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The University of Manchester

DIGITAL FUTURES

TRANSFORMING OUR WORLD

INSTITUTE FOR DATA SCIENCE
AND ARTIFICIAL INTELLIGENCE

ADVANCES IN DATA SCIENCE &
AI CONFERENCE 2023

13 June | Alliance Manchester Business School



DIGITAL FUTURES

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The 2023 Advances in Data Science and AI Conference is brought to you by The Institute for Data Science and AI which delivers the Data Science and AI theme within the University of Manchester's Digital Futures platform.

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Welcome



Professor
Magnus Rattray,
Director of the
Institute for Data
Science and AI,
The University of
Manchester

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Welcome to The University of Manchester's sixth annual Advances in Data Science and AI Conference.

The University's Data Science Institute was founded in 2016 and in 2018 we joined the Alan Turing Institute and rebranded to the Institute for Data Science and Artificial Intelligence (IDSAI).

This year we look forward to welcoming our participants, for an exciting programme that includes the latest developments in explainable and causal approaches to AI, Digital Twins, Human-Data Interaction, AI for games, and Natural Language Processing.

We hope you enjoy the conference.

Conference organisers:

- Professor Magnus Rattray
- Professor Sophia Ananiadou
- Professor Richard Allmendinger
- Dr Mauricio Álvarez López
- Professor David Topping
- Dr Zhonghua Zheng

Follow and contribute to live conference discussion on Twitter using [#ADSAI2023](https://twitter.com/ADSAI2023)

Follow the Institute for Data Science and AI [@idsai_uom](https://twitter.com/idsai_uom)

www.idsai.manchester.ac.uk/ADSAI23

Conference Programme

08:30 Registration and breakfast networking

09:00 Opening Welcome | Professor Magnus Rattray, Professor of Computational and Systems Biology at The University of Manchester

Technical AI Advances for Science and Government

Professor Mark Girolami, Chief Scientist at The Alan Turing Institute

Towards Generative Models of Human Behaviour

Tim Pearce, Artificial Intelligence Researcher at Microsoft Research

10:20 Refreshments and networking

10:55 Why We Need Explainable Conversational and Generative AI

Dr Maria Aretoulaki, Head of Voice & Conversational AI at GlobalLogic/Hitachi

Fact-checking as a Conversation

Professor Andreas Vlachos, Natural Language Processing and Machine Learning at The University of Cambridge

Spotlight Talks – Session One

12:40 Lunch and networking | Poster session

14:05 Trust and Uncertainty in User-facing AI

Matt Benatan, Research Scientist in Machine Learning and AI at Sonos

Bridging Responsible AI Divides: Why the Arts, Humanities and Social Sciences are Critical to Developing a Healthy AI Ecosystem

Professor Ewa Luger, Director of Research Innovation at The University of Edinburgh

Spotlight Talks – Session Two

15:45 Refreshments and networking

16:10 A Data Integration Approach to Estimating Personal Exposures to Air Pollution

Dr Matthew Thomas, Lecturer in Data Science and Analytics at The University of Manchester

Closing remarks | Professor Magnus Rattray, Professor of Computational and Systems Biology at The University of Manchester

17:00 Drinks reception | Poster session

18:30 Event close

Conference Speakers

Professor Mark Girolami

Mark Girolami is Chief Scientist of The Alan Turing Institute, UK's National Institute for data science and artificial



intelligence and took up this role in October 2021. He was one of the original founding Executive Directors of the Institute and previous to his role as Chief Scientist he led the Turing's Data-centric Engineering programme, which is principally funded by Lloyd's Registry Foundation.

In 2019, Mark was elected to the Sir Kirby Laing Professorship of Civil Engineering at the University of Cambridge where he also holds the Royal Academy of Engineering Research Chair in Data Centric Engineering. He is a fellow of Christ's College Cambridge.

Prior to joining the University of Cambridge, Mark held the Chair of Statistics in the Department of Mathematics at Imperial College London. He is an elected fellow of the Royal Academy of Engineering and the Royal Society of Edinburgh.

Tim Pearce

Tim is an AI researcher at Microsoft Research in the 'Reinforcement Learning for Games' team. His current focus is on building agents that behave in humanlike ways, and learn general 'world models' of their environments. He also has deep expertise in uncertainty estimation for neural networks.



Tim completed his PhD at the University of Cambridge, spending time at the Alan Turing Institute, and then did a postdoc at Tsinghua University. Tim adopts a probabilistic view of learning to help understand current algorithms and design those of the future. Tim believes that RL, with its mix of sequential decisions and interactive learning, is the correct setting to be studying to make long-term progress in AI.

