AI in Healthcare & its Impact on Practice

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Stabilise, Reform, Deliver

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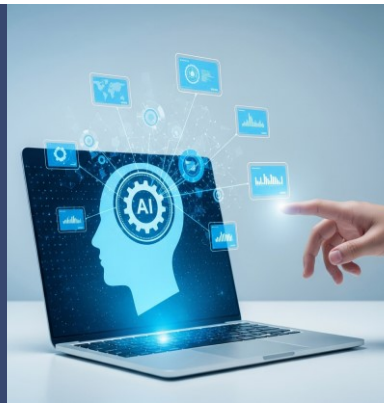

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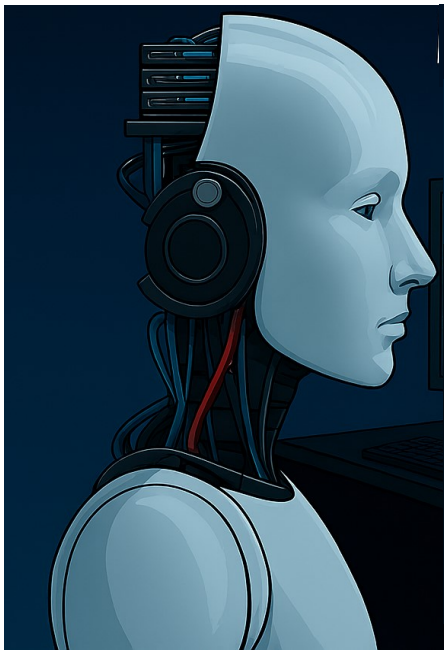

What is Artificial Intelligence?

AI refers to technologies that mimic human cognitive functions like learning, reasoning, and decision-making.

Key types:
- Machine Learning: Learns from data to make predictions.
- Generative AI: Creates content (text, images, etc.).
- Natural Language Processing: Understands and generates human language.

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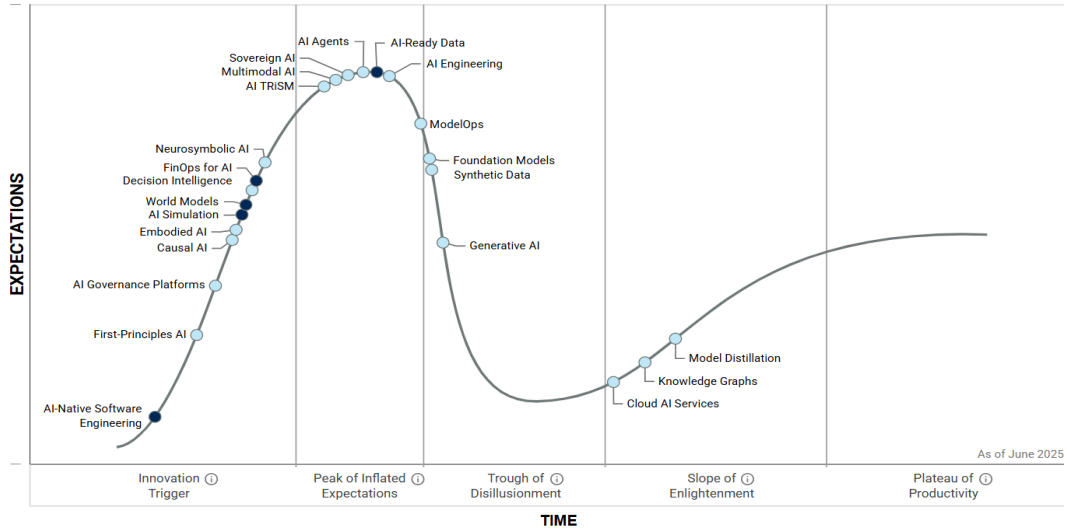

Gartner Hype Cycle for AI

How is AI Being Used in Healthcare? (beyond the hype)

- **Scheduling:** Automates appointment booking.
- **Documentation:** Transcribes and summarizes clinical notes [ambient scribing].
- **Diagnostics:** Assists in interpreting imaging and lab results.
- **Treatment Planning:** Suggests evidence-based care plans.
- **Predictive Analytics:** Forecasts patient deterioration or discharge needs.
- **Placement & Rota Scheduling:** AI tools optimize student nurse placements.
- **Telehealth Support:** AI chatbots assist with triage and patient queries

