

The NHS AI Lab

Exploring ethical approaches to the use of AI in health & care

Brhmie Balam, Head of AI Research & Ethics
NHS AI Lab, NHSX
November 2021



Artificial Intelligence (AI)



Some people are concerned about the use of AI-driven technologies in health and care:

Will AI put me out of a job?

Can I trust a diagnosis or decision made by AI?

Are AI-driven technologies safe for health and care?

We need to address these concerns by:

Building public trust and confidence

Emphasising that AI in health has a human-in-the-loop

Conveying that AI can humanise healthcare

How could AI improve the patient experience?

A possible future....



Jon was able to **quickly access mental health services** through a remote AI solution



A simple AI-powered test allows Stefan to **monitor his long-term condition from home** and send the results directly to his GP



Lisa's smartwatch noticed that her activity dropped this month and asked whether she needed to **review her arthritis medication**

How could AI give clinicians a helping hand?

A possible future....



Helen uses a virtual AI model to visualise her upcoming surgical procedures - **identifying potential complications before they occur**



Using AI, Gurpreet identified a pattern of symptoms across the local area - alerting her to a **potential public health emergency**



Andrew can now **focus on the most complex diagnostic cases** with help from an AI triage service

How could AI help the system run more efficiently?

A possible future....



With an AI-driven management system, Amit has a **real-time view of the waiting times and bed capacity** at his hospital; able to move patients more efficiently through the system



Felicity uses AI to **reduce medicine wastage** - saving valuable resources for the NHS



Tasks such as **appointment scheduling are now automated**, giving Jade more time to work on strategic priorities

How could AI give care providers a helping hand?

A possible future....



Louise uses an AI acoustic monitoring tool to **check on care home residents without having to enter their room and disturb their sleep**



Using an AI pain assessment tool, Harpreet identifies the **right pain management intervention for a person with dementia**



Ken uses a predictive AI tool to **understand the current and future care needs in his borough**

About the NHS AI Lab

A focal point for accelerating safe,
ethical and effective AI technologies



The UK will be world leading for the development and use of AI-driven technologies to improve people's health and wellbeing, delivering the most impactful technology to support our health and care system.

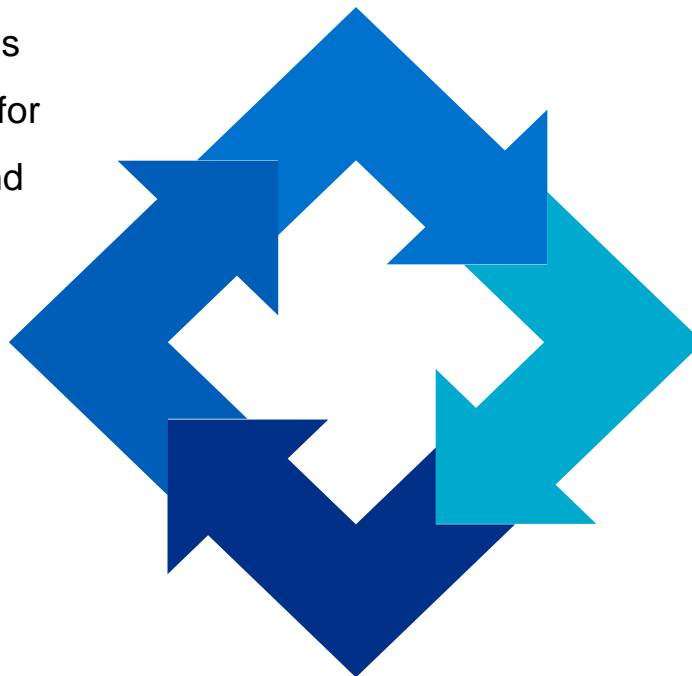
What is the NHS AI Lab seeking to change?

SYSTEM

To bring AI-driven technologies into use, we need clear steps for each stage of development and agreed ownership of those stages.

INFRASTRUCTURE

To make the best use of AI-driven technologies, it is essential to have access to high quality, reliable data sets and effective digital systems.



