GCSE 2014, 2012

EDUCATION

Artificial Intelligence (PhD)

Imperial College London

Oct 2020 – Nov 2023 London, UK

My work focused on characterising and controlling for bias in high-dimensional medical deep learning settings and self-supervised learning objective functions for auditory inference.
Supervisor: Prof. Björn Schuller.
Examiners: Prof. Guy J. Brown, Prof Lucia Specia

Postgraduate Certificate in Higher Education (PGCert)

Imperial College London

Oct 2021 – June 2022 London, UK

Course content: Reflection of Changing Practice, Digital Learning, Educational Supervision, Higher Education in Context

Artificial Intelligence (MSc)

Imperial College London

Sept 2019 – Sept 2020 London, UK

- **Distinction** (82%) with **Distinguished** Individual Project
- Course content: Reinforcement learning, Introduction to Machine Learning, Mathematics for Machine learning, Symbolic AI, Python programming, Natural Language Processing, Deep Learning, Machine Learning for Imaging, AI Ethics and Privacy, Software Engineering group project and an Individual Research project.

Materials Science and Engineering (MEng)

The University of Manchester

2015 – 2019 Manchester, UK

- **1st** (84%) finishing **top of the year** every year throughout 4 year course
- Specialised in nanotechnology (energy storage devices), solid state physics (solar cells and computer transistors) and composite + nanocomposite mechanics.

Artificial Intelligence

The University of Stanford in partnership with deeplearning.ai

2018 – 2019 Online

Neural Networks and Deep Learning (grade: 97.2%), 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%)

Secondary School

Queen Elizabeth's Hospital School, Bristol

2007 – 2014 Bristol, UK

A2: A*A*A, **GCSE**: 8A*s 1A 1B

PROFESSIONAL ACTIVITIES

Explainable AI, Interactivity, and Natural Language Technical Workshop (explAIn)-Confounding in Audio and Machine Learning

2023 Speaker

The Safe and Trustworthy AI Workshop (ICLP) - Confounding in AI

2023 Speaker

AIUK - COVID-19 Detection from Respiratory Audio: A Case Study in Confounders

2023 Speaker and Session Lead

The UK Heath Security Agency (UKHSA) Annual Conference

2022 Invited to present work

The ACM Multimedia 2022 Computational Paralinguistics Challenge: Vocalisations, Stuttering, Activity, and Mosquitoes

2022 Challenge Organiser
100+

Imperial Computing Conference (ICC)

2021,22,23 Committee member

SUPERVISION

- Chia-Hsin Lin, 'Characterising and Controlling for unmeasured confounders in AI in the audio domain', start April 2023
- Zhaoyu Wang, 'Self-Supervised Learning for Auditory Representation Learning', start April 2023
- Jonah Anton, 'Audio Barlow Twins: Self-Supervised Audio Representation learning', 2022. ★ Corporate Individual Project Prize.
- Chenchen Liu, 'Are COVID-19 Detection from Audio Models simply Symptoms classifiers?', 2022
- Matthew Barker, 'FIBS - a toolkit for automated bias detection', 2022
- Weitong Zhang, 'COVID-19 Pre-diagnosis by Deep Learning based Speech Analysis', 2021
- Roopa Anthony, 'Mosquito species classification from wingbeat acoustics', 2021

COMMUNITY ENGAGEMENT AND LEADERSHIP EXPERIENCES

The PhD Equality, Diversity and Culture Representative

2021-2023 | Representative Role

In this role, I represented all PhD students in the Department of Computing acting as an Ally, working to ensure that all voices were heard, and campaigned for a more diverse future for the department.

The 1^{st} and 2^{nd} African Caribbean Hackathon (AC-HACK)

2022-2023 | Lead Organiser | 100

Through my role as the PhD EDI representative and in collaboration with the African Caribbean Society, with the goal of encouraging more Afro-Caribbean students to apply to Imperial to pursue both undergraduate and postgraduate degrees, we set up and ran the first AC-HACK. Here Afro-Caribbean students competed in a series of computer science challenges. Speakers: Shakir Mohamed and Maggie Aderin-Pocock. I have now stepped back as lead organiser and assist through an advisory role. Please see the news story.

Weekly Departmental Socials

2020-2023 | Lead Organiser | 150+

To improve the social life in the department of computing and to increase the number of people visiting campus following the pandemic, I set up and run the 'The Social Committee'. Through this committee, we run weekly socials known as 'Pizza Fridays' where PhD students, staff (support and academic) are invited for drinks and pizza every Friday. This is a hugely successful initiative often cited in departmental evaluation reports.

The 1^{st}, 2^{nd}, 3^{rd}, 4^{th} Imperial Computing Conference (ICC)

2021-2023 | Committee Member | 200+

Involved in organising the bi-annual PhD winter and summer conferences.

Shepherd

2014-2020

Spent my summer months herding and milking sheep, making cheese, topping the fields for hay, helping with sheep care such as vaccination and carrying out manual labour such as tilling fields and assisting with the general up keep of the family farm.