Conference Speakers

Dr Maria Aretoulaki

Maria Aretoulaki, Head of Conversational AI at GlobalLogic has been a Voice User Interface (VUI) Designer for the past 25 years. A VUI Designer uses language technologies like speech recognition, text-to-speech, Natural Language Processing (NLP) and Natural Language Understanding (NLU) to design user experiences.



Dr. Aretoulaki describes VUI Design as “designing and implementing text-based dialogues and spoken dialogues between humans and machines.” Dr. Aretoulaki’s work mainly involves call center automation, voicebots, voice assistants and chatbots. As a VUI Designer, she designs, tests, tunes and optimizes human-computer interfaces. “Any industry, any company that has a call center, I can get involved in,” she says.

Professor Ewa Luger

Ewa Luger, Director Research Innovation at The University of Edinburgh, holds a personal chair in Human-Data Interaction, is Director of the new Arts and Humanities Research Council programme ‘Bridging Responsible AI Divides (BRAID), and Co-Director of the Institute of Design Informatics.



Ewa regularly advises industry and government and is a Fellow at the Alan Turing Institute. In research terms, her work explores applied ethical issues and intelligibility of complex data-driven systems, with a particular interest in distribution of power, spheres of exclusion and consent. Her recent book *What do we Know and What Should we do About AI* is specifically targeted at non-academic audiences unfamiliar with AI.

Matt Benatan

Matt Benatan is a Principal Research Scientist at Sonos, where he leads research on intelligent personalisation systems, and is also a Simon Industrial Fellow at the University of Manchester.



Matt obtained his PhD in audio-visual speech processing from the University of Leeds, after which he pursued a career in industry, conducting machine learning research across a range of domains including signal processing, materials discovery, and fraud prevention. Matt has co-authored two textbooks on deep learning, and his key research interests currently include robust machine learning, optimisation, and uncertainty estimation.

Professor Andreas Vlachos

Andreas is professor of Natural Language Processing and Machine Learning at the Department of Computer Science Technology at the University of Cambridge and a Dinesh Dhamija fellow of Fitzwilliam College. Current projects include dialogue modelling, automated fact checking and imitation learning.



Andreas has also worked on semantic parsing, natural language generation and summarization, language modelling, information extraction, active learning, clustering and biomedical text mining. Their research team is supported by grants from ERC, EPSRC, ESRC, Facebook, Amazon, Google, Huawei, the Alan Turing Institute and the Isaac Newton Trust.



Dr Matthew Thomas

Matthew Thomas is a Lecturer in Data Science and Analytics in the Department of Earth and Environmental Sciences at the University of Manchester, having recently moved from the University of Exeter. The lectureship is a joint position with the National Centre for Atmospheric Science (NCAS).

Matthew is also a Visiting Researcher at the MRC Centre for Global Infectious Disease Analysis at Imperial College London, where he works within the HIV inference Group. His research interests are in Bayesian hierarchical modelling, spatial/spatio-temporal statistics and data integration with applications in the environment and public health.

Presentation Abstracts

Technical AI Advances for Science and Government **Professor Mark Girolami**

The Alan Turing Institute is transforming itself and adopting a grand challenge-led approach to science and innovation. The institute recently released its strategy and announced Health & Medicine, Defence & Security, Environment & Sustainability as its three grand challenge priority areas. This talk will look at advances made at Turing in some of these priority areas, including: the assessment of Scottish Patients at Risk of Readmission, Seasonal Article sea ice forecasting with probabilistic deep learning, and the development and deployment of Ecosystems of digital twins.

Towards Generative Models of Human Behaviour **Tim Pearce, Artificial Intelligence**

Researcher at Microsoft Research
Large generative AI models trained across massive diverse human datasets have had huge impact on the text and image domains. This talk considers how similar techniques can be applied to sequential decision making domains, as generative models of behaviour. Specifically, I'll present recent work using diffusion models to imitate human demonstrations, showcased in video games and robotics. I'll also reflect on the current status of reinforcement learning in the era of foundation models.

A Data Integration Approach to Estimating Personal Exposures to Air Pollution

Dr Matthew Thomas, Lecturer in Data Science and Analytics at the University of Manchester

Air pollution is the largest environmental risk to public health and to develop and target mitigation strategies, there is a need to increase our understanding of the (personal) exposures experienced by different population groups. The Data Integration Model for Exposures (DIMEX) integrates data on daily travel patterns and activities with measurements and models of air pollution using agent-based modelling to simulate the daily exposures of different population groups. We present the results of a case study using DIMEX to model personal exposures to PM_{2.5} in Greater Manchester, UK, and demonstrate its ability to explore differences in time activities and exposures for different population groups. DIMEX can also be used to assess the effects of reductions in ambient air pollution and when run with concentrations reduced to 5 µg/m³ (new WHO guidelines) lead to an estimated (mean) reduction in personal exposures between 2.7 and 3.1 µg/m³ across population (gender-age) groups.

