

Board

Artificial Intelligence - overview

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Artificial Intelligence – what do we mean?

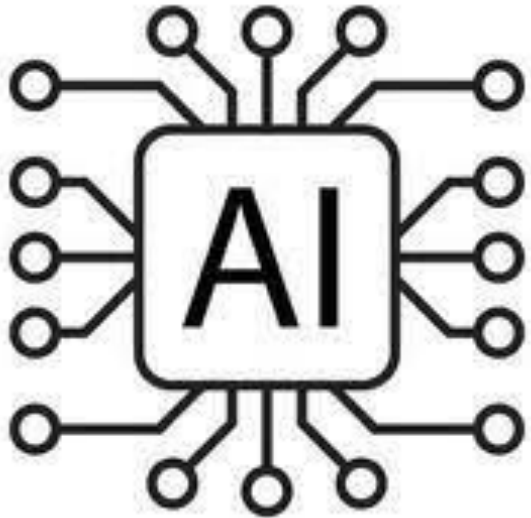
“Artificial Intelligence (AI) leverages computers and machines to mimic the problem-solving and decision-making capabilities of the human mind”

Alan Turing’s definition would have fallen under the category of *“systems that act like humans.”*



Generative AI (gen AI)

Generative AI (gen AI) is a predictive language model producing unstructured content such as text, images, and audio.



Analytical, AI, is used to solve tasks i.e. classifying, predicting, clustering, analysing, and presenting structured data.

Gen AI is powered by AI models (*foundations*), trained on a broad set of data, can be adapted to **generate** content that seems human, i.e. written documents, audio conversations and visual images etc.

Gen AI doesn't calculate or do maths, therefore, won't displace traditional AI, each will complement and enable the other.

Many people often asked about the difference between Robotic Process Automation (RPA) and Artificial Intelligence (AI)....some even confused the two to be the same.

RPA is a software robot that mimics human actions, whereas AI is the simulation of human intelligence by machines.

Real-world applications of AI systems today.



Speech recognition: Also known as automatic speech recognition (ASR), uses natural language processing (NLP) to process human speech into a written format.



Customer service: Online virtual agents are replacing human agents along the customer journey.



Computer vision: This AI technology enables computers and systems to derive meaningful information from digital images/visual inputs and can take action.



Automated stock trading: Designed to optimise stock portfolios, AI-driven high-frequency trading platforms make thousands or even millions of trades per day without human intervention.

Widespread AI adoption in Healthcare

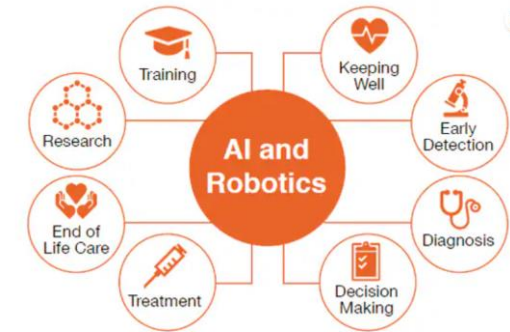
Keeping Well – major potential benefits is to help people stay healthy, minimising frequent clinical interventions, by encouraging healthier behaviour (***Shift left***).

Early Detection - already being used to detect diseases, such as cancer, more accurately and in their early stages.

Diagnosis - unlocks vast amounts of health data, AI can review and store vast medical data – every medical journal, symptom, and case study of treatment.

Decision making - Alignment of health data with appropriate and timely decisions, predictive analytics supporting clinical decisions/actions.

Treatment - help clinicians with a more comprehensive approach for disease management, better coordinate and comply with care plans.

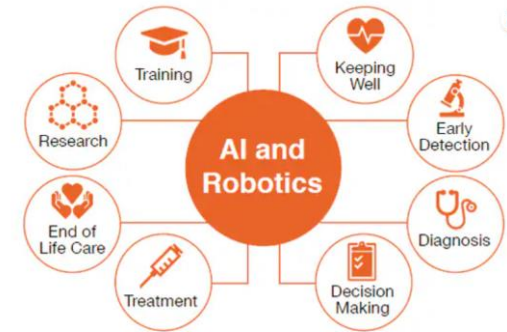


Widespread AI adoption in Healthcare

End of life (EoL) – People living longer and often with conditions such as dementia, and heart failure. AI can support “isolation” and help people to remain independent for longer during EoL phase.