UNDERSTANDING

To encourage adoption staff across the health and social care sector must understand benefits of AI and develop the expertise to use it.

CONFIDENCE

Clinicians and the public must have confidence in the AI-driven technologies and systems they are using to use them to their full potential.



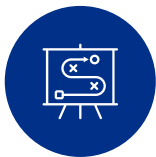
Demonstrate potential

of AI-driven technologies for health and care to build understanding among the public and healthcare professionals



Build appropriate trust and confidence

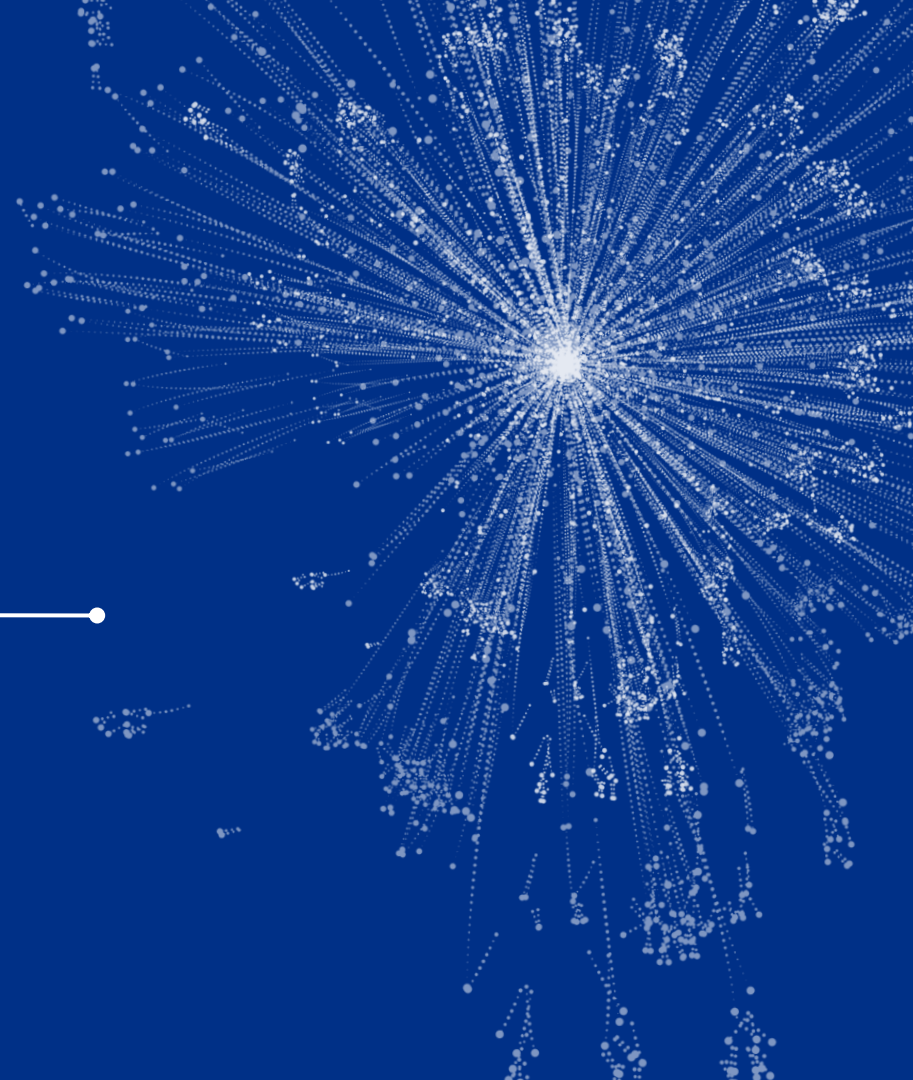
among the public and healthcare professionals in the use of AI



Advance regulation

with steps to ensure that health AI is safe, effective and has equal opportunities across the market