Why we need Explainable Conversational and Generative AI

**Dr Maria Aretoulaki, Head of Voice
& Conversational AI at GlobalLogic/
Hitachi**

Chatbot technology democratisation and the ChatGPT hype has led to implementation arrogance and the current “AI Trump” plague. Terabytes of data and LLMs are not enough. We need to go back to basics: away from the extremes of frail hand-crafted but also completely unsupervised approaches, and towards a semi-supervised human-curated approach that leads to the golden duo of robustness and explainability. 'Explainable Conversational and Generative AI' combines data-driven Design with Human expert-curated Language and Speech Data Science. It ensures that we move away from pure processing (NLP) and random fact hallucination, to actual understanding (NLU) and the generation of accurate unbiased statements (NLG). This hybrid approach ensures optimal language coverage and at the same time the transparency, standardisation, customisation and user-centred control of a rule-based system.

Fact-checking as a Conversation

**Professor Andreas Vlachos, Natural
Language Processing and Machine
Learning at The University of
Cambridge**

Misinformation is considered one of the major challenges of our times resulting in numerous efforts against it. Fact-checking, the task of assessing whether a claim is true or false, is considered a key in reducing its impact. In the first part of this talk I will present our recent and ongoing work on automating this task using natural language processing, moving beyond simply classifying claims as true or false in the following aspects: incorporating tabular information, neurosymbolic inference, and using a search engine as a source of evidence. In the second part of this talk, I will present an alternative approach to combatting misinformation via dialogue agents, and present results on how internet users engage in constructive disagreements and problem-solving deliberation.

Presentation Abstracts

Trust and Uncertainty in User-facing AI

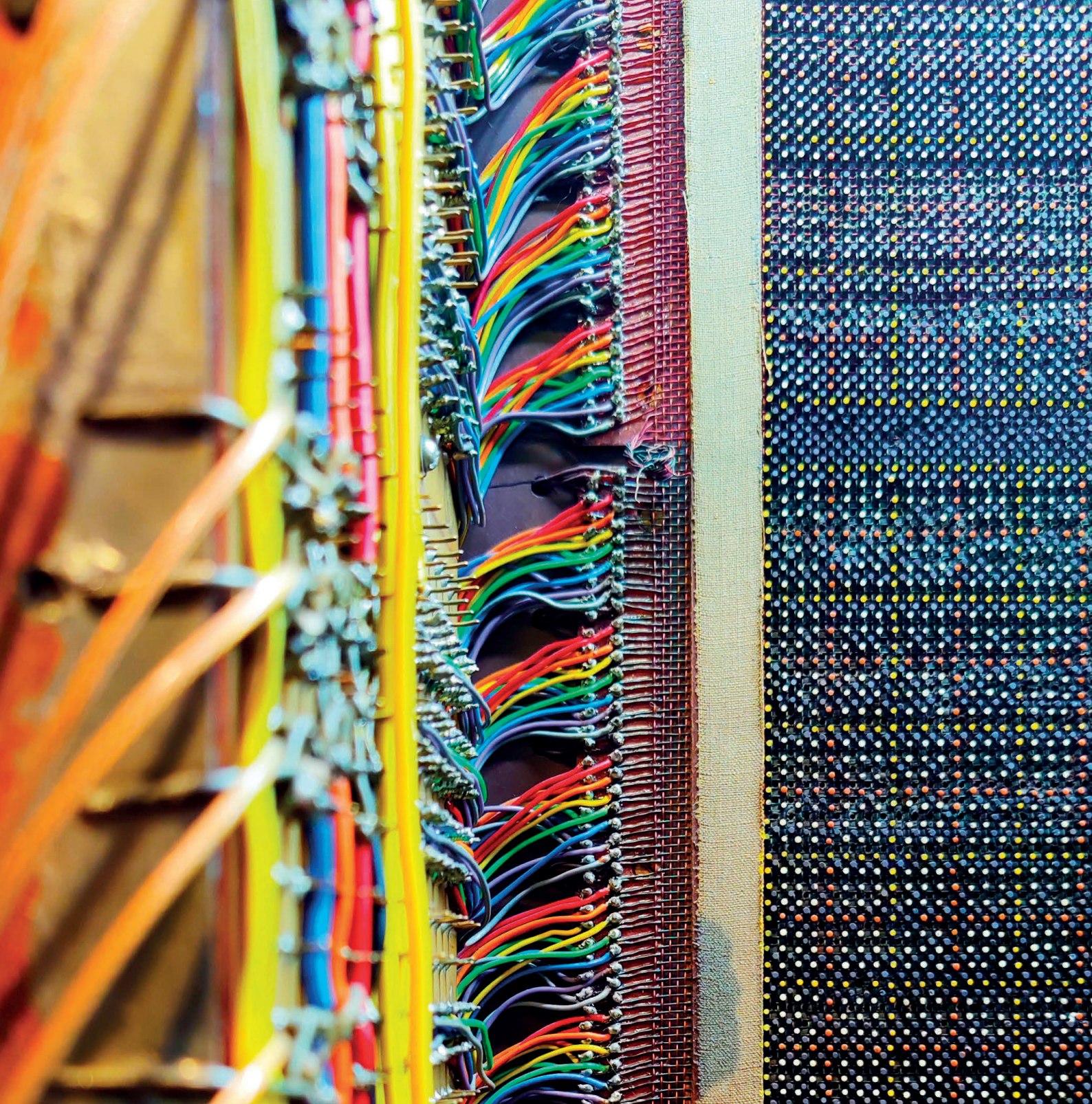
Matt Benatan, Research Scientist in Machine Learning and AI at Sonos

