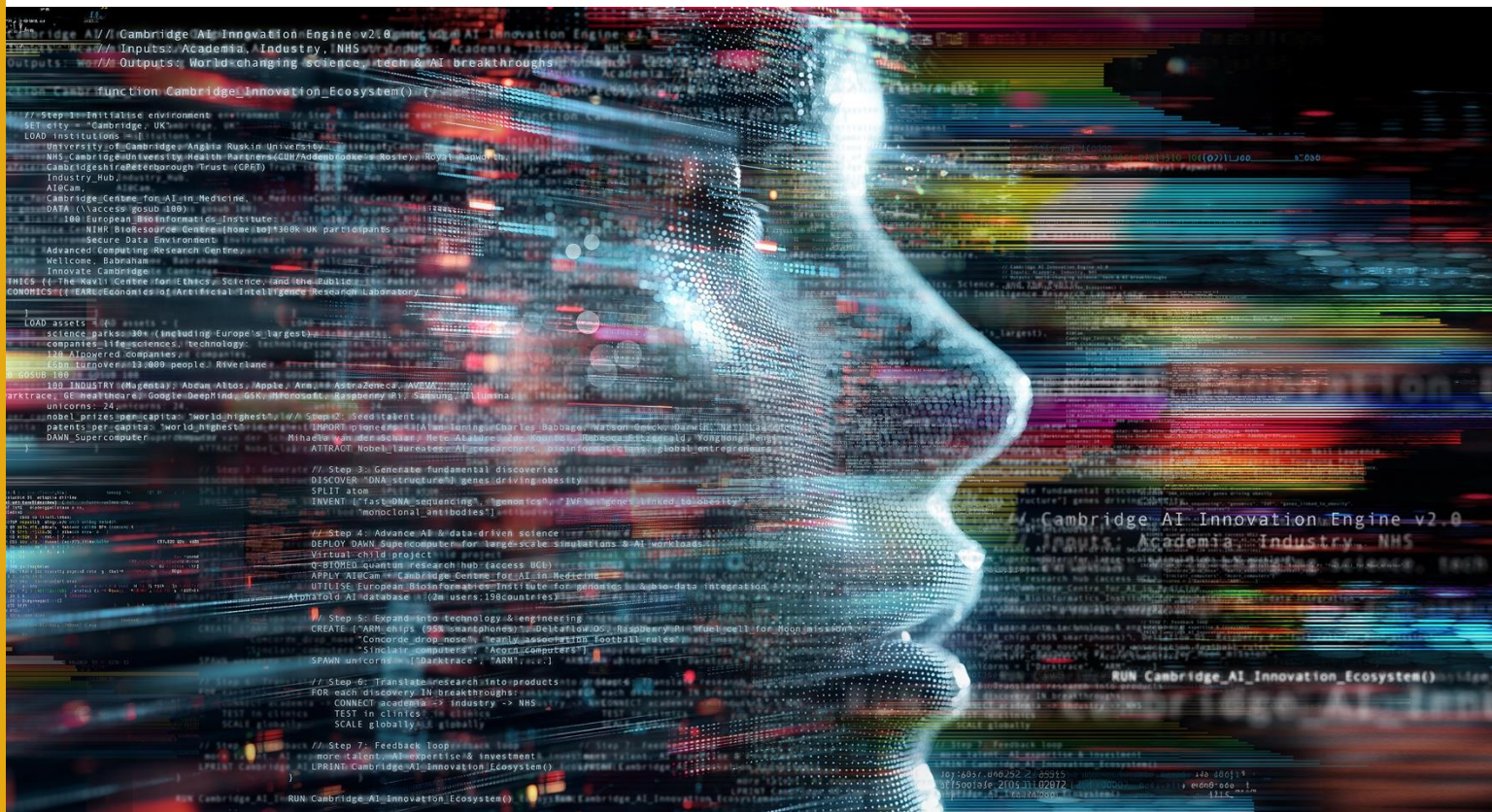


Opportunities to partner with Cambridge



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AI and machine learning have the potential to truly revolutionise the delivery of healthcare, to the great benefit of patients, clinicians and the wider medical ecosystem.

”



Professor Mihaela van der Schaar
Director of the Cambridge Centre
for AI in Medicine (CCAIM)

CAMbrIdge is ready to partner and deliver.

AI has the potential to transform healthcare, and we believe that Cambridge has the ingredients to lead that transformation. Our academic, healthcare and industry organisations have a long track record of collaborating to discover new health solutions, demonstrate their impact, and then deliver them into clinical practice. We see many of the challenges in this area as tractable through AI – from discovering new drug targets to improving the operational efficiency of clinical trials.

Cambridge drives UK innovation and R&D with the highest patent rates in the UK - 308 patents per 100,000 residents, which is double that of any other city. The area is home to more than 120 AI-powered companies employing 13,000 people with a combined turnover of £6bn. The city is ranked as the second hub in the world in AI by density and ninth overall. Our infrastructure and innovative culture attracts world-leading AI experts across the full suite of scientific and clinical disciplines. They spearhead a wider Cambridge community of clinicians and healthcare staff who are eager to pilot and translate AI-driven ideas into real-world clinical impact

Cambridge University Health Partners and Innovate Cambridge have created this prospectus to showcase the capabilities, infrastructure and live projects that make Cambridge a prime destination for investment in AI in health. We are actively seeking industry partners, government support, private investors, philanthropists and research funders to collaborate with us at scale and we invite you to join us in making Cambridge the global destination for AI-driven health research and innovation.

Developed by:



An aerial photograph of Cambridge, England, showing the city's historic architecture, including the spires of King's College Chapel, set against a bright blue sky with scattered white clouds. Overlaid on the image is a Venn diagram consisting of two overlapping yellow circles. The text 'Cambridge Where Innovation Makes History' is written in white, with 'Cambridge' and 'History' positioned outside the circles and 'Where Innovation Makes' positioned within the overlapping area.

Cambridge Where Innovation Makes History

An invitation to partner

AI is sparking a revolution in the time and cost it takes to discover and test new drugs. From finding new targets and designing new molecules, to making it quicker and simpler to recruit eligible participants for clinical trials, in the next few years AI will transform the process of drug development.

AI will also play an important role in healthcare settings: for example, AI powered decision support tools can predict disease progression or risk, help doctors select the most effective treatments, and improve the quality and accuracy of diagnosis.

We want to establish Cambridge as a hub for AI-driven health innovation by partnering with some of the leading organisations around the world to develop the next generation of drug discovery tools and clinical trials. This prospectus is your invitation to join us in developing AI solutions that can transform health and life sciences globally.



Lord James O'Shaughnessy
Chair of Cambridge University Health Partners



The Cambridge ingredients



30+

science and technology campuses, including one of the largest in Europe



2

leading universities, providing higher and further education, with many world-class research institutes



3

leading research-active NHS trusts, working in physical and mental health



4

world-class research institutes, Babraham, Wellcome Sanger, Laboratory of Molecular Biology and EMBL-EBI



600+

life science companies, from start-ups to multinationals, including Abcam, AstraZeneca, GSK, Illumina

The UK's leading medical school in the **University of Cambridge's School of Clinical Medicine**¹

A culture of **world-changing innovation** stretching back hundreds of years

Funding from some of the UK's largest charities, **British Heart Foundation** and **Cancer Research UK**

Access to **integrated, high-quality** health, genomic, biological, social and economic data

“A safe place to do risky things”

- Dr Andy Richards CBE

The future of healthcare depends on AI

AI holds transformative potential for healthcare. The economic impact of the technology could also be substantial, with McKinsey Global Institute estimating that AI could generate \$60–110 billion annually for the pharmaceutical and medical product industries alone.