The AI Ethics Initiative



**AI in Health
and Care
Awards**

Skunkworks

AI Imaging

**AI
Regulatory
Programme**

**AI Ethics
Initiative**

Strategy and policy

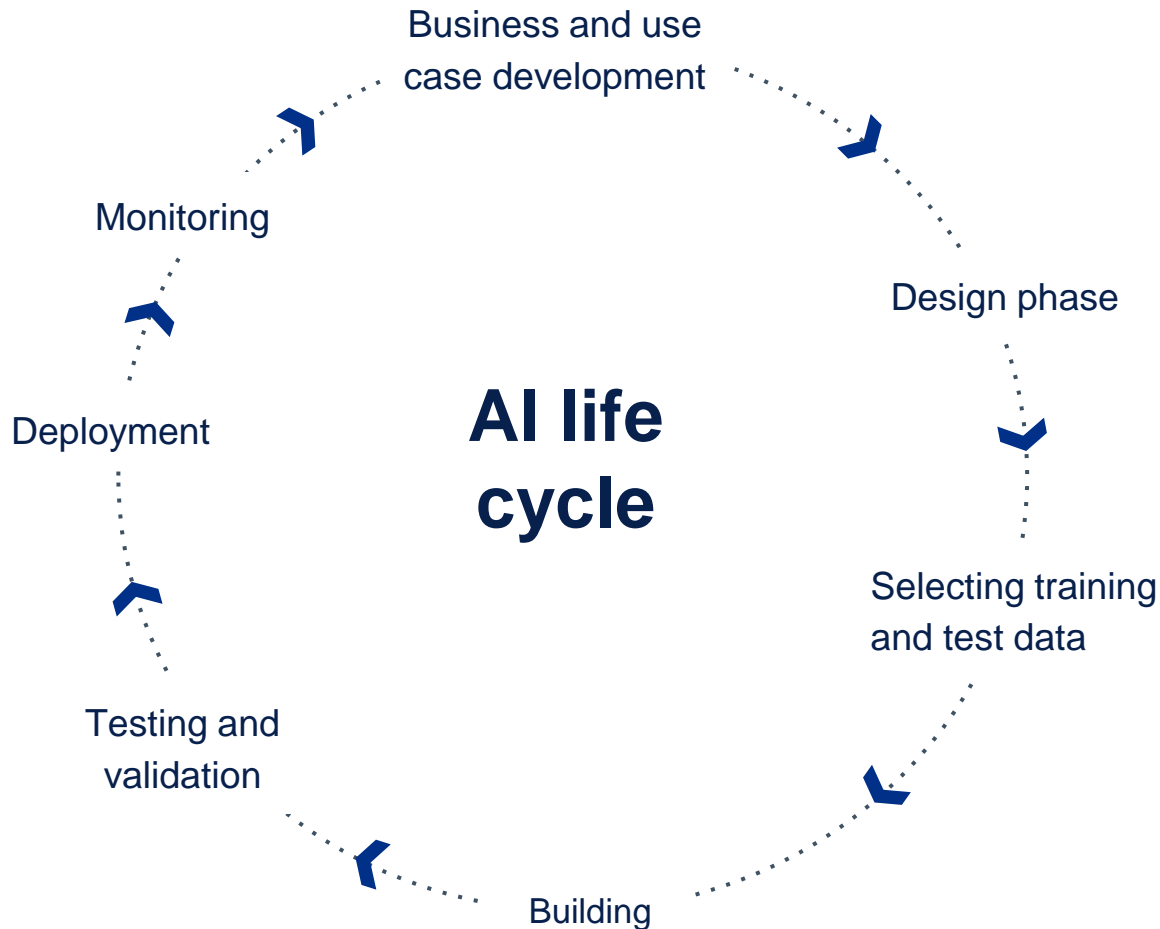
Collaboration and engagement

Programme management office (PMO)

The development of AI is iterative

This means that there is a **continuous cycle of improvement** for health technologies.

They are designed to **change over time**, which impacts how we can use, regulate and monitor their use in health and care services.



