

UKRI Metascience AI early career researchers funded fellowships

AI and knowledge production

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We still know very little about how the adoption of AI is actually shaping the behaviours, outputs, and career paths of researchers. This project aims to fill that gap by investigating how AI has transformed academic knowledge production. This research focuses on the biomedical sciences, and will explore how AI tools are being adopted by scientists at different stages of their careers, as well as the impact of AI adoption on scientists' productivity, creativity, research diversity and career trajectories.

Caught in the Current: Rethinking Research Anxiety and Creativity in the Age of AI

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While AI offers significant promise to enhance research innovation, existing studies reveal the prevalence of anxiety about AI tools among students and researchers, as well as concerns about the potential negative impact of researchers' overreliance on AI tools and its diminishment of originality. Strategies have been proposed to reduce research anxiety in students, but little research focuses on early-career researchers (ECRs) nor individual differences. This study will plug that gap.

Exploring AI's role in enhancing research accessibility and equity for researchers with Specific Learning Disabilities

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This study notes the potential for AI as a 'leveller' by making research practice and dissemination of outputs accessible, manageable and equitable. For researchers with Specific Learning Difficulties (SpLD) and learning differences, LLMs could remove barriers in many of the stages in research and create a more inclusive research environment for researchers with disabilities. The study measures how AI is used to make efficient, accurate and manageable gains for researchers which will contribute to policymaking for a more inclusive research environment.

sustAInable: AI-Driven Research for Sustainable Agri-Food Futures

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This proposal investigates how artificial intelligence (AI) is reshaping scientific research within sustainable agri-food systems, focusing on workforce transformation and AI adoption across sectors. AI holds transformative potential for science-enhancing prediction, discovery, and optimisation but the agri-food sector remains behind more digitally mature fields (e.g., finance) in integrating these capabilities into research and innovation ecosystems.

AI in Criminology Research: Mapping Methodological Shifts and Epistemic Risks

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AI adoption may be altering the discipline of criminology by skewing research toward certain types of crime with rich AI-generated data. This is at the expense of time-consuming, human-based qualitative approaches such as ethnographies and case studies, which are now published infrequently in journals. AI could also be skewing ways junior researchers choose methodologies in research. Are there fields not being studied? Is there pressure to adopt certain methodologies? Are well-resourced institutions at an advantage because they can afford AI? The study aims to map the influence of AI adoption in criminology and provide evidence and guidelines for the responsible use of AI.

Developing disciplinarily situated recommendations for responsible GenAI use in the Social Sciences

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The social sciences are home to a plurality of disciplines and their disciplinary and sub-disciplinary perspectives shape their use of GenAI. This means that any resolution surrounding GenAI use cannot take the form of a simple one-size fits all ruling. It must, instead, consider disciplinary and sub-disciplinary variation. Yet, notably, existing GenAI funding guidance omits any mention of discipline. Thus, there is an evident need to enhance such policies by offering nuanced disciplinary insight on responsible GenAI use. This study will unpack GenAI use in two disciplines that account for the largest allocation of UK Social Science research funding: (i.) Business & Economics, and (ii.) Education.

How Humans Shape AI for Life Sciences Research

Charlotte Collins

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The past decade has seen an exponential increase in AI engagement across scientific disciplines, notably in the life sciences, where it is used for complex, data-intensive tasks including the identification of disease genes, the prediction of protein folding and protein-drug interactions and the design of molecular tools. This project aims to explore the roles of humans in AI for life sciences research, defining how AI model training and development is guided by researchers, how humans interpret and validate knowledge generated by computers, and how computer scientists interact with other scientific researchers to transfer knowledge between different disciplines.

Developing an evidence-based framework for reducing epistemic trespassing when using generative artificial intelligence: a mixed methods study

Danny Maupin

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The use of GenAI within healthcare research raises questions about research integrity. GenAI can improve access to specialised knowledge, but researchers engaging in methodologies beyond their expertise or domain should consider potential ethical and integrity issues in the research through incorrect or misinterpreted data. This study will inform a framework for using GenAI beyond a core domain, especially in data analytics, and inform policy on the education and training of healthcare researchers.

Generative AI and the Future of Research Software Engineering

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GenAI is reshaping the production of research software. While the positives are increased inclusivity and improved productivity, the use of GenAI poses issues such as academic authorship, loss of professional skills and credibility of AI generated output. The study will identify the role of research software engineering (RSE) in knowledge creation, create a framework for assessing the quality of AI-generated research code and develop guidance on GenAI in research software engineering.

Rethinking how AI reshapes scientific norms, collaboration dynamics and disruptive science in wicked problem research

Batool Almarzouq
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The complex, often contradictory and ever-evolving nature of 'wicked' problems necessitate transdisciplinary and collaborative research, systems thinking and multi-actor engagement. AI trained on historical data may not support the disruptive thinking required in tackling these 'wicked' problems, and its use may disadvantage or diminish the chances of risky transdisciplinary research from being funded. This project examines the impact of AI on scientific norms, collaboration dynamics and disruptive science in 'wicked' problems and provide recommendations to funders looking to incentivise disruptive agility in 'wicked' problem research.