The UK Government's 'Fit for the future: 10 Year Health Plan for England' (July 2025) outlines its ambition to make the NHS the most AI-enabled health system in the world. It describes a future state where:

- Hospitals have time to prioritise safe deployment of AI and harness new technology to bring the very best of cutting-edge care to all patients.
- Use of technology like AI scribes can be scaled to liberate staff from their current burden of bureaucracy and administration, freeing up time to focus on the patient
- Where AI is every nurse's and doctor's trusted assistant, saving them time and supporting them in decision making. Over the next 3 years we will overhaul education and training curricula to future-proof the NHS workforce

Sector news

In April 2025, an investment of up to £600 million was announced from Government alongside the Wellcome Trust, to create a **Health Data Research Service (HDRS)**- the world's most advanced, secure, and AI-ready health data platform. It will unite genomic, diagnostic, and clinical data at population scale, turning NHS and wider healthcare data into a magnet for global trials and AI investment.



Scope of this prospectus

Throughout the prospectus we use the term AI to represent any of these forms of AI.



Artificial Intelligence

A set of computational tools or machine intelligence that can analyse large data sets to find patterns and connections and extract meaning

Machine Learning

A sub-field of Artificial Intelligence (the most common type). These tools can perform classification, prediction and data compression – after humans have trained them.

Deep Learning

A sub-field of machine learning. These tools make predictions and decisions using ‘neural networks’ – stacks of connected artificial neurons, inspired by the human brain.

Generative AI

A type of AI that often uses deep learning tools to create content, such as images, text or even music. Gen AI has the ability to create ‘new’ data similar to the data it was trained on.

Opportunities for partnership - our three priority areas

We've grouped our AI partnering opportunities into three key areas:



Accelerate drug discovery

Cambridge's academic and commercial research communities are using AI and machine learning to accelerate drug discovery. From identifying drug targets to designing new molecules, coupling our AI expertise with biological understanding means Cambridge can help accelerate progress.

Optimise clinical trials

Clinical trials are ripe for positive disruption. We want to make Cambridge a world-leading location to pilot new AI tools that accelerate patient recruitment, enhance the operational delivery of trials and reduce the need for in vivo testing, dramatically cutting both the cost and the time needed to produce new treatments.

Improve healthcare delivery

Cambridge NHS trusts believe in the transformative role of AI in healthcare delivery with a focus on improving patient outcomes and reducing pressures on frontline clinical staff. Our healthcare community and researchers are engaged and ready to pilot and evaluate new tools in our digitally enabled hospitals.

Discover

Demonstrate

Deliver

Aligned to our Cambridge cluster life sciences strategy

“

Cambridge's vibrant innovation ecosystem brings together world-class research institutions, leading hospitals, and global leaders in life sciences and technology. By harnessing this collective strength—including AstraZeneca's deep pharmaceutical expertise and advanced AI integration—the region is uniquely positioned to accelerate how life-changing medicines are discovered and developed for patients worldwide.

”



Dr Jim Weatherall

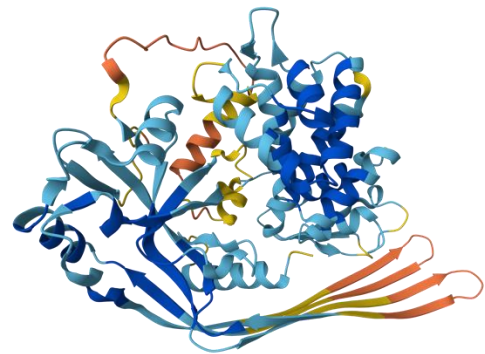
Chief Data Scientist and Vice President
Data Science & AI, BioPharmaceuticals
R&D, AstraZeneca

EMBL-EBI collaborates with Google DeepMind to make AlphaFold AI Database available to the scientific community

Open data stored at EMBL-EBI played a pivotal role in the development of the AlphaFold AI.

EMBL-EBI's Protein Databank in Europe (PDBe) team worked closely with Google DeepMind to develop the AlphaFold database, which launched with approximately 350,000 protein structure predictions, including the vast majority of human proteins – a key dataset for healthcare research.

Just one year after the launch, in a gargantuan effort, EMBL-EBI and DeepMind released a major update, covering over 200 million protein structure predictions. The AlphaFold Database has over 2 unique million users in 190 countries.



“This extremely valuable resource for the research community would not have been possible without the deep collaboration with the world-class team at EMBL.”

Demis Hassabis

Nobel Prize laureate and Co-founder of Google DeepMind



AI could generate \$60–110 billion annually for the pharmaceutical and medical product industries alone.

Drug discovery

The opportunity



Discovering and developing essential new medicines continues to be a slow, expensive and inefficient process.

AI has the potential to accelerate drug discovery – helping to understand how diseases arise, identify new drug targets and design new medicines. It can also unlock huge ‘omics’ datasets to help predict an individual’s disease risk, detect diseases early and develop more targeted treatments.

Bringing a new drug to market can cost \$2.5bn, once you account for the cost of failures. Applying AI tools across all stages of drug discovery and development could bring innovative medicines to patients faster and ensure that they are affordable. Whilst time and cost savings are helpful, modelling by the Wellcome Trust/ BCG showed that it will be improvements in probability of success in the clinic that deliver the biggest impact from AI in drug discovery.

Lack of high-quality data sets, access to mature tools, and relevant AI and drug discovery capabilities constrains the value being delivered from AI today.

“Scientists build on the shoulders of giants. In fact, most often, those shoulders are data”



Janet Thornton
Director Emeritus
EMBL-EBI.

Dawn servers.
Copyright Joe Bishop.

Drug discovery – what's already happening?

Selected active projects and organisations driving innovation.

Using Deep Screening to accelerate biologics discovery and AI-enabled design

Sortera Bio, a new MRC Laboratory of Molecular Biology spinout company, aims to redefine early biologics discovery and engineering with its high-throughput drug discovery platform, Deep Screening. In addition to being a powerful tool for biologics drug discovery, the resulting datasets can also be used to train generative AI models which can predict novel and higher-affinity biologic sequences that encode potentially superior therapeutics, further accelerating drug discovery. The development of Deep Screening was the result of seven years of rigorous research, refinement and validated by Ben and Philipp in the Laboratory of Molecular Biology's PNAC Division, with support from AstraZeneca through the LMB-AstraZeneca Blue Sky Collaboration. By combining Sortera Bio's Deep Screening platform with AstraZeneca's expertise in AI assisted biologics discovery, the aim is to discover precision biologics that have the potential to benefit patients.



Ben Porebski
Founder of Sortera Bio



Philipp Holliger
Founder of Sortera Bio

Generative and Synthetic Genomics Programme

The Generative and Synthetic Genomics Programme combines large-scale data generation and artificial intelligence to lay the foundations for predictive and programmable molecular biology and the routine synthesis and engineering of genomes. The goal is to generate the data and models that will allow biology to be engineered as easily as software, electronics and cars and to accelerate greatly the understanding of genomes and the development of therapeutics.



AI for discovering new rare disease treatments

Healx is a mission-driven technology company pioneering the use of AI to accelerate the discovery and development of treatments for rare and under-served conditions. Its platform leverages advanced machine learning to identify and explain novel connections between drugs and diseases, enabling faster, cheaper and more effective therapy development. In July 2025, Healx announced a partnership with SCI Ventures to accelerate the discovery and development of therapies for spinal cord injury (SCI) using artificial intelligence.