Over the past decade, machine learning has grown from a technical buzzword into a key component of our daily lives. An important contributor to its success is its impressive performance, which has inspired countless articles professing the superhuman capabilities of sophisticated deep learning models. But is media hyperbole sufficient to win over the masses? We've all experienced both the best and worst that 'smart' technology has to offer, such as frustration with the smart thermostat, or elation when a music service discovers something we love. Ultimately, trust in AI comes down to day-to-day user experiences: the small, frequent interactions which underscore our relationship with technology.

Bridging Responsible AI Divides: Why the Arts, Humanities and Social Sciences are Critical to Developing a Healthy AI Ecosystem

Professor Ewa Luger, Director of Research Innovation at The University of Edinburgh

The hype around the recent class of generative AI models such as Chat GPT, Midjourney and Crayon has captured the attention of governments, the media and the public. These models offer a low barrier to entry, allowing pretty much anyone with an internet-connected personal device to join the conversation, and with such democratisation comes risk. To mitigate this, we look to governments and regulators to protect our interests through the exercise of responsibility. This drive for responsible innovation has been motivated in large part by insights from the Arts, Humanities and Social Sciences and, if there was ever a time to shine a light on the importance of those disciplines, it is now. Bridging Responsible AI Divides (BRAID) is a new 3-year programme looking at precisely this. In this talk I will explore at some of the core challenges presented by data-driven innovations and present some of our early insights.



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Digital Futures is a highly interdisciplinary network that operates across the whole range of The University of Manchester's digital research.

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MORE THAN 1700 RESEARCHERS ACROSS 30 DISCIPLINES
.....

.....
UNDERSTANDING AND DRIVING DIGITAL TRANSFORMATION
.....

.....
ENGAGING WITH CITIZENS, BUSINESS AND GOVERNMENT
.....

.....
PROVIDING THOUGHT LEADERSHIP, SHAPING THE FUTURE
.....

www.digitalfutures.manchester.ac.uk

Digital Futures at The University of Manchester

Digital Futures is The University of Manchester's strategic response to the challenges and opportunities presented by the digital revolution.

It brings together a multidisciplinary community of over 1700 researchers from across the University's three faculties with the aim of:

- providing an integrated view of our digital research, creating a 'front door' for potential partners
- bringing together cognate research communities, and exploiting synergies
- developing a coherent strategy for addressing major societal and technical challenges

By creating a coherent framework of societal challenges and cross-cutting capabilities, we've been able to create an integrated and accessible view of our digital research for external stakeholders whilst exploiting synergies and building critical mass internally.

Professor Chris Taylor

The programme is built around challenges and crosscutting capabilities.

Societal Challenges focus on real-world activities that are economically and socially important, building on multidisciplinary strengths within the University.

Institutional Challenges focus on the potential for digital technology to transform what we do as a University and how we do it: how we conduct research, what and how we teach, and how we function as an organisation.

Cross-cutting Capabilities are digital frameworks, technologies and methods that are important areas of research in their own right and provide the underpinning for addressing the challenges.

Find out more:
digitalfutures.manchester.ac.uk



The Turing Innovation Catalyst Manchester (TICM)

The Turing Innovation Catalyst Manchester (TICM) is led by The University of Manchester, working with a consortium of business, academic and public sector organisations. The project aims to accelerate Greater Manchester's £5bn digital economy by supporting existing start-ups and creating new ones – especially in the field of artificial intelligence. It will also help to develop skills in the region, with a particular focus on women and under-represented groups in the industry.

The TICM will bridge the gap between cutting-edge research and business, and will have centres across the region from which to coordinate activity. With no city having a global lead in AI commercialisation, the project aims to position Greater Manchester at the forefront, which would have a transformative effect on the regional economy and jobs.

The project being backed as part of the government's Innovation Accelerator Fund, are undertaking world-leading research to address some of the biggest challenges we face.