Research - Drug research is a recent application for AI in healthcare. Directing the latest AI to streamline the drug discovery and drug repurposing, potential to cut both the time to market for new drugs and their costs.

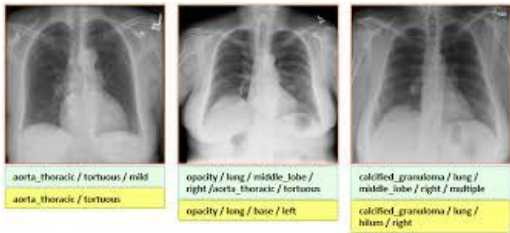
Training - Through simulations, natural speech and the ability of AI to draw instantly on a large database of scenarios, means responses to questions, decisions or advice from a trainee can challenge in a way that a human cannot.



AI adoption in Healthcare - examples



C2-Ai – working in acute settings to provide risk stratification and prioritisation at individual patient level, calculating risk of mortality and complications plus the impact of deterioration on the waiting list – September 2023, Cheshire & Merseyside ICS had signed an agreement to deploy C2-AI solutions across all its acute settings.



Rotherham NHS FT (**Machine Learning**) in Radiology for all bone and chest X-rays 24 x 7, with view to then deploy across the ICS region, plans are emerging to do similar in endoscopy and upper GI.

Early implementations of AI - examples

Risk stratification solutions that are gaining traction include:

- **Health Navigator** (HN) – AI screens patient data, rapid identification of risks such as disease progression across entire populations in real time. At risk patients, HN provides access to Health Coaches, to work with patients to reduce/prevent disease progression. HN have previously undertaken work with Staffordshire ICS, which to 35% reduction in A&E admissions.
- **PinPoint Data Science** - using ML to combine signals from multiple blood analytes and basic patient information into a single clinical decision support tool. Allows clinicians to identify patients to be referred to specialists for cancer diagnosis, red flag particularly urgent cases and identify those who can be safely investigated for other possible causes of their symptoms.

Early implementations of AI - examples

AI coupled with computer vision is being developed in specialities such as ophthalmology and dermatology to support clinical decision making, such as:

- Researchers at Moorfields Eye Hospital and UCL Institute of Ophthalmology developed an AI system that has potential to identify sight-threatening eye diseases but also to predict or identify other health conditions, including heart attacks, stroke, and Parkinson's disease.*

Predictive analytics utilising diverse data is an emergent field with innovators such as:

- **Pangaea Data** - unsupervised AI to extract intelligence from both structured and unstructured textual data to provide doctors and researchers with a full picture of an individual's health. This helps clinicians accurately diagnose and detect patients at risk earlier. It can also support identification of patients that have been misdiagnosed.*

AI opportunities for health and care


- **Diagnostics:** AI is being used for image analysis, such as interpreting medical images; X-rays, MRIs, and CT scans to aid in diagnosing conditions like cancer and fractures.
- **Predictive Analytics:** AI is used to predict patient outcomes, such as identifying patients at risk of readmission or deteriorating health, which can help in proactive patient care.
- **Virtual Health Assistants:** Chatbots/virtual assistants are used for patient engagement, appointment scheduling, and providing information.
- **Electronic Patient Records (EPR) management:** can assist in managing/analysing EPRs for more efficient/personalised patient care.
- **Administrative Tasks:** AI - automating administrative tasks; i.e. HR, finance/transactional processing, and patient appointment scheduling.



AI implications for health and care

- ❑ AI will lead to improved health outcomes, but few have been trialled and evaluated in real-world settings. **Clinical Safety** assessments, need to be understood and implemented.
- ❑ Automation may reduce the time spent by staff on routine work, though they may **require new skills to use AI**.
- ❑ Concerns that AI could **dehumanise** healthcare, others argue staff time saved could be spent caring for patients.
- ❑ Patient data are often used to produce and test AI systems, raising issues around data quality, accessibility and **patient privacy**.