Tim Guillems
Co-founder and CEO

healx

Multimodal Machine Learning

ARU AI researchers have developed cutting-edge multimodal AI and machine learning models. In a collaboration, University of Cambridge and ARU researchers develop scalable AI models for advancing the capability of modelling of complex cell morphologies and addresses current limitations in 3D labelling and segmentation. Working on large healthcare data, ARU is investigating the complex relationship between atrial fibrillation and heart failure using multimodal machine learning. By analysing structured and unstructured clinical data, the project provides informative evidence to advance the precision medicine and enable personalised, data-informed treatment strategies.



Quantum Computing in drug discovery

The Milner Therapeutics Institute is developing a Quantum Centre partnered with Yonsei University, South Korea, and its IBM Quantum System One (127-qubit) Computer. The focus will be drug target identification and early drug discovery.



New machine learning tool to design peptides with enhanced potency towards RNA

A team from the Yusuf Hamied Department of Chemistry at the University of Cambridge is collaborating with AstraZeneca to develop a model to design new peptide molecules with enhanced potency for RNA targets.



Dr Lucy Colwell
Yusuf Hamied Department of Chemistry
University of Cambridge

Developing next-generation cardiovascular treatments with AI

CardiaTec is a TechBio company employing computational methods to decode the biology behind cardiovascular disease. CardiaTec is building the first and largest proprietary human heart tissue multiomics dataset. Their platform powers the discovery and development of novel therapeutics for cardiovascular diseases. CardiaTec spun out of the Han Lab at the University of Cambridge. As Head of AI and Computational Research at the Milner Therapeutics Institute, Namshik has a number of Pharma and Biotech partnerships and is leading projects using AI/ML and Quantum approaches in a range of healthcare applications. Drug target identification is a specific focus of Namshik's group.



Dr Namshik Han
Milner Therapeutics Institute



AI-driven automation to enable cell and gene therapy research

Appraiseye is revolutionizing viral vector manufacturing for cell and gene therapies using AI-driven automation. Its flagship platform, Bodhi, integrates advanced AI vision with a scalable, multi-layered roller bottle system to ensure high-yield, reproducible AAV production with real-time process monitoring. The technology enables biotech innovators to smoothly transition from proof-of-concept studies to clinical readiness, enhancing patient accessibility to advanced gene therapies.



Rupert Smit
CEO, Appraiseye



Carol Ke
CSO, Appraiseye

Drug discovery:

We could collaborate to...

These are a few initial ideas informed by our discussions with some of our AI experts in Cambridge. We are excited to collaborate with you and develop tailored partnerships that align with your unique interests and goals.

Establish a centre for the application of quantum computing to drug discovery

Quantum computing could help process large data sets including the nature of binding between small molecules and proteins, and see unseen insights that could unlock innovation in drug discovery. Given the volume, pace of generation and complexity of the scientific problems in this area, drug discovery should be prioritized for quantum computing research and how to pair it with AI tools.

Launch an intensive omics data generation programme

High quality, well annotated data sets are essential fuel for AI drug discovery models, in the same way that the Protein Data Bank allowed AlphaFold to predict protein structures. Researchers in Cambridge long for data that is ripe to train their elegant AI models, but existing data sets are often low quality or quantity with gaps in annotation. Grant funding will not permit this foundational data generation work, as it is viewed as 'one step removed' from real world impact. Cambridge researchers have shared their desire for these data sets and how they would accelerate their drug discovery research.

Sponsor a training programme in AI in drug discovery

By sponsoring a training programme - from degree apprenticeships to PhD level research - you can help to advance new AI applications in drug discovery whilst developing the next generation of AI talent in Cambridge. By becoming a partner, you'll have access to a fresh talent pool of AI experts to accelerate your R&D efforts and ensure that your organisation remains competitive in this rapidly growing space.

AI-deas



New research strategies are needed to bridge the implementation gap between our aspirations for AI and our ability to deploy it to tackle major societal challenges. AI-deas is ai@cam's incubator for challenge-led AI research that tackles major scientific and societal challenges. Projects supported through AI-deas will generate new thinking about the role of AI in addressing major issues, build coalitions in areas of need, and create partnerships to take research from lab to real-world benefit.

Womb to World

AI Innovations that Bridge the Fertility to Family Experience

The From Womb to World project aims to develop cheaper, less invasive and more accurate AI-assisted tests that can be used throughout the conception to childhood journey. We want to improve the accuracy of early diagnosis of women's health conditions, personalise fertility and IVF outcomes – and support the transition to parenting. The University of Cambridge's Departments of Psychology, Computer Science, and Physics among others will lead this project, in partnership with two leading specialty hospitals.



Mo Vali

Department of Physics
University of Cambridge
AI-deas challenge lead



Staci Weiss

Department of Psychology
University of Cambridge
AI-deas challenge lead

Responsible AI for better lifelong brain and mental health

This project will use the latest advances in AI to better understand brain health and disease. It will explore the environmental, social and neurological factors at play, to develop responsible AI-driven tools that help clinicians predict, diagnose and treat brain diseases and mental health disorders. The project will be led by the Department of Psychology at the University of Cambridge and delivered by an interdisciplinary team of experts in areas including data science, software engineering, neuroscience and clinical practice from across the university.



Professor Zoe Kourtzi

University of Cambridge
AI-deas challenge lead

Clinical trials

The opportunity

Between 2017-2021 in UK the number of participants recruited to industry-led trials nearly halved (down 44%) – losing the country an estimated £1bn. AI has the potential to optimise the next generation of clinical trials and reverse this trend.

Approximately 80% of clinical trials are delayed or closed because of recruitment issues with ~40% of clinical trial cost attributed to this step. One industry leader shared that ~80% of their clinical trial cost can be spent on trial participants that are not ultimately recruited. AI – when combined with electronic health record data – could play a key role in identifying participants who meet the eligibility criteria for the trial. AI can also help to optimise clinical trial design by analysing and interpreting outcomes in real time and suggesting adjustments to the design – creating so called ‘adaptive clinical trials.’

Aligned with one of the six headline actions in the Life Sciences Sector Plan

Slashing trial set up times to under 150 days: By implementing the O'Shaughnessy reforms, updating the NIHR governance and placing a dual health and growth mandate on the NIHR, we will cut delays that deter investors and aim to double commercial interventional trial participants by 2026, and again by 2029.

"The UK has a real opportunity to be a global leader in AI-enabled clinical trials and Cambridge can be a key partner. Cambridge is home to digitally mature hospital trusts, a highly engaged clinician community and a thriving ecosystem of AI expertise across many domains. Together, these strengths give Cambridge the potential to be a centre for improving clinical trial efficiency at scale."



Lord James O'Shaughnessy

Chair of Cambridge University Health Partners and author of the independent review 'Commercial clinical trials in the UK'



Clinical trials – what's already happening?

Selected active projects and organisations driving innovation in this space.

AI can accelerate the search for more effective Alzheimer's medicines by streamlining clinical trials

Scientists have used AI to re-analyse a clinical trial for an Alzheimer's medicine and identified a group of patients who responded to treatment. The work demonstrates that AI can inform the design of future clinical trials to make them more effective and efficient, accelerating the search for new medicines. They found that the drug slowed cognitive decline by 46% in a group of patients with early stage, slow-progressing mild cognitive impairment – a condition that can progress to Alzheimer's.

AI-Powered Eye and Vision Research

ARU researchers are advancing AI-enabled predictive analytics to support early detection and intervention in both systemic and vision health. One project applies machine learning to analyse vital sign trends for early warning of conditions such as hypovolemic shock, cardiogenic shock, and sepsis, which helps to predict acute deterioration in clinical settings. Funded by the EU, ARU researchers led by Professor Pierscionek and her team have developed eye models for understanding refractive error, age-related changes to eye and vision and potential treatments for sight threatening diseases. The Pierscionek lab is also conducting research on anti-cataract drugs, with canine clinical trials in progress, on advanced nanotechnologies for treating retinal disease, on use of digital twins and on advancing robotic eye surgery with international partners in Poland and Turkey. This includes computational models that are being developed to improve orthopaedic surgery and images used to develop AI algorithms that will improve surgical outcomes.