How is AI Being Used in Healthcare? (beyond the hype)

- **Addenbrooke's Hospital:** Microsoft InnerEye for prostate cancer imaging.
- **HeartFlow:** AI-generated 3D heart models for coronary diagnosis.
- **C the Signs App:** Used by nurses to identify cancer risk during consultations.
- **DeepMind & Moorfields Eye Hospital:** AI for rapid eye disease diagnosis.
- **HSCNI - NIPACS+ Boneview**
- **HSCNI - Encompass / EPIC** Ambient Voice; Noting

How is AI Being Used in Healthcare?

AI-Assisted Pregnancy Scans

Example: AI tools are being trialled to assist with 20-week anomaly scans, making them faster and just as accurate as traditional methods.

Impact: Frees up sonographers and midwives for more mother centred care.

Citation: MDPI Scoping Review on AI in Midwifery [mdpi.com]

How is AI Being Used in Healthcare?

AI-Driven Risk Assessments

Example: AI can generate live falls risk assessments using data from Electronic Patient Records (EPRs), reducing the documentation burden for nurses and midwives.

Impact: Supports real-time decision-making and improves patient safety.

Citation: Digital Health: AI and Data in Nursing and Midwifery [digitalhealth.net]

How is AI Being Used in Healthcare?

AI-Driven CTG (Cardiotocography) Decision Support

Example: AI tools assist midwives in interpreting foetal heart rate patterns during labour, supporting safer and more accurate clinical decisions.
Impact: Enhances confidence and accuracy, especially in high-risk births.
Citation: MDPI Scoping Review on AI in Midwifery [mdpi.com]

Early Warning Systems for Maternity Safety

Example: AI scans NHS data to flag risks such as stillbirth or neonatal death in real time, enabling earlier interventions.
Impact: Improves safety and outcomes in maternity care.
Citation: NHS England AI Case Studies [digital.nhs.uk]

How is AI Being Used in Healthcare?

AI in Midwifery Education
Example: AI-powered virtual patients and personalised learning tools are being used to enhance clinical education for nurses & midwives.
Impact: Reduces training errors and supports ongoing professional development.
Citation: MDPI Scoping Review on AI in Midwifery [mdpi.com]

Predictive Analytics for Maternal Health
Example: AI models predict complications such as preeclampsia or preterm birth, supporting proactive care planning.
Impact: Enables earlier interventions and better resource allocation.
Citation: Integration of AI in Midwifery Care: A Systematic Review [oaskpublishers.com]

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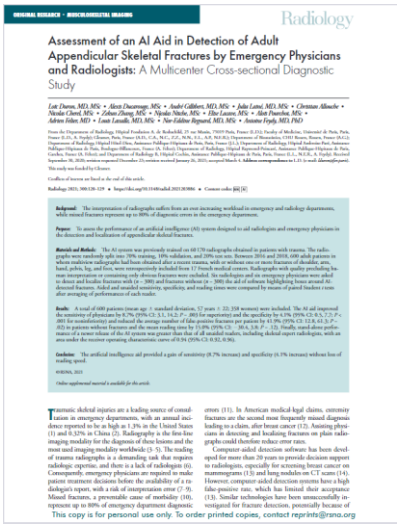
2021 Paper	NHSCT Audit
• 600 patients 17 centres	• 725 patients 3 centres (single Trust)
• Excluded obvious fractures	• ED sensitivity improved 79.8% - 94.3% • **14.5% increase**

• ED sensitivity improved 61.3% - 74.3%
  • **13% increase**
	• Radiology sensitivity 89.1% - 94.4%
	  • **5.3% increase**

• Radiology sensitivity 80.2% - 84.6% • **4.3 % increase**	



Radiology

Assessment of an AI Aid in Detection of Adult Appendicular Skeletal Fractures by Emergency Physicians and Radiologists: A Multicenter Cross-sectional Diagnostic Study