What the AI Ethics Initiative does

- Invests in research and practical interventions
- Encourages proactive approaches to countering inequalities
- Supports projects that are patient-centred, inclusive and impactful



Patient-centred



Inclusive



Impactful



Pillar 1: Models for improving trust & confidence in AI

- Stand-alone projects with a common thread: building trust and confidence in AI systems
- Focus is on practical interventions:
 - Informing a skills and capabilities framework that can clarify expectations for healthcare practitioners using AI
 - Model for an impact assessment that can be used for the National Medical Imaging Platform
 - Guidance and standards for auditing the trustworthiness of systems
- Explicit link to one of the key goals of the Lab, offering demonstrable examples of how we're building trust and confidence





Facilitating early-stage
exploration of
algorithmic risks



Health Education England



Empowering
healthcare
professionals to make
the most of AI



Enabling
organisations to
assess the
trustworthiness of AI
systems



Pillar 2: Core research commitments

Pillar 2: Core research commitments

- Core research commitments enable the Lab to highlight ethical challenges of importance that may be overlooked or lack funding, such as the racialised impact of AI, and are funded through competitions and tenders
- Core research commitments can support the Lab and NHSX to meet its overall mission or objectives; for example, the competition on AI and racial and ethnic health inequalities constitutes a key commitment as part of the [National Data Strategy](#) “to harness data to improve health outcomes and reduce inequalities”
- Research findings will be integrated as part of the AI Lab’s programmes, ultimately improving efforts to validate, evaluate and regulate AI





Optimising AI to
improve the health
and care outcomes
of minority ethnic
communities

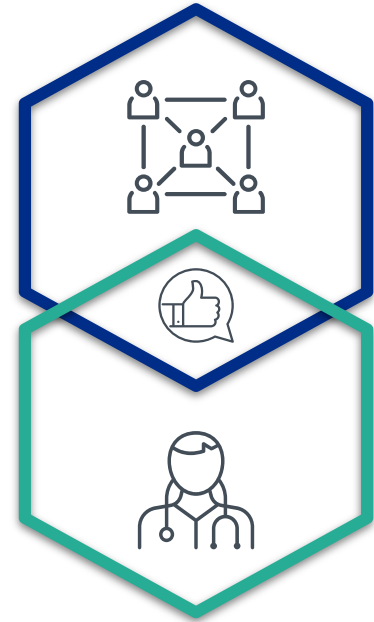
1. HEALTH INEQUALITIES

- Four projects awarded funding in October 2021 over the course of 24 months
 - **AUDITED** - Aims to raise the uptake of screening for STIs/HIV among minority ethnic communities through an automated AI-driven chatbot
 - **I-SIRch** - Aims to use AI to improve the investigation of factors contributing to adverse maternity incidents amongst mothers from different ethnic groups
 - **ARIAS** - Aims to ensure that AI technologies that detect diabetic retinopathy work for all.
 - **STANDING Together** - an international consensus process to develop standards for datasets underpinning AI systems



Pillar 3: Communities of practice

- Communities of practice will enable key stakeholders, including members of the public, to coalesce around our core research commitments to support further progress and impact
- Using the **AI Virtual Hub** to forge connections and host content, we would invite stakeholders to be a part of a network with others working on the specified challenges or areas of interest in order to learn from the research and one another




**AI in Health
and Care
Awards**

Skunkworks

AI Imaging

**AI
Regulatory
Programme**

AI Ethics Initiative

- 1 Join the **NHS AI Lab Virtual Hub** via the [FutureNHS Collaboration Platform](#)
- 2 Find out more about our work on the [NHS AI Lab website](#)
- 3 Join us on [LinkedIn](#) and [Twitter @NHSX](#) 

For those seeking to understand, develop and adopt AI visit our [AI Knowledge Hub](#).

Publications

- [A Buyer's Guide to AI in Health and Care](#)
- [AI for healthcare: creating an international approach together](#)
- [Artificial intelligence: how to get it right](#)
- [A guide to good practice for digital and data-driven health technologies](#)
- Use of AI in social care [case studies](#)