Professor Zoe Kourtzi
Department of Psychology
University of Cambridge



Professor Barbara Krystyna Pierscionek
Anglia Ruskin University

New AI tool visualises a cell's 'social network' to help treat cancer

A new artificial intelligence (AI)-based neural network tool developed by scientists at the Wellcome Sanger Institute can rapidly analyse and interpret millions of cells from a patient sample. It can uncover tissue changes across breast and lung cancer patients and help identify how certain people may respond differently to treatment.

<https://doi.org/10.1038/s41588-025-02120-6>

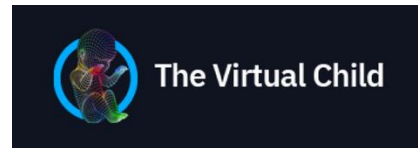


Mo Lotfollahi

Co-senior author at the Wellcome Sanger Institute

The 'Virtual Child'

Professor Richard Gilbertson's group at the CRUK Cambridge Centre are building the world's first 'Virtual Child' - a computer model of normal and cancerous human development at the level of each individual cell. The model will "develop cancer" and the team will use it to do virtual clinical trials to pinpoint, predict, and prioritize potential new treatments.



The Cambridge Centre for AI in Medicine (CCAIM)

One of the aims of CCAIM is to achieve a breakthrough in personalised healthcare delivery, including effective administration of treatments over time, and in the way in which clinical trials are conducted. CCAIM is integrating omics data and a wide variety of other data sets, including electronic health records (EHRs), and applying novel machine learning techniques to better characterise individual patients, improve diagnosis, account for co-morbidities and reliably predict patient trajectories. These technologies will enable the optimisation of targeted treatment interventions, identify looming health issues in large populations before they develop symptoms, and allow us to move towards the AI-enabled hospitals of tomorrow.



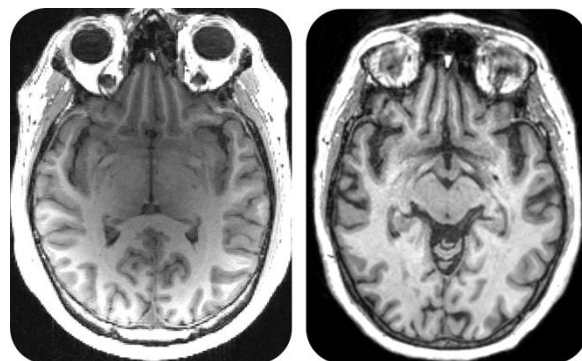
“

With our AI model we can finally identify patients precisely and match the right patients to the right drugs. This makes trials more precise, so they can progress faster and cost less, turbocharging the search for a desperately-needed precision medicine approach for dementia treatment.

Professor Zoe Kourtzi
Department of Psychology
University of Cambridge

”

Two MRI scans of patients at early stages of dementia. In the brain on the left the disease is in a stable state, while in the brain on the right the disease is Slowly Progressive. The AI model developed by Zoe Kourtzi's team can tell these apart, precisely.



Clinical trials

We could collaborate to...

These are a few initial ideas informed by our discussions with some of our AI experts in Cambridge. We are excited to collaborate with you and develop tailored partnerships that align with your unique interests and goals.

Speed up clinical trial recruitment

Approximately 80% of clinical trials are delayed or closed because of problems with recruitment. Trials may 'fail' if the study did not accurately identify the patients most likely to benefit from the treatment. Both of these issues are potentially tractable with AI tools. By leveraging Cambridge's secure data infrastructure and compute power AI start ups and academic innovators could access a range of appropriately consented clinical trial data and or healthcare data to develop and test their AI tools on secure platforms. In addition, the data sources, governance and infrastructure already developed could support the application of AI patient selection tools by companies and clinical research.

Support the regulatory approval of AI tools and approaches to clinical trials

A Cambridge clinical trial can offer companies the double-prize of exceptional study delivery coupled with an option to trial AI tools and approaches to selection and analysis. Currently, there is a barrier to testing AI tools in a real-world setting, because regulators need evidence that the tools are safe. However, trial sponsors are unlikely to fill or fund this prospective trial analysis. Therefore, the sector needs investment to link the discovery phase to the R&D, boosting the clinical adoption of these tools. We propose a model where Cambridge offers support with a parallel study (e.g. alongside a phase 2 trial) that includes analysis of AI tools. This could include, for example, compute power, regulatory expertise and/or access to data environments.

Speed up study starts by funding development of new AI tools to automate data curation

Cambridge is leading in secure data access (add examples) but curation is currently lagging. AI is suited to this kind of task. The AI could pull from a library of codes already developed by the specialist data curation teams and use them to build a chatbot style interface so that researchers can ask their queries. This would cut the time spent on data curation and allow the trial to begin sooner.

“

Using the predictive algorithm to treat patients earlier could potentially reduce long-term lung damage. We are also hoping to remove the need for people to attend hospital for routine clinic appointments.

”

**Professor Andres Floto**

Co-Director, Cambridge Centre for AI in Medicine
Research Director and Honorary Consultant, Royal Papworth Hospital
Honorary Consultant, Cambridge University Hospitals
Co-Director, Cambridge Infectious Diseases Interdisciplinary Research Centre

Healthcare delivery

The opportunity

AI has the potential to transform the treatments available to patients and the healthcare systems that deliver them. It could enable personalised therapies, offering the right drug at the right time at the right dose to the right person.

There is significant potential for AI to have a major impact on primary care services, such as GP practices, by tackling operational tasks such as notetaking. AI tools called 'ambient voice technology' or 'digital scribes' can be used to transcribe, and summarise conversations between GPs and patients, which may help to increase productivity in the NHS.

It's essential that the deployment of healthcare AI is underpinned by a solid evidence base and that innovators developing these tools are always focussed on end users, including healthcare staff, as well as being informed by the experiences of patients and carers, to ensure that the tools are clinically relevant, scalable and user-friendly.

Many Cambridge clinicians and healthcare staff have pioneered the development of new tools, but red tape is limiting adoption within Cambridge and other NHS trusts. Tools must have a pathway to implementation across the NHS, saving teams time, effort and money.

One area we have identified for this, aligned to national priorities, is AI tools for prioritisation and management of NHS waiting lists.

“Considering that healthcare staff time is probably the most precious commodity within the NHS, this is technology that could be transformational.”



Professor Niels Peek
THIS Institute
(The Healthcare Improvement Studies)

“

This is the first time AI has been shown to diagnose as accurately as an experienced pathologist whether an individual has coeliac or not.