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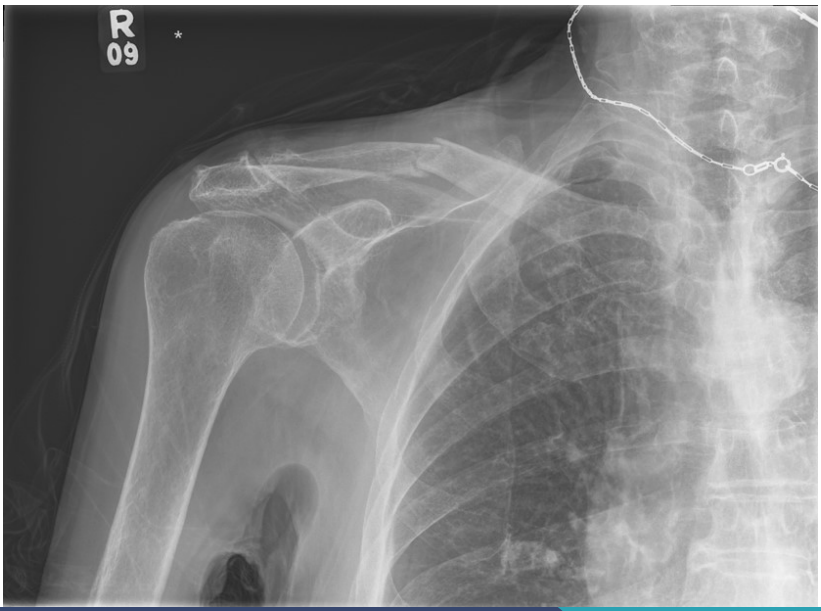
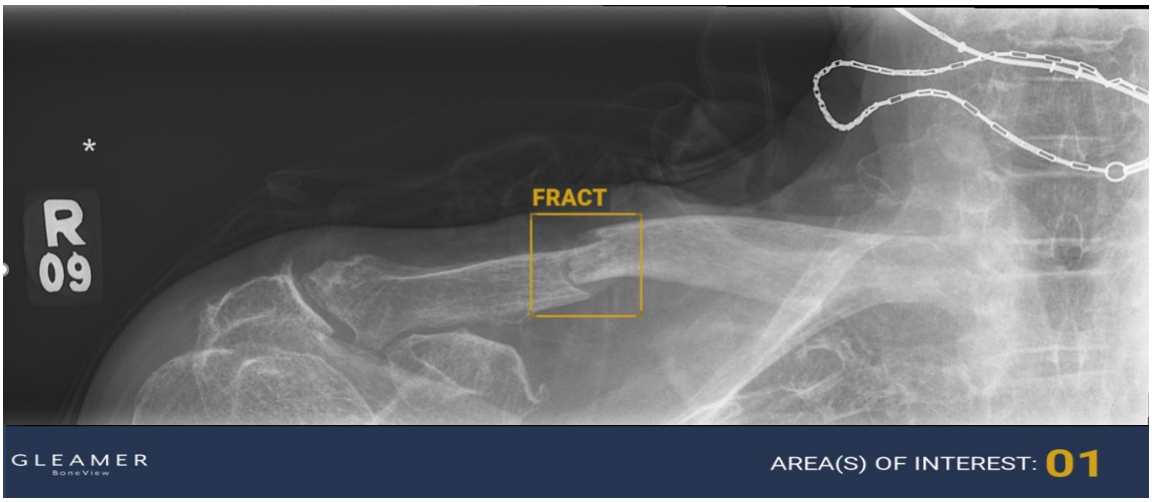



