
RESEARCH INTERESTS

AI for social good, machine learning, human-centred computing, human-computer interaction, AI explainability, open source intelligence (OSINT), responsible research and innovation (RRI), reinforcement learning, applied AI

EDUCATION

University of Oxford	PhD in Computer Science, <ul style="list-style-type: none"> “Social Media Intelligence in Disaster Response” Awarded departmental scholarship 	Apr 2023
University of Melbourne	Master of Information Systems <ul style="list-style-type: none"> Dean’s Honour List (first in class) 	Dec 2014
University of Melbourne	Bachelor of Commerce	Dec 2013
University of Melbourne	Bachelor of Information Systems	Dec 2013
Alan Turing Institute	Data Study Group	Sep 2019
Microsoft Research	AI Summer School	Jul 2018
NVIDIA Deep Learning Institute	Deep Learning for Multi-GPUs	Apr 2021
	Accelerated Data Science with RAPIDS	Apr 2021
	Applications of AI for Anomaly Detection	Apr 2021

INDUSTRY

Bellingcat – Software Engineer	Jan 2022 – Current
<ul style="list-style-type: none"> Developed network analysis tools for open-source intelligence software. Led team integrating findings from my Ph.D. research with software requirements. 	
Oxlogica – Senior Software Engineer & Founder	Jan 2017 – Dec 2022
<ul style="list-style-type: none"> Facilitated eight partnerships between academics and industry practitioners. Managed and trained emerging teams in state-of-the-art AI practices. 	
Twitter – Quantitative Researcher	Jan 2020 – Dec 2020
<ul style="list-style-type: none"> Developed graph based discovery algorithms for user recommendation systems. Improved rate of novel relationship formation by 17% in pilot study. 	
Harris Manchester College, Oxford – Junior Dean	Jan 2017 – Oct 2021
<ul style="list-style-type: none"> Mentored 375 undergraduate and master’s students. Managed residential college and responded to crises and medical emergencies. 	

ACADEMIA

University of Oxford – Assistant Lecturer and Teaching Assistant	Oct 2015 – Current
<ul style="list-style-type: none"> Developed and administered syllabi for the master’s courses: <i>Requirements Engineering, Agile Methodologies, Enterprise Architecture, Object-Oriented Programming, Agile Engineering Practices, Software Process Quality and Improvement</i> Introduced an ethics course into the undergraduate syllabus. 	
Jesus College, Oxford – Lecturer	Jan 2023 – Mar 2023
<ul style="list-style-type: none"> Taught undergraduate courses: <i>Concurrent Programming</i> and <i>Digital Systems</i>. 	
Associate Fellow of the Higher Education Academy (AFHEA)	Mar 2022
New College School – ICT Teacher	Sep 2019 – Mar 2020
<ul style="list-style-type: none"> Designed syllabi and taught programming with Python and Scratch. Demonstrated and taught computer hardware construction and 3D printing. 	

PROJECTS

Ph.D. Thesis – Social Media Intelligence in Disaster Response

- Conducted ethnographic studies of 13 disaster response organisations for requirements engineering.
- Developed algorithms to extract situational intelligence from social media using network data.
- Validated findings through deployment of prototype in live disaster response scenarios.

Russian Invasion of Ukraine – War Crime Identification

- Deployed classification models which identified 1.2 terabytes of eyewitness data during invasion.
- Documented evidence of war crimes which contributed to the United Nations investigation.

Stock Market Fluctuation Mitigation using Reddit as Alternative Data

- Identified grassroots investor mobilisation with time series analysis of Reddit discourse.
- Early detection reduced market risk of short positions: 16% loss reduction in simulated portfolios.

Emerging Topics in Artificial Intelligence in Healthcare from Twitter posts

- Identified ethical concerns pertaining to AI during the COVID-19 pandemic.
- Time series analysis using sentiment classification of unstructured 743k Twitter data.

Graph-Based Analysis of Wikipedia Editors of Terror Attack Articles

- Bipartite graph analysis of co-authorship networks for user characterisation.
- Developed classification model for early detection of article vandalism risk.

Reinforcement Learning with Proximal Policy Optimisation

- Trained a PPO agent to play the board game ‘Shobu’ (action space of 65,536).
- Outperformed heuristic tree search model in ability and time complexity.
- Agent deployed as HTML5 web-app, played by over 5,000 unique users.

Video Game Development

- [Boshu](#); abstract game with tree search and RL-trained AI, played by over 5,000 unique users.
- [‘Welcome To’](#); card drawing app using bootstrap sampling and motion tweening.
- [Antsolation](#); asynchronous multiplayer ant colony game modelling distributed intelligence.
- ‘Civilisation’-style hexagonal turn based strategy [game framework](#) used by over 100 developers.
- Grand strategy [map interface](#) with computational border detection.

Hackathon Projects

- [Slouch No More](#) (posture correction app), awarded Judges Prize; Oxford Hack (2017)
- MindBridge: Fake News Detection; Oxford Foundry A.I. Impact Weekend (2018)
- Recruitment AI Explainability App; Oxford Foundry A.I. Impact Weekend (2019)
- [Antsolation](#) (asynchronous multiplayer ant colony game); Oxford Hack (2020)

HONOURS AND AWARDS

Ph.D. Research Scholarship, University of Oxford	Current
Microsoft Research AI Summer School Grant	2018
Judges Prize, Oxford Hackathon	2017
Dean’s Honour List, The University of Melbourne	2014
Grand Prize, Deutsche Bank Carbon Credit Challenge	2009

PUBLICATIONS AND TALKS

Green Radio: Dynamic Power Saving Configuration for Mobile Networks	Alan Turing Institute, 2020
Harnessing Interdisciplinarity to Promote the Ethical Design of AI Systems	ECAIR, 2019
#HurricaneHarvey: Community Sensemaking During Hurricane Events	Pending
Detecting On-The-Ground Twitter Users in Crises	Pending
Teaching Agile with Board Games: Empirical Study of getKanban	Under Review
Network Analysis for Social Media Data	University of Oxford, 2022
Understanding Twitter Data for Sociologists	University of Oxford, 2020
Network Analysis for Information Discovery	PSC-E Conference, Bled, 2018
Social Media in Disaster Response	TU Graz, 2018