Dr Florian Jaeckle

University of Cambridge and CTO of Lyzeum

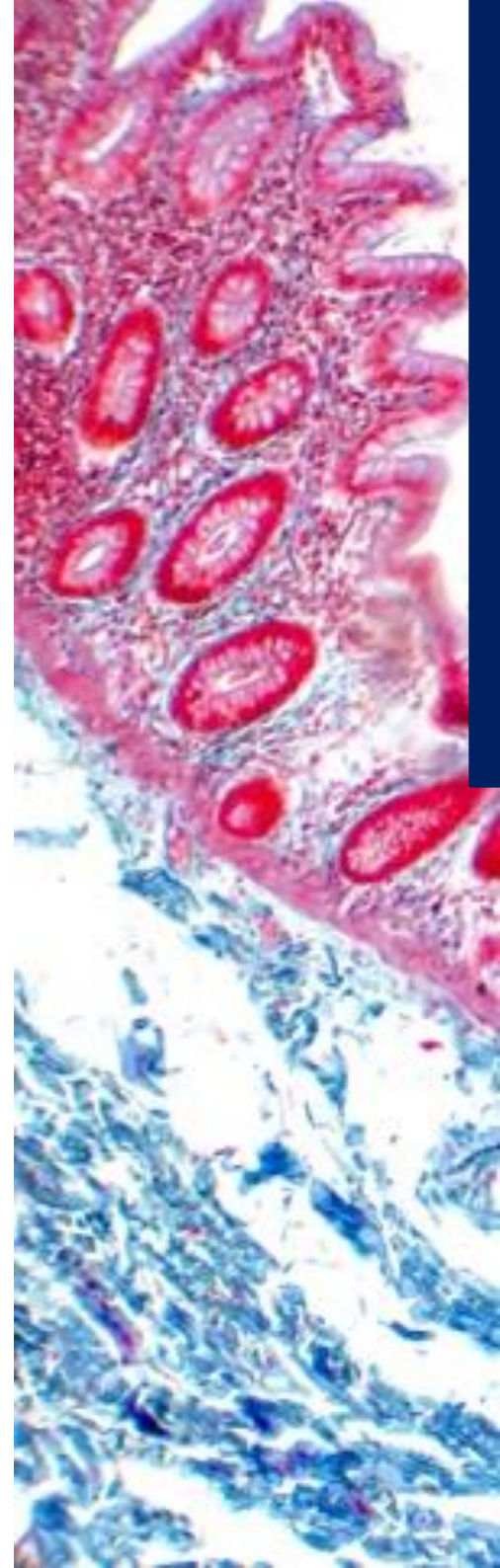
AI has the potential to speed up this process, allowing patients to receive a diagnosis faster, while at the same time taking pressure off NHS waiting lists.



Professor Elizabeth Soilleux

University of Cambridge and CEO of Lyzeum

”



Healthcare delivery – what's already happening?

Selected active projects and organisations driving innovation in this space.

AI guided clinical coaching in urgent and emergency care

UCL Partners, North East London Integrated Care System, and Health Navigator are currently delivering the AI for Urgent and Emergency Care programme, which aims to support patients before they reach crisis points, helping them live healthier lives and easing pressure on A&E services. The programme uses routinely collected local hospital data to create bespoke machine learning algorithms to identify people who are likely to seek help from emergency or urgent healthcare services in the next six months. They are offered support via targeted, phone-based clinical coaching with trained healthcare professionals. THIS Institute is carrying out an evaluation of the project, along with LCP Health Analytics, to gather evidence that will support its wider adoption and help to shape future policies for effective proactive care.



Professor Niels Peek

THIS Institute (The Healthcare Improvement Studies Institute)

AI algorithm can read 'capsule sponge test' pathology slides

AI algorithms have been developed to read the slides from the 'capsule sponge test' which was developed by Professor Rebecca Fitzgerald, Director of the Early Cancer Institute at the University of Cambridge. The capsule sponge test allows patients with Barrett's Oesophagus to be grouped into three levels of cancer risk. This helps to prioritise endoscopy timing, with low-risk patients potentially being monitored using the sponge alone. One of the key sponge markers is a test for the p53 cancer gene and the AI technology can rapidly identify the negative tests and point the pathologist to any areas that need careful examination. This AI technology could save time and facilitate larger-scale implementation in future.



Professor Rebecca Fitzgerald

Early Cancer Institute
University of Cambridge

Diagnosing coeliac disease

A machine learning algorithm developed by Cambridge scientists was able to correctly identify, in 97 cases out of 100, whether or not an individual had coeliac disease based on their biopsy. The AI tool, which has been trained on almost 3,400 scanned biopsies from four NHS hospitals, could speed up diagnosis of the condition and take pressure from stretched healthcare resources, as well as improving diagnosis in developing nations, where shortages of pathologists are severe. Professor Soilleux and Dr Jaeckle have set up a spinout company, Lyzeum Ltd, to commercialise the algorithm.



Professor Elizabeth Soilleux
University of Cambridge and
CEO of Lyzeum

AI cuts radiotherapy waiting times for cancer patients

Artificial intelligence developed by and for the NHS at Addenbrooke's Hospital in Cambridge is reducing the amount of time cancer patients wait for radiotherapy treatment. 'OSAIRIS' is saving many hours of doctors' time in preparing scans and helping to cut the time patients have to wait between referral for radiotherapy and starting treatment. Working alongside this AI technology, specialists can plan radiotherapy treatments approximately two and a half times faster than if they were working alone, ensuring more patients are treated sooner and improving the likelihood of cure. The technology is currently being used at Addenbrooke's for prostate and head and neck cancers, but has the potential to work for many other types of cancer, benefitting patients across the NHS. OSAIRIS was developed using open-source software from Microsoft Research's Project InnerEye.



Dr Raj Jena
Cambridge University Hospitals
NHS Foundation Trust

AI in General Practice

At ARU, AI-driven predictive modelling is used to enable innovation in general practice aiming for improving efficiency and reducing healthcare inequalities. For example, ARU researchers have applied machine learning to predict the side effects of contraceptive pills using routine GP data. This approach enables personalised prescribing by identifying women at higher risk of adverse effects based on their clinical history. Their researchers also applied longitudinal clinical trajectory analysis to better understand individual health patterns over time, supporting more evidence-informed clinical decision-making.



AI technology introduced to benefit stroke patients

Clinicians at Royal Papworth Hospital NHS Foundation Trust are using AI technology to help deliver faster and more accurate diagnoses of strokes. AI algorithms used by the Brainomix e-Stroke system help to interpret CT scans taken at Royal Papworth, providing real-time information for hospital staff and NHS colleagues delivering care at specialist stroke units nationwide. The technology helps doctors to make informed decisions, allowing more stroke patients to get the right treatment, in the right place, at the right time.



Royal Papworth Hospital
NHS Foundation Trust

Addressing mental health among young people

With stretched NHS resources, it can be difficult to access Child and Adolescent Mental Health Services (CAMHS). Anna Moore is interested in whether AI can help to manage this bottleneck, by identifying those children in greatest need of support and helping those who don't need specialist CAMHS to find suitable support from elsewhere. One way to do so is by using data collected routinely on children. CADRE is a network of local databases that are linked together. It has been designed purely for children's health research, innovation and service improvement.



Anna Moore
University of Cambridge



AI-driven home monitoring platforms to predict clinical deteriorations in Cystic Fibrosis (CF)

Andres Floto is leading a trial at Royal Papworth Hospital NHS Foundation Trust using AI alongside home monitoring, to create predictive algorithms which can forecast dips in the health of adults with cystic fibrosis (CF) before they begin to feel unwell.

ML algorithms are used to spot signs of lung infections in cystic fibrosis, enabling patients to start treatment before they become sick, thus avoiding unnecessary hospital admissions.