POSITIVE
3
ANALYZED
3
RECEIVED
DID YOU RECEIVE ALL THE IMAGES?
Please note, that if Gleamer did not receive all the images in the study then the result may be inaccurate.
BONEVIEW
FRACTURE
YES
DISLOCATION
EFFUSION
NO
GLEAMER
These are preliminary results only the radiologist's report is final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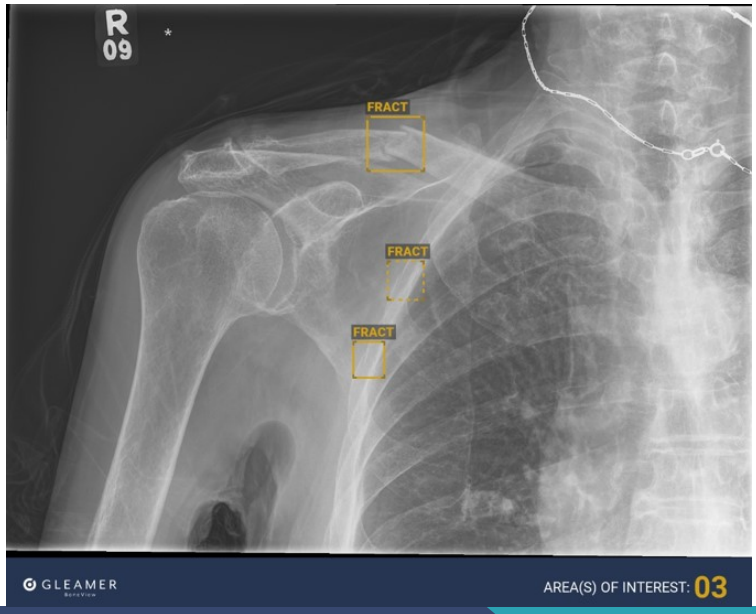

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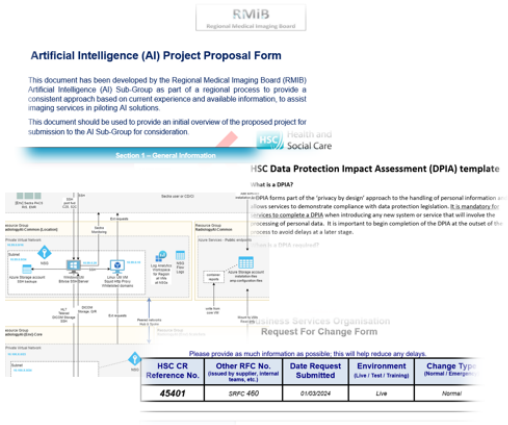
Benefits of AI

- Patient Benefits:
  - AI is good at flagging up multiple injuries
  - Getting it right first time
  - Missed fracture rate has reduced from 6.7% to 1.2%
- Staff Benefits:
  - AI reduces the requirement for a second opinion
  - ED performance with AI seems comparable to the Radiology performance
  - AI increases confidence levels of junior staff
  - Reduced difficult conversations
  - Allowing senior staff more time with more difficult cases

HSC NIPACS+
A BSO ITS PROGRAMME


RMIB
Regional Medical Imaging Board

Artificial Intelligence (AI) Project Proposal Form

This document has been developed by the Regional Medical Imaging Board (RMIB) Artificial Intelligence (AI) Sub-Group as part of a regional process to provide a consistent approach based on current experience and available information, to assist imaging services in piloting AI solutions.

This document should be used to provide an initial overview of the proposed project for submission to the AI Sub-Group for consideration.

Health and Social Care

Section 1 – General Information

HSC Data Protection Impact Assessment (DPIA) template

What is a DPIA?

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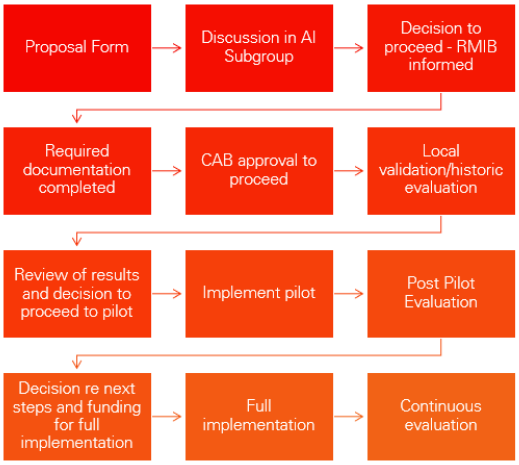
Request For Change Form

Please provide as much information as possible, this will help reduce any delays.