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Generated by Synthesia AI

AI related opportunities in NENC

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News Health NHS

North East NHS hospitals get share of £21m funding to use AI to improve lung cancer diagnosis

Machine-learning and AI will continue to be rolled out in the NHS to improve cancer detection.

Four of the North East's NHS Trusts will get a share of new Government funding for the use of artificial intelligence (AI) in diagnosing lung cancer.


The [County Durham](#) and Darlington, [South Tyneside](#) and [Sunderland, Gateshead](#) Health and [Northumbria Healthcare](#) hospital trusts will all receive a share of £21m in Department of Health and Social Care cash as part of a project to use AI for analysis of life-saving lung scans. This will see AI used to analyse X-rays and CT scans in the hope of speeding up diagnosis and treatments for patients.



£2M Funding for AI Supporting LC Diagnosis

Bringing the power of Artificial Intelligence to Respiratory Medicine

ArtIQ empowers medical professionals with artificial intelligence to accurately and timely diagnose, treat and follow-up patients with lung diseases.



HINENC - Spirometry AI assistance

Discharge Summary (100/100) for the P

Administrative	Medical and/or Surgical
Name	Diagnosing condition
Reference	Diagnosing Service/Department
Date of birth	Medical or diagnosis
MRN/Unique ID	Class of Discharge
Address	Class of Discharge
City	ICD-10
Telephone	Operations and Procedures
Signature of Discharge	
Reason for admission and/or presenting Complaint(s)	
Clinical Summary	
Treatment Investigations and Results	
Discharge Destination	
Please send legal information to: www.nhs.uk/legalsupport (not applicable for all trusts)	
Subscription given to patient and/or authorized representative (including e.g. next-of-kin) (if any)	
Physician/Staff/Clinical Pathway	Dr. [Name]
Specialist	
Consultant	
Other	
MARRS, Medication, Investigations and Referral given (including locally available and continuing investigations) (if applicable please)	
G.P. Address (if any)	
Strategies for potential problems	

Discharge Summary AI assistance

English (GB)

Welcome to Anima

The fastest way to get the help you need through online consultation

Use Anima with NHS login

NHS login allows you to access your health and care websites and apps with one set of login details. We will check if you have an NHS login. If not, you can set one up.

NHS Continue with NHS login

OR

Continue with Email

email


Continue with Email

Use α anima to...

- Submit any medical or admin request straight to the practice
- Track your requests
- Request repeat prescriptions
- Ask for sick notes and other letters from your GP
- Access self-help and useful resources from the NHS website
- Find other nearby services
- And much more!

Clinical Consultations

Invitation to partner on the Centre for Doctoral Training in Citizen-Centred AI

 **Northumbria University NEWCASTLE**

Northumbria University has been shortlisted to apply for a [UKRI Centre for Doctoral Training in AI](#). We are proposing a Centre for Doctoral Training (CDT) in Citizen-Centred AI which will train at least 60 PhD students (5 cohorts of 12) on 4-year programmes from September 2025.

Current rapid advances in AI are set against concerns around potential individual and societal algorithmic harm including losses of opportunity, privacy and freedom, and economic and social disadvantage. To reconcile AI's technical capabilities with citizen-centric concerns, whilst preserving its transformative potential, there is a need to build capability, and capacity, in the UK workforce to design AI products, systems and services in new and innovative ways. Our CDT therefore intends to train doctoral students in citizen-centred approaches to the **design, development, implementation, governance, and evaluation of AI technologies** so that they are **transparent, explainable, inclusive, sustainable, legal, and ethical**.

NENC ICB AI Research Support

Finally....

“AI is becoming increasingly sophisticated at doing what humans do, but more efficiently, more quickly and at a lower cost.

The potential for both AI and robotics in healthcare is vast. Just like in our every-day lives, AI and robotics are increasingly a part of our healthcare eco-system.”