Professor Andres Floto
Director, Cambridge Centre
for AI in Medicine

AI-powered mental healthcare

ieso is a pioneer in AI-powered mental healthcare, combining clinical expertise with advanced technology to help more people feel better, faster. Its latest product, Velora, is a next-generation generative AI-based programme that delivers outcomes on a par with human-delivered care and is designed to integrate seamlessly into existing clinical workflows.

ieso

AI to transform operating theatre efficiency

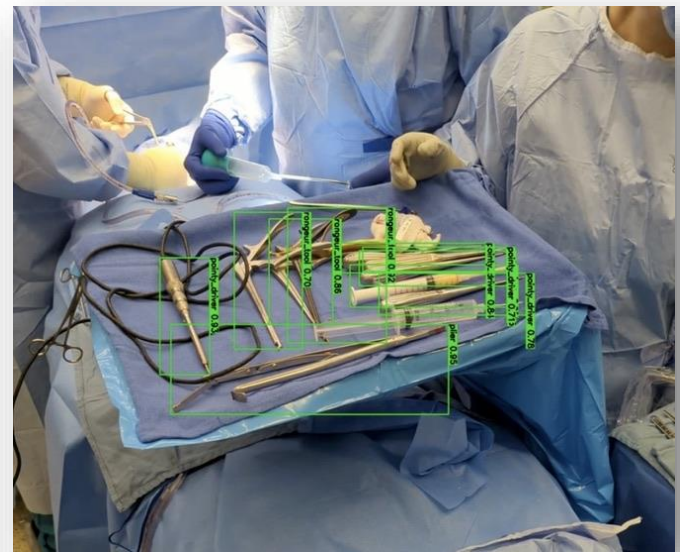
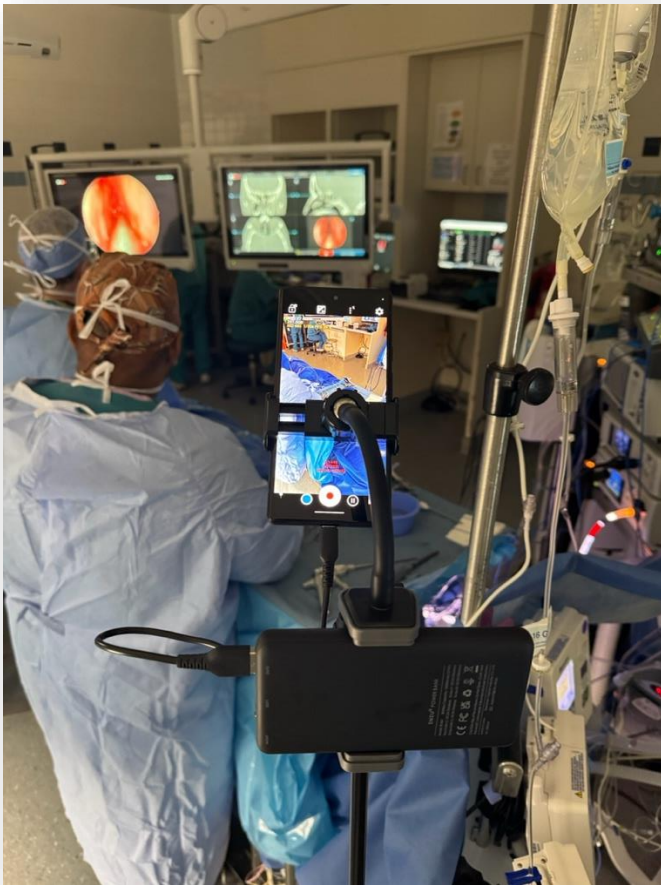
Appraiseye equips hospitals with AI-powered vision systems and real-time analytics to uncover hidden inefficiencies in operating rooms (ORs) and sterile processing departments (SPDs). By transforming every second of peri-operative workflow into actionable insights, their proprietary OR platform accelerates room turnover, reduces instrument tray redundancy, and helps hospitals reclaim millions in opportunity costs.



Rupert Smit
CEO, Appraiseye



Emil Swanepoel
CTO, Appraiseye



An example of the impact SaMD* can have: CanRisk

CanRisk is an online tool that enables healthcare professionals to calculate an individual's future risks of developing breast and ovarian cancer using family history, genetics and other risk factors.

It was developed by Professor Antonis Antoniou and Professor Doug Easton (Centre for Cancer Genetic Epidemiology, Department of Public Health and Primary Care), in collaboration with other University of Cambridge departments and units. CanRisk is designed to empower women and healthcare professionals in cancer risk management and was first released in 2008. It is freely available online for end use by healthcare professionals and has also been commercialised through Cambridge Enterprise.



Clinical Impact

- **Global Adoption:** 22,500+ registered healthcare professionals across 130+ countries.
- **Usage:** Nearly 4 million breast and ovarian cancer risk assessments since January 2020.
- **Regulatory Approval:** registered as an *in vitro* medical device in GB (MHRA) and EEA (CE marking).
- **Endorsements:** NICE guidelines, NHS high-risk screening programme, US National Comprehensive Cancer Network, American Cancer Society, Ontario Breast Screening Programme, and Australia's eviQ guidelines.
- **Real-World Impact:** Supports ongoing clinical trials and implementation studies of risk-stratified screening and prevention in the UK, USA, Europe, Canada, and Australia.

*Clinical decision support tools and risk prediction models such as CanRisk are classified as 'Software as Medical Device'

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Currently too many AI products are stuck in pilot phases due to the need for bespoke IT solutions for each research project.

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UK Government
Life Sciences Sector Plan (July 2025)



Healthcare delivery: Let's collaborate to...

These are a few initial ideas informed by our discussions with some of our AI experts in Cambridge. We are excited to collaborate with you and develop tailored partnerships that align with your unique interests and goals.

Improve patient care by creating a defined pathway for AI-powered Clinical Decision Support Tools

New molecular entities have a well-defined process for testing and adoption. This is not currently the case for new AI clinical decision support tools (includes prediction, diagnosis and treatment selection). Cambridge needs to rally its expertise around this and define a process and associated infrastructure to enable these tools to move through clinical investigation and into practice.

Clinical decision support tools and risk prediction models are classified as 'Software as Medical Device' SaMD. These have a different regulatory pathway to molecular entities. There are multiple examples of AI tools that have been developed by Cambridge clinicians that have demonstrated clinical impact, but the tools have stalled at the implementation phase due to red tape and a lack of specialist support on how to refine, commercialise and implement the technology. Expertise developed in Cambridge could support researchers in other academic settings across the UK.

Launch a collaborative University-Industry AI Health Workforce Upskilling Centre

A pioneering training initiative co-led by academia, the NHS and industry could upskill clinicians and health professionals in AI, responsible innovation, and implementation science. This will ensure a future-ready workforce equipped to deliver safe and ethical AI-enabled care.

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At ARU, we believe that one of the essential skills for the future healthcare workforce is to be able to responsibly harness AI to provide better healthcare.

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Professor Yonghong Peng
Anglia Ruskin University



Healthcare delivery: We could collaborate to...