The backed projects, including TICM, align with the sectors where Greater Manchester has emerging or established strengths, like advanced materials, artificial intelligence (AI) and diagnostics. We look forward to working with partners to ensure this funding supports the growth of our future industries and delivers greater prosperity for our people.

Mayor of Greater Manchester, Andy Burnham

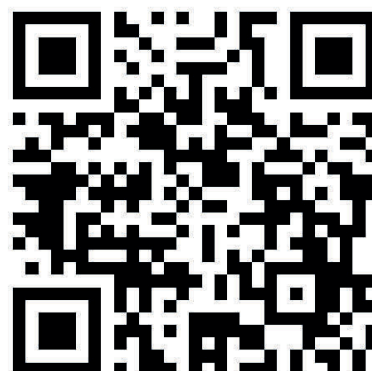
The TICM brings together a consortium of leading AI-focused businesses, regional R&D organisations, specialist skills providers, accelerators and investors to provide access to:

- Venture Building - Accelerator and Investor Programmes
- Skills and Talent Programmes
- Collaborative R&D Projects
- Development of the AI Ecosystem in Greater Manchester

The TICM is funded by Innovate UK over an initial two-year period as part of the national strategy to increase the benefit and accelerate the impact of the application of data science and AI across the UK economy and society and is being incubated by the University of Manchester (UoM) working with delivery partners.

Sign up to the Digital Futures community to stay informed about the launch:

tinyurl.com/digitalfuturesuom



Natural language processing and text mining at The University of Manchester

The National Centre for Text Mining (NaCTeM), based in the Department of Computer Science in the School of Engineering at the University of Manchester, is the first publicly-funded text mining centre in the world. It was established to provide support, advice, and information on text mining (TM) technologies and to disseminate information from the larger TM community, whilst also providing tailored services and tools in response to the requirements of the academic community.

NaCTeM researchers have excelled in community shared tasks and challenges, notably in BioCreAtIvE III, IV and V, in BioNLP 2011 and 2013 (for the most complex task of event extraction) and most recently obtained two first places in tasks of the 5th CL-SciSumm Shared Task 2019. Moreover, NaCTeM's participation in DARPA's \$45m Big Cancer Mechanism initiative, in a consortium led by the University of Chicago, saw it produce in 2015 the top performing system for extracting information to support cancer pathway modelling. NaCTeM's academic and industrial research projects range over many domains from biology and biomedicine to biodiversity, toxicology, neuroscience, materials, history, social sciences, insurance, and health and safety in the construction industry, with funding coming from EPSRC, ESRC,

MRC, AHRC, Wellcome Trust, NIH, Pacific Life Re, Lloyd's Register Foundation, AstraZeneca, DARPA, EC Horizon 2020, JST and the cosmetics and extracts industry, among others.

Applications arising from such research include Thalia, a semantic search engine over more than 20m biomedical abstracts; Facta+, to find unsuspected associations in the biomedical literature; HoM, allowing semantic search of historical medical and public health archives; and RobotAnalyst, supporting the hitherto laborious screening stage of systematic reviewing through active learning techniques. NaCTeM also collaborates closely with the Artificial Intelligence Research Center, National Institute of Advanced Industrial Science and Technology, Japan.

Find out more:
nactem.ac.uk



Alan Turing

Turing's name is synonymous with Data Science and Artificial Intelligence at The University of Manchester, from his work here in the 1940s and 50s to our current partnership with the Alan Turing Institute.

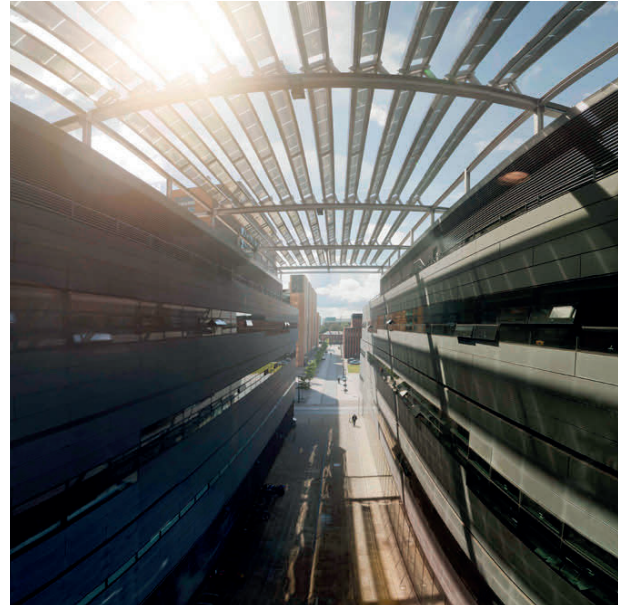
Alan Turing joined The University of Manchester in 1948, as Reader in the Mathematics department. In 1949, he took up the post of Deputy Director of the Computing Laboratory. This coincided with Manchester's work to develop the world's first modern computer: the 'Manchester Baby'.