Is Generative AI Reinventing the Language of Science?

Youyou Wu
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The use of AI to write scientific texts may be impacting 'the language of science' as funders, journals and conference organisers increasingly turn to AI and human reviewers to make decisions on funding and publication. While pragmatic, AI-assisted writing, trained on previous human-generated texts, raises ethical concerns and policy considerations as disclosure remains low. The project will examine the evolution of the 'language of science' in the age of GenAI and the ways this might affect AI-assisted peer review. The findings will identify strategies for greater transparency and be shared in a policy brief with funders, and in knowledge exchange engagements with journal editors.

Removing Legal Hurdles in Copyright and Data Privacy for AI-driven Research: Unleashing the Potential of AI for Science

Zihao Li
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The existing UK legal frameworks, specifically the text and data mining (TDM) exception under the Copyright, Designs and Patents Act 1988 (CDPA) and UK Data Protection Act, introduce uncertainties and restrictions on research using AI models and systems. While they support and permit certain AI activities in research, this is restricted to non-commercial research and do not extend to AI models and systems. The legal frameworks need added clarity to encourage collaborative and interdisciplinary research. This project will ascertain the most vital legal ambiguities and their impact on research. It will recommend policy and governance solutions that would potentially transform current copyright and data protection in the lifecycle of AI in research.

Understanding in the Age of AI: Preserving Scientific Achievement in AI-Assisted Research Production

Emma Gordon
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This project examines the ethical dimensions of researchers publishing AI-mediated outputs when the understanding behind the methodology, phenomena or outputs may be incomplete. This project will develop a framework for evaluating the quality of researcher understanding in AI-assisted research and establish guidelines for responsible publication practices.

Transforming Evidence Synthesis: AI and the (R)evolution of the Evidence Ecosystem

Justyna Bandola-Gill

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The use of AI in evidence synthesis, the process of systematically gathering, evaluating and integrating data from multiple sources, will have broad implications for scientific inquiry and the research ecosystem - from methodology to academic culture. However, the impact of AI-driven evidence synthesis on the science ecosystem is yet to be explored. Filling this gap, this project will improve our understanding of what good AI-driven evidence is by using a new theoretical language to capture the ethics and accuracy of research outputs.

Synthetic Metascience: Tracing Artificial Intelligence-generated epistemic shifts in scientific research practice and cultures

SJ Bennett

Durham University

Synthetic data - data generated using Artificial Intelligence (AI), designed to mimic real-world data characteristics or patterns without direct reference to real persons, objects, or events - has become increasingly prominent in discussions of science and technology innovation. A recent notable example is the UK government's AI Action plan which specifically highlights the national importance of developing AI-generated synthetic datasets for scientific purposes. The increasing prominence of synthetic data in scientific research, where synthetic data is often framed as a solution to concerns around data privacy and model robustness, warrants deeper understanding.

From Human to Machine: The Ethics of How AI Is Reshaping Data in Scientific Research

Aurelia Sauerbrei

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AI-systems in data collection and generation of data presents a change in the healthcare sector, which traditionally obtained data directly from clients. Now, AI systems can gather clinical information, and generate, clean and categorise existing data. Such data can reduce biases and improve efficiencies in research, for instance, in psychotherapy, people may disclose more to AI chatbots than to humans. But AI systems may not present context, structure and interpretation accurately. This has implications for the validity, ethics and reliability of findings. This project will deepen understanding on how AI systems change the nature of research data and the resultant findings. It will also generate new guidelines for policy makers, funders and researchers in promoting responsible and ethical research.

The Impact of AI on Scientific Foresight

Megan Crawford

Edinburgh Napier University

GenAI tools are now being used by researchers, policy makers and funders in long term development planning and direction in science and technology. In the past, such future planning relied on human thinking and reasoning, and we have yet to understand how AI tools can improve the quality of scientific foresighting without introducing new risks and limiting critical thinking. This investigation will test the impact of GenAI on higher order cognitive functions and produce a cognitive foresight taxonomy. The study will also provide guidance for policy, funding directions and skills development on the responsible use of AI tools for scientific decision-making.

Investigating AI's Impact on Evidence Sources for Policymaking

Basil Mahfouz

University College London

AI systems are changing the way evidence is sourced for policy making. As governmental decision-making shifts to the use of AI-sourced or mediated evidence, there is a need to analyse the gap between AI-recommended and human-selected evidence. The study will investigate the domains susceptible to disruption and map the work of uncredited researchers producing highly policy-relevant work across different Sustainable Development Goals (SDG).