Improve the environmental sustainability and productivity of AI based tools

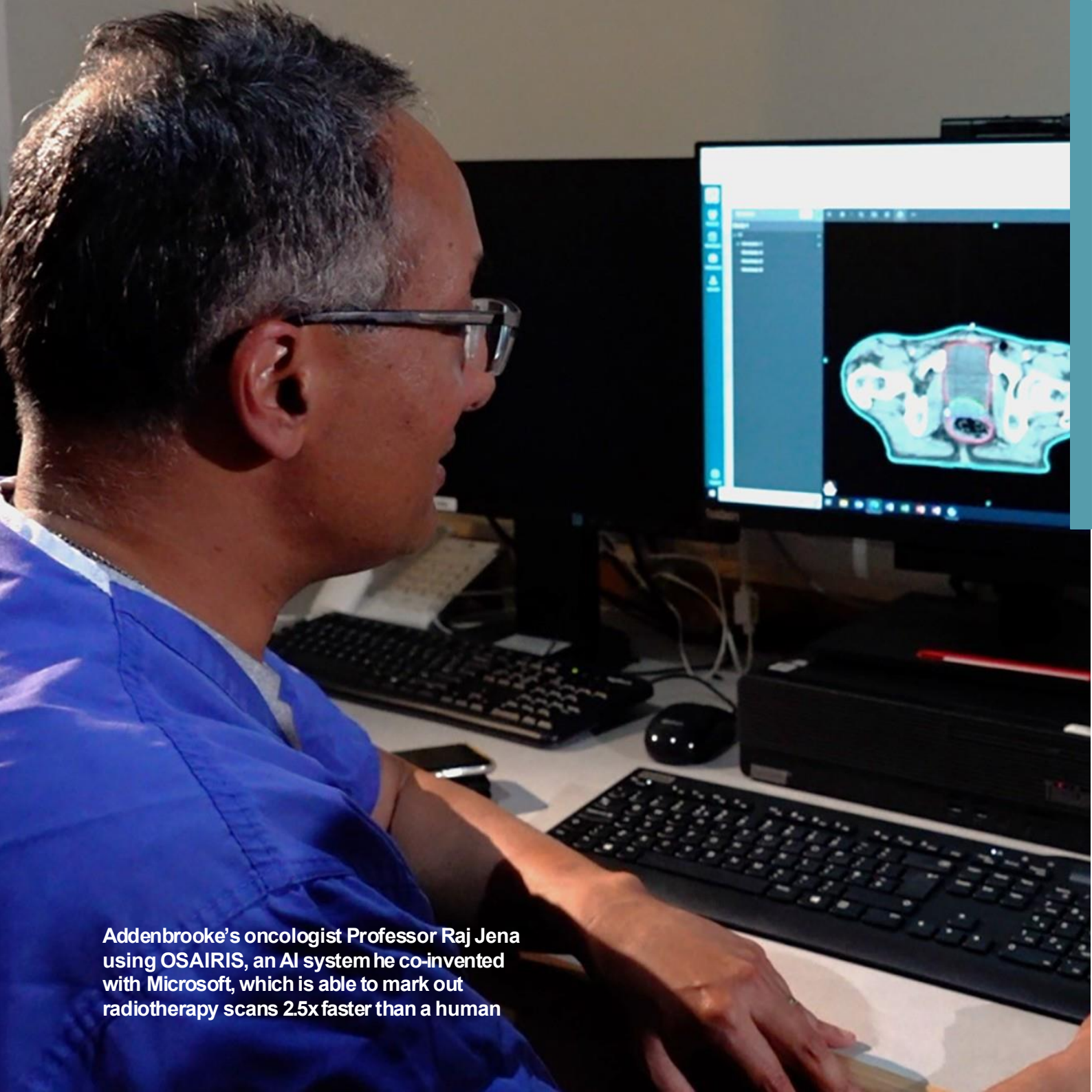
AI diagnostic tools are already being trialled and used in some NHS settings and are seen as a way to address radiology backlogs, speed up diagnosis, and make better use of clinical time — but they also introduce environmental costs, such as energy use and emissions associated with inference and cloud deployment. With the NHS committed to becoming Net Zero by 2045, there is an urgent need for practical, evidence-based methods to assess and mitigate the environmental impact of AI before widespread adoption.

Currently, a team at THIS institute is creating NHS-facing tools and guidance that will enable trusts to assess, compare and monitor AI technologies for their environmental footprint — alongside criteria such as clinical effectiveness, cost and ease of integration. More work will be needed to co-design, implement and evaluate these tools in partnership with NHS leaders, clinicians, managers, policy makers, procurement professionals and patients, ensuring that they are usable, relevant, and impactful. At the same time, we need to make AI and algorithms more sustainable, building on the award-winning work of The Green Algorithms project led by Professor Michael Inouye.

Establish Cambridge as a leader in adopting AI for children's health

With a world-first hospital comes the opportunity for a whole new way of thinking. The Cambridge Children's Hospital — which uniquely will deliver integrated mental healthcare, physical healthcare and research in one place — is proposing an AI Adoption Lab to help understand and treat the whole child, maximise efficiency across a whole hospital, listen to the whole community and stay at the cutting edge for a whole life.

A dedicated translational hub could identify, implement and scale AI-enabled solutions that improve patient outcomes, empower clinicians/staff and drive operational excellence. Working across multiple NHS and academic institutions, as well as partnering with industry, its purpose would be to bridge the gap between proven AI models and real-world clinical and operational adoption. The AI Adoption Lab could start in advance of construction completion and quickly validate the value propositions.



Addenbrooke's oncologist Professor Raj Jena using OSAIRIS, an AI system he co-invented with Microsoft, which is able to mark out radiotherapy scans 2.5x faster than a human

Cambridge is AI ready

From compute power to data, entrepreneurship, ethics and inclusivity

Compute power

Cambridge already has the high-performance computing infrastructure required for AI research – the Dawn supercomputer is one of the most powerful AI supercomputers in the UK and provides AI-specialised compute capacity to researchers, academia and industry.

DAWN

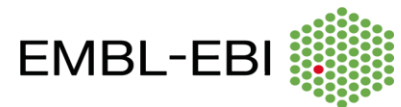
Secure environments for AI research

The East of England Secure Data Environment is a cloud-based platform that enables researchers to access de-identified NHS data for approved research within a secure setting. The SDE provides tooling to maximise research opportunities for the benefit of patients and the NHS, whilst keeping data safe and protecting people's privacy. The SDE is becoming AI-ready through the VISTA project, which is enhancing infrastructure for safe, scalable AI research.



Bioinformatics expertise

EMBL's European Bioinformatics Institute (EMBL-EBI) is a global leader in the storage, analysis and dissemination of large biological datasets. EMBL-EBI helps scientists realise the potential of big data by enhancing their ability to exploit complex information to make discoveries that benefit humankind. Scientists worldwide rely on EMBL-EBI's open data resources and tools. On an average day, EMBL-EBI's data resources get over 120 million web requests from millions of users worldwide.



Generative genomics expertise

Artificial intelligence (AI) is transforming biology by enabling researchers to build predictive models from vast biological datasets. Wellcome Sanger Institute researchers are leveraging AI tools to predict, design, and engineer biological sequences, such as DNA and proteins.



AI policy and public engagement expertise

The Kavli Centre for Ethics, Science, and the Public enables global conversations on the ethical issues raised by cutting-edge science. The Centre is a unique collaboration between the University of Cambridge and Wellcome Connecting Science, with funding from the Kavli Foundation.



AI ethics and impact expertise

The Economics of Artificial Intelligence Research Laboratory (EARL) at Anglia Ruskin University explores AI's role in accelerating knowledge creation and economic growth. It investigates AI's power to create both opportunities and challenges – driving progress but also requiring new strategies to ensure that growth is inclusive, ethical, and sustainable.



A hub for quantum research

A major new research hub led by the University of Cambridge and UCL aims to harness quantum technology to improve early diagnosis and treatment of disease. Q-BIOMED is one of five quantum research hubs announced on 26 July by Peter Kyle MP, the Secretary of State for Science, Innovation and Technology, supported by £160 million in funding. The hub will exploit advances in quantum sensors capable of detecting cells and molecules, potentially orders of magnitude more sensitively than traditional diagnostic tests.



Support for entrepreneurs

Founders at the University of Cambridge provides deep and extensive support to founders as they take ideas and companies forward, through pre-seed and seed capital investment, intensive mentoring and programmatic support. Many other programmes like Founders play a key role in creating a pipeline of innovative new companies, including in the AI space. This strengthens the ecosystem in Cambridge and attracts top talent.



A thriving AI community in Cambridge

ai@cam

ai@cam is the University of Cambridge's flagship mission on artificial intelligence. Leveraging the world-leading research pursued across the University, ai@cam creates connections between disciplines, sectors and communities to unlock a new wave of progress in AI and its applications to benefit science, citizens and society.