In 1950 Turing published a seminal paper entitled 'Computing Machinery and Intelligence', in which he first addressed the issue of what was to be labelled artificial intelligence (AI).

In his paper, Turing developed a method to determine whether a machine can be recognised as 'intelligent' by demonstrating human-like thinking - this challenge was called the 'Imitation Game', and is now known as the 'Turing Test'. Computing Machinery and Intelligence would have a significant influence on AI, a research area that continues exponentially today and where Manchester is still a global centre of excellence.

Turing contributed to the development of the Manchester Mark 1 and the Ferranti Mark 1, the world's first commercially-available digital computer, designed at The University of Manchester by Freddie Williams and Tom Kilburn.

Turing, Kilburn and Williams all now have Manchester buildings bearing their name.



The University's Alan Turing Building

// Turing's pioneering work in mathematics, computing and artificial intelligence helped to distinguish and enhance our reputation in these academic areas, something that continues to this day.

Here at The University of Manchester, Turing's legacy lives on as future generations of mathematicians and physicists study in a building that bears his name. This latest recognition is richly deserved and a fitting tribute to one of the greatest scientists of the 20th Century. //

Professor Dame Nancy Rothwell



The Alan Turing Memorial,
Sackville Gardens, Manchester

The Alan Turing Institute was created as the national institute for data science in 2015, adding artificial intelligence to their remit in 2017. The institute is a collaborative hub, with roots in universities and centres of research excellence across the UK, and strong links to a growing network of industry, public sector, and third sector partners.

Since 2018 there have been thirteen University partners: Birmingham, Bristol, Cambridge, Edinburgh, Exeter, Leeds, Manchester, Newcastle, Oxford, Queen Mary University of London, Southampton, UCL and Warwick.

The Alan Turing Institute also collaborates with businesses and public and third sector organisations to apply this research to real-world problems, with lasting effects for science, the economy, and the world we live in.

Our researchers collaborate across disciplines to generate impact, both.

through theoretical development and application to real-world problems. They are fuelled by the desire to innovate and add value.

The institute has three ambitious goals:

- Advance world-class research
- Train the leaders of the future
- Lead the public conversation

Being a national institute enables the institute to deliver benefits that a single university could not deliver alone. Breaking down disciplinary boundaries, computer scientists, engineers, statisticians, mathematicians, and scientists work together under one shared goal.

Crucially, the Turing Institute is a convening power, bringing together the best talent in the data science and AI community to speak to industry, policy-makers, and the public.

In October 2021, The University of Manchester announced 33 Manchester-based Turing Fellows across all three of our Faculties.

Find out more: turing.ac.uk

Use the QR code to find out more about Manchester's Turing Fellows.



Samuel Kaski

Professor of Artificial Intelligence
Turing AI World-Leading Research Fellow

The University of Manchester is developing unique research teams to help cure humanity's increasingly complex future health and societal problems by partnering researchers with Artificial Intelligence (AI).

The University of Manchester's Professor Sami Kaski is among the first Turing Artificial Intelligence (AI) World-Leading Research Fellows. The fellowships, named after AI pioneer Alan Turing, are part of the UK's commitment to further strengthen its position as a global leader in the field.

Through his fellowship, Professor Kaski aims to overcome a fundamental limitation of current AI systems; that they require a detailed specification of the goal.

Artificial intelligence is still limited by the fact that human intervention is needed to set appropriate objectives and rewards to tell AI systems which outcomes are desired. This is difficult when we only partially know the goal, as is the case at the beginning of scientific research.

As part of this AI driven approach, The University of Manchester has also received a share of £4.4 million research funding from UKRI, in addition to contributions from the partners and the university totalling over £10 million.

Professor Kaski has a world-leading reputation in AI and our collaboration with Aalto University strengthens our global reach to deliver new interdisciplinary research, innovation and impact for the benefit of the university, city and region.

Professor Martin Schröder

With these investments the university is further strengthening its fundamental research in AI and will be launching the Manchester Centre for AI Fundamentals in 2022.

The full story is available via the QR code below.

To find out more about the Manchester Centre for AI Fundamentals, visit manchester.ac.uk/fun-ai



Manchester Centre for AI Fundamentals

The University of Manchester's new Centre for AI Fundamentals is a key component of a number of significant recent investments. The University of Manchester has made into AI education, innovation and industrial collaboration.

We boldly focus on fundamental AI research, which includes probabilistic modelling, deep learning, reinforcement learning, causal modelling, human-in-the-loop ML, explainable AI, ethics, privacy and security.