Year Representative at The University of Manchester

2016-2019 | Elected Representative

Elected for my 2nd, 3rd, and 4th years at Manchester. Nominated for "Student Representative of the Year" in 2019, representing student voices and concerns.

Elected Head Boy at QEH School

2013-2014 | Student Representative

Represented all the students, gave biweekly addresses to the school and community, and helped organise various school events.

Volunteer at Southmead Hospital, Bristol

2012-2014 | Volunteer Role

Assisted cardiac and respiratory patients and, once trained, performed more complex tasks including ECGs and feeding patients.

NHS Organ Donation Campaigner

2012-2014 | 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.

Pack Leader of the 1^{st} XV

2012-2014 | Team Leader

Led, motivated, and was part of a winning rugby team, fostering teamwork and discipline.

PUBLICATIONS TOTAL CITATIONS: 354, H-INDEX: 7, I10-INDEX: 7

Audio-based AI classifiers show no evidence of improved COVID-19 screening over simple symptoms checkers

Harry Coppock, George Nicholson, Ivan Kiskin, [...], Peter Diggle, Sylvia Richardson, Josef Packham, Björn W. Schuller, Davide Pigoli, Steven Gilmour, Stephen Roberts and Chris Holmes

Nature Machine Intelligence 2023

Synthia's Melody: A Benchmark Framework for Unsupervised Domain Adaptation in Audio

Cynthia Lin, Charles Jones, Björn W. Schuller, **Harry Coppock**

NeurIPS 2023 Workshop + ICASSP 2024 2023

A large-scale and PCR-referenced vocal audio dataset for COVID-19

Jobie Budd, Kieran Baker, Emma Karoune, **Harry Coppock** et al.

Nature Scientific Data 2022

Audio Barlow Twins: Self-Supervised Audio Representation Learning

Jonah Anton, **Harry Coppock**, Pancham Shukla, Björn W Schuller

ICASSP 2023 2023

Statistical Design and Analysis for Robust Machine Learning: A Case Study from COVID-19

Davide Pigoli, Kieran Baker, Jobie Budd, Lorraine Butler, **Harry Coppock**, et al.

Royal Statistical Society, Series A 2022

The ACM Multimedia 2022 Computational Paralinguistics Challenge: Vocalisations, Stuttering, Activity, Mosquitoes

Harry Coppock, Ivan Kiskin, Marianne Sinka, Stephen Roberts

30th ACM International Conference on Multimedia 2022

Climate Change Computer Audition: A Call to Action and Overview on Audio Intelligence to Help Save the Planet

Björn W. Schuller, Alican Akman, Yi Chang, **Harry Coppock**, et al.

arXiv 2022

COVID-19 detection from audio: seven grains of salt

Harry Coppock, Lyn Jones, Ivan Kiskin, Björn W Schuller

The Lancet Digital Health 2021

[Book] Omics approaches and technologies in COVID-19 [Chapter 16] Artificial intelligence in COVID-19

Mina A.Nessiem, **HarryCoppock**, Mostafa M.Mohamed, Björn W.Schuller

Elsevier, Academic Press 2021

Evaluating the COVID-19 Identification ResNet (CIdeR) on the INTERSPEECH COVID-19 from Audio Challenges

Alican Akman*, **Harry Coppock***, Alexander Gaskell, Panagiotis Tzirakis, Lyn Jones, Björn W. Schuller

Frontiers in Digital Health 2021

A Summary of the ComParE COVID-19 Challenges

Alican Akman*, **Harry Coppock*** et al.

Frontiers in Digital Health 2021

End-2-End convolutional neural network enables COVID-19 Detection from Breath & Cough Audio: a pilot study

Harry Coppock, Alexander Gaskell, Panagiotis Tzirakis, Alice Baird, Lyn Jones, Björn W Schuller

BMJ innovations 2021

Detecting COVID-19 from Breathing and Coughing Sounds using Deep Neural Networks

Mina Nessiem, Mostafa M. Mohamed, Alexander Gaskell, **Harry Coppock**, Björn W Schuller

IEEE CBMS | 2021 | Best Student Paper

Vector Quantised-Variational Autoencoders (VQ-VAEs) for Representation learning

Harry Coppock, Georgios Rizos, Björn W Schuller

Imperial Master's Thesis | 2020 | Distinguished Project

IN THE NEWS

'Clinical-grade' AI stress detector doesn't work, study suggests

NewScientist | 2023

AI is no better at detecting covid-19 than simple symptom survey

NewScientist | 2023

Discussion with Journalist for up and coming work on 'Vocal Biomarkers'

Wall Street Journal | 2023 | In Press

Interview with journalist on confounders in COVID-19 detection from audio

TechCrunch | 2023 | In Press

Do I sound sick?

The Lancet Digital Health | 2021

Audio Recordings that Reliably Detect COVID-19 not Quite Ready for Use

The Well News | 2021