Cambridge Centre for AI in Medicine (CCAIM)

CCAIM develops pioneering AI and machine learning technologies to transform biomedical science, medicine and healthcare. CCAIM aims to revolutionise healthcare through innovative research, education and collaboration with partners. By fostering a collaborative environment, CCAIM and its partners aim to cultivate an outstanding talent pool equipped to tackle future challenges in medical research with AI and machine learning. CCAIM has strategic partnerships with AstraZeneca, Boehringer Ingelheim, GSK, McKinsey & Company, and its artificial intelligence arm, QuantumBlack, and Sanofi.



CCAIM Summer Schools

CCAIM leads two online Summer Schools - one aimed at data scientists, students, academics and industry experts with a background in AI and machine learning and the other aimed at medical professionals and medical students focussing on how to transform healthcare with cutting-edge machine learning.

AI summer school sponsorship

Cambridge University Health Partners has sponsored five Cambridge-based researchers and clinicians to attend an AI summer school in 2025, including those offered by CCAIM. This is part of CUHP's strategic objective to support local talent in the areas of health data and AI - and to build a community of AI researchers and professionals from academic and clinical backgrounds.



Cambridge AI Club for Biomedicine

AI Club is organised by the Milner Therapeutics Institute and Cancer Research UK. Participants enjoy monthly talks and networking, discuss common themes and explore different topics and Methodologies. 800 Club delegates gathered over a 12-month period at the Jeffery Cheah Biomedical Centre.



The Centre for Human Inspired Artificial Intelligence

The Centre for Human-Inspired Artificial Intelligence (CHIA) is a new centre within the University of Cambridge. The founding principle of CHIA is to advance Artificial Intelligence (AI) for the benefit of humanity.

The Centre brings together an interdisciplinary community of researchers to investigate the innovative ways in which human and machine intelligence can be combined to yield AI which is capable of contributing to social and global progress.



British - French research partnership on AI

Institut Polytechnique de Paris (IP Paris), HEC Paris, Université Paris-Saclay, Oxford University and Cambridge University have formalised a joint commitment in July 2025 to create a strategic partnership in the field of artificial intelligence. The Entente Cordiale Paris-Saclay – Oxford-Cambridge AI Initiative will structure long-term cooperation in AI research, training and innovation, in order to meet the major challenges of our time.



Cambridge ERA:AI Fellowship

The Cambridge ERA:AI Fellowship provides researchers and entrepreneurs with an in-person, paid, 8-week summer research fellowship at the University of Cambridge, working on mitigating risks from frontier AI.



Impulse Programme at the Maxwell Centre

The Impulse Programme enables the development of high-potential technology and life sciences innovation into commercial propositions. It is a three-month programme, with a sharp focus on prioritising and developing high-potential business cases. A network of passionate mentors and experienced entrepreneurs act as role models and provide valuable guidance from the Cambridge innovation cluster. Recent AI alumni from the programme include Cambridge Vision Technology, Demetria and DropCode.



Accelerate Programme for Scientific Discovery

Accelerate Science pursues research at the interface of AI and the sciences, generating new scientific insights and developing AI methods that can be deployed to advance scientific knowledge. Supported by a donation from Schmidt Futures, a philanthropic initiative founded by Eric and Wendy Schmidt, the Accelerate Programme will provide young researchers with specialised training in AI techniques, equipping them with the skills they need to use machine learning and AI to power their research.



Raspberry Pi Foundation

Raspberry Pi Foundation works at the leading edge of AI education, bringing together research and industry expertise with practical classroom experience to define what AI means for computing education and how best to support teachers and learners in understanding this rapidly evolving technology.



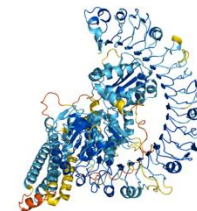
Spärck AI Scholarships

The UK government's Department for Science, Innovation and Technology (DSIT) has announced the launch of the Spärck AI Scholarships, a major new initiative to nurture the next generation of AI leaders, with Cambridge proud to join as a founding partner. The Spärck AI scholarships will provide full funding for master's degrees at nine leading UK universities specialising in AI and STEM subjects.



AlphaFold training course

To support and democratise the use of AlphaFold, Google DeepMind and Cambridge's EMBL-EBI have developed a free, online training course for researchers. The course delves into the fundamentals of AlphaFold, exploring its strengths and limitations and enabling learners to gain practical skills through hands-on exercises. Over 125,000 users from more than 170 countries have already accessed the AlphaFold training course.



Degree apprenticeships at ARU.

Anglia Ruskin University (ARU) has a well-established track record when it comes to work-based, industry-relevant degree courses. They are at the forefront of the development of degree apprenticeships and offer a wide range of apprenticeships at both undergraduate and postgraduate levels. Science, bioinformatics, machine learning and AI were identified as areas of skills needs in recent research conducted by ARU.



Centre for Genomics Research

AstraZeneca's Centre for Genomics Research (CGR), based at The Discovery Centre and embedded within Cambridge's innovation ecosystem, pioneers AI-driven healthcare breakthroughs. CGR's AI tool MILTON combines advanced machine learning with data from genes, proteins and health information, predicting over 1,000 diseases 10-15 years before diagnosis. Recognised by the World Economic Forum as one of the ways AI is transforming healthcare, it exemplifies AstraZeneca's AI leadership. AstraZeneca collaborates in Cambridge with other researchers and institutions on genomics research to inform disease understanding and drug discovery and development, including the University of Cambridge, Cancer Research UK, the Medical Research Council and the Wellcome Sanger Institute.



SAS Advanced Analytics Hub

Cambridge's Maxwell Centre and SAS, leaders in data and AI, jointly launch an AI & Advanced Analytics Hub to advance opportunities for the healthcare sector. The hub will embed SAS experts and SAS® Viya® data and AI platform capabilities into the university environment, enabling targeted collaboration with leading researchers and early-stage entrepreneurs, supporting them to "find the quickest way from a billion points of data to a point of view".



"We are excited to interface Cambridge's world-class research and innovation with SAS' leading expertise in advanced analytics and AI forming a partnership for societal good."



Dr Aga Iwasiewicz-Wabnig
Director Maxwell Centre

Innovation Centre in Digital Molecular Technologies

The Centre advances the digital transformation of chemical synthesis and manufacture by fostering a sustainable pipeline of innovative products and services. Established in 2020, iDMT is an open innovation hub driving progress in digital and automation technologies for molecular sciences. Through hosting industry researchers, performing targeted joint projects, offering technical training, organising seminars and running the annual Machine Learning and AI in Bio(Chemical) Engineering Conference, iDMT accelerates the adoption of AI, machine learning, and robotics in molecular discovery, synthesis and manufacturing.



iDMT
Innovation Centre
in Digital Molecular
Technologies

Cambridge University Health Partners



Cambridge University Health Partners (CUHP) is one of eight Academic Health Science Centres in England whose mission is to improve patient healthcare by bringing together the NHS, industry and academia.



Anglia Ruskin University was voted the UK University of the Year at the Times Higher Education Awards 2023, holds a Gold Award for the quality of its education, awarded through the Teaching Excellence Framework (TEF) and has been named University of the Year at the UK Social Mobility Awards.



The University of Cambridge is one of the world's leading universities, with a rich history of radical thinking dating back to 1209. Its mission is to contribute to society through the pursuit of education, learning and research at the highest international levels of excellence.




Cambridge University Hospitals NHS Foundation Trust is one of the largest and best-known hospital trusts in the country and runs the area's main hospital, Addenbrooke's.



Royal Papworth is the UK's leading heart and lung hospital. It treats patients from across the country, performing operations and procedures not carried out anywhere else in the UK.



Cambridgeshire and Peterborough NHS Foundation Trust (CPFT) is a health and social care organisation, providing integrated community, mental health and learning disability services across Cambridgeshire and Peterborough and children's community services in Peterborough.



Cambridge Where Innovation Makes History



Where
life-changing
science

*changes lives
here first*