This centre brings together renowned academic expertise in AI with the latest research taking place across our growing institutes including The Institute for Data Science and AI (IDSAI), The Christabel Pankhurst Institute and our partnerships with The Alan Turing Institute and the European Laboratory for Learning and Intelligent Systems (ELLIS).

The University has already recruited a number of key staff to the new centre for AI Fundamentals, including lecturers and researchers, and there are a number of further vacancies currently being advertised. For further information on these, please use the QR code below.

To find out more about the Manchester Centre for AI Fundamentals, visit manchester.ac.uk/fun-ai



“ We need new kinds of AI assistants which can learn to work well with humans and complement their skills. That requires new fundamental AI research, and Manchester has recognized this opportunity and is considerably strengthening its AI research. Manchester is a top-notch place to build and apply new AI which matters and has impact.

Professor Samuel Kaski

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The Christabel Pankhurst Institute

For health technology research and innovation

In 2021, a consortium led by The University of Manchester launched the Christabel Pankhurst Institute for Health Technology Research and Innovation. This new multimillion pound institute is building on Manchester's academic strengths in digital health and advanced materials to discover innovative health and care solutions.

This institute is part of an ambitious plan set out in the Greater Manchester (GM) Local Industrial Strategy to boost the city-region's provision in this area.

The initiative will build on investments from the University, Manchester Science Partnerships (MSP), the Engineering and Physical Sciences Research Council (EPSRC), and The Alan Turing Institute, creating a total budget of more than £25m.

The institute has recently moved into a flagship building at the centre of the University's campus on the Oxford Road Corridor, as well as having bespoke, state-of-the-art research and business development spaces at MSP's Citylabs campus. This location and partnership will provide support for business growth by facilitating better collaboration between the NHS, researchers and industry through MSP, MFT, Health Innovation Manchester and the University.

Health and scientific innovation is needed now more than ever, so it is terrific news that we can support the launch of The Christabel Pankhurst Institute in Greater Manchester.

The launch will see The University of Manchester continue to be a pioneer in digital health. It will come as a boost to the business sector by creating employment opportunities, at the same time as delivering further long-term health benefits to our city-region.

Andy Burnham,
Mayor of Greater Manchester

To find out more, visit
pankhurst.manchester.ac.uk



Robotics and AI

Manchester's new centre dedicated to state-of-the-art AI technologies

The University's Centre for Robotics and AI pulls together experts and projects from across the academic disciplines who share the challenge of working on the front line of applied robotic technologies.

For example, Manchester researchers are looking to develop robotic systems that are able to explore in the most extreme environments, such as those found in the nuclear industry, power generation or agriculture. Other expertise includes designing robots to support digital manufacture or work in the field of medicine and health.

Robotics is now an important field that can be found in research areas across the University's academic portfolio – which is not surprising, as robotic and autonomous systems are being applied in all parts of our lives.

With the launch of this Manchester centre of excellence in robotics and AI we are providing a new focus to our multidisciplinary, world-class work in this field.

Professor Richard Curry

While driving developments in cutting-edge robotic systems, the centre will also have a commitment to ensure autonomous systems are compatible with the values and expectations of society. Some of the breakthrough Manchester-led research work will include:

- designing control systems with a focus on bio-inspired solutions to mechatronics
- designing trustworthy autonomous systems through the development of new software engineering and AI methodologies for verification
- researching human-robot interaction, with a pioneering focus on the use of brain-inspired approaches to robot control, learning and interaction
- research in ethics and human-centred robotics issues, for the understanding of the impact of robots and autonomous systems with individuals and society.

To find out more, visit:
robotics.manchester.ac.uk



European Laboratory for Learning and Intelligent Systems

The European Laboratory for Learning and Intelligent Systems (ELLIS) recently added The University of Manchester as a partner of its global members who strive towards a meaningful contribution to securing Europe's sovereignty and leadership in the research field of modern artificial intelligence (AI).

Four new international units have been announced including; Manchester, Jena and Stuttgart in Germany and Milan in Italy. The new units join a network of world-class institutions across 14 European countries and Israel.

The University of Manchester has recently strengthened its position as a centre for research into AI fundamentals and impactful applications of AI to improve health, security and sustainability. Last year the University appointed AI Chairs in each of its faculties followed by several excellent machine learning faculty appointments in the department of Computer Science.

The University of Manchester has been a partner of the Alan Turing Institute since 2018 and is home to 33 Turing Fellows.

It has a thriving community of data science and AI researchers, with over 900 researchers affiliated to its Institute for Data Science and AI (IDSAI). Manchester's ELLIS unit brings together experts in AI fundamentals

“ The University of Manchester continues to grow as a centre of excellence for AI research and the new ELLIS unit will further strengthen this activity. Through the new ELLIS unit Manchester will be able to better link machine learning researchers across Europe with impactful applications across many disciplines. ”

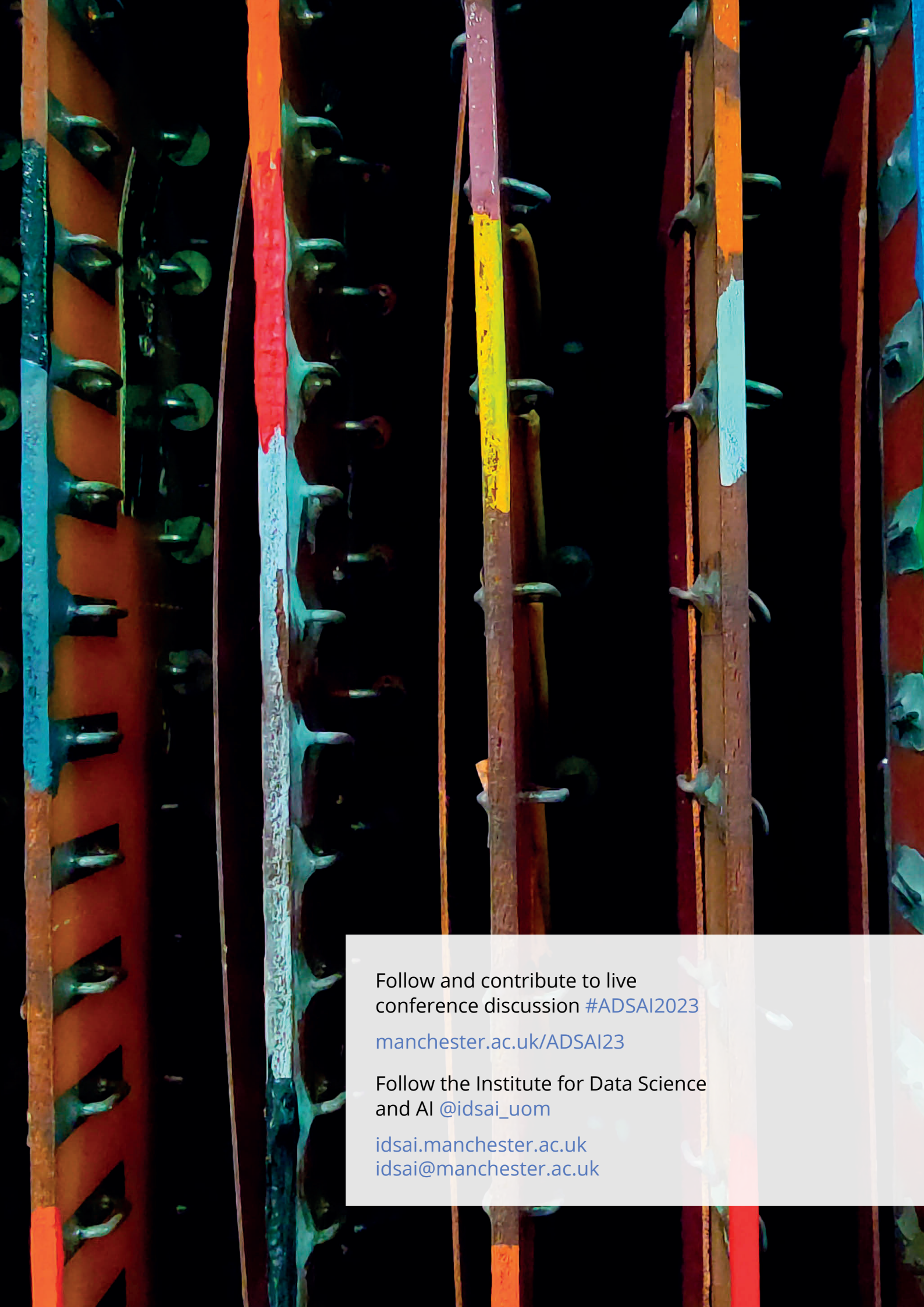
Professor Magnus Rattray

with experts in the application of AI in other fields, with particular strengths in health, and will connect with other leading experts in the ELLIS network across Europe.

The University of Manchester has established a strategic partnership in a shared professorship with the director of the ELLIS unit Helsinki, Samuel Kaski from Aalto University, Finland. This Northern link will be used in the future to set up the ELLIS units in Manchester and Helsinki as a twin unit, with tight collaboration already under way through research collaboration and exchange.

Find out more: idsai.manchester.ac.uk/connect/partnerships/ellis





Follow and contribute to live
conference discussion [#ADSAI2023](#)

manchester.ac.uk/ADSAI23

Follow the Institute for Data Science
and AI [@idsai_uom](#)

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idsai@manchester.ac.uk

Thank you for attending, we
hope to see you next year!

idsai.manchester.ac.uk