HSC CR Reference No.	Other RFC No. (Issued by supplier, internal teams, etc.)	Date Request Submitted	Environment (Live / Test / Training)	Change Type (Normal / Emergency)
45401	SRFC 460	01/03/2024	Live	Normal

AI Subgroup Regional Process



HSC NIPACS+
A BSO ITS PROGRAMME

Next Steps – Chest X-Rays

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Directorate of Digital

Grampian

CXR AI is speeding up lung cancer diagnosis
(**22 days to 10.3 days**)

26% Increase in treatable cancers

100% of lung cancer patients meeting 62 day wait (up from **52%**)

99.98% Negative Predictive Value

"The earlier cancers are treated, the better. Our evidence so far is the AI tool is helping us identify earlier stage cancers that are treatable."

Dr Andrew Keen -Clinical Director of Innovation, NHS Grampian

Encompass + EPIC

Dragon Ambient eXperience (DAX) Co-Pilot is an AI-powered, voice-enabled solution that reduces the administrative workload of clinicians by automatically documenting patient encounters.

- Captures patient interactions accurately and efficiently at the point of care, letting clinicians focus more on patient care.
- Reduces documentation time and helps improve patient satisfaction, patient experience, operational efficiency, and financial outcomes.
- Has been integrated with the encompass application for 50 consultants in both SEHSCT and BHSCT for a pilot.
- In production / use from early Nov 2025.

Epic integrates Generative AI into workflows to boost efficiency and patient care.

- Acts as a trusted assistant, summarizing charts and prepping documentation.
- Reduces admin tasks, speeds up work and simplifies adoption. Examples: Pre-arrival chart summaries, discharge draft notes.
- encompass are currently considering a pilot of this technology, subject to affordability

Business Automation Journey Utilising AI

The Oracle ERP suite for Public Sector comes pre-packaged with a suite of AI components which can enable benefits as outlined below. The Equip Programme will be utilising the AI capability for Document Understanding. This will be used to design and build an automated solution for invoice scanning.

Connect Apps And Data

Automate connectivity to disparate applications and data sources using APIs and RPA robots

- Eliminate data silos
- Inform decision making
- Enhance AI with enterprise data
- Support innovation

Automate Processes

Automate complex processes spanning apps, data, trading partners, digital, and human workers

- Reduce manual work
- Minimise errors
- Boost productivity
- Empower employees

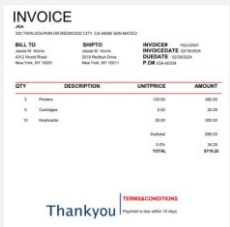
Innovate with AI

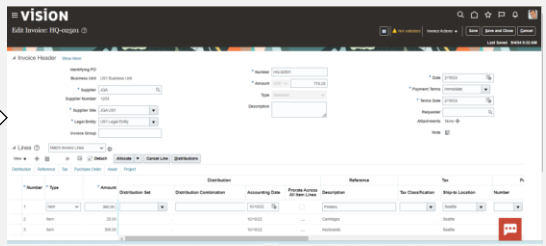
Automate orchestration of AI services, AI-based decision making, and intelligent document processing

- Streamline Processes
- Workforce augmentation
- Speed adaptability
- Increase scalability

Document Understanding Invoice Creation

Document Understanding can recognise the information contained on supplier invoices and convert these into invoice documents within Oracle. It is capable of recognising invoices in a number of formats can also including handwritten. This enables a high level of automation for invoice creation and invoice matching and reduces the need for manual intervention





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Considerations:

- Explainability and Transparency
- Adoption and Acceptance
- Rigorous Testing and Validation
- Data Privacy and Security
- Ethical Guidelines and Regulations
- Accountability
- Sustainability / cost

Regulatory and professional bodies policy / guidance on AI

MHRA: Engage with AI Airlock for pre-market testing, maintain transparency and post-market surveillance. AIaMD - The Regulation of Artificial Intelligence as a Medical Device

NHS: Implement AI governance policies, appoint SIRO and Clinical Safety Officer, ensure ethical deployment.

NMC: Maintain professional judgment, uphold patient safety, and prepare for future AI standards.

NICE: Align with Evidence Standards Framework, CHEERS-AI for economic evaluation, and engage early for guidance.

BMA: Apply 7 principles for AI use, verify MHRA registration for AI tools, involve clinicians and patients in decision-making, monitor AI performance continuously. Principles for artificial intelligence (AI) and its application in healthcare

RCP: Ensure clinician engagement, transparency, and robust evaluation before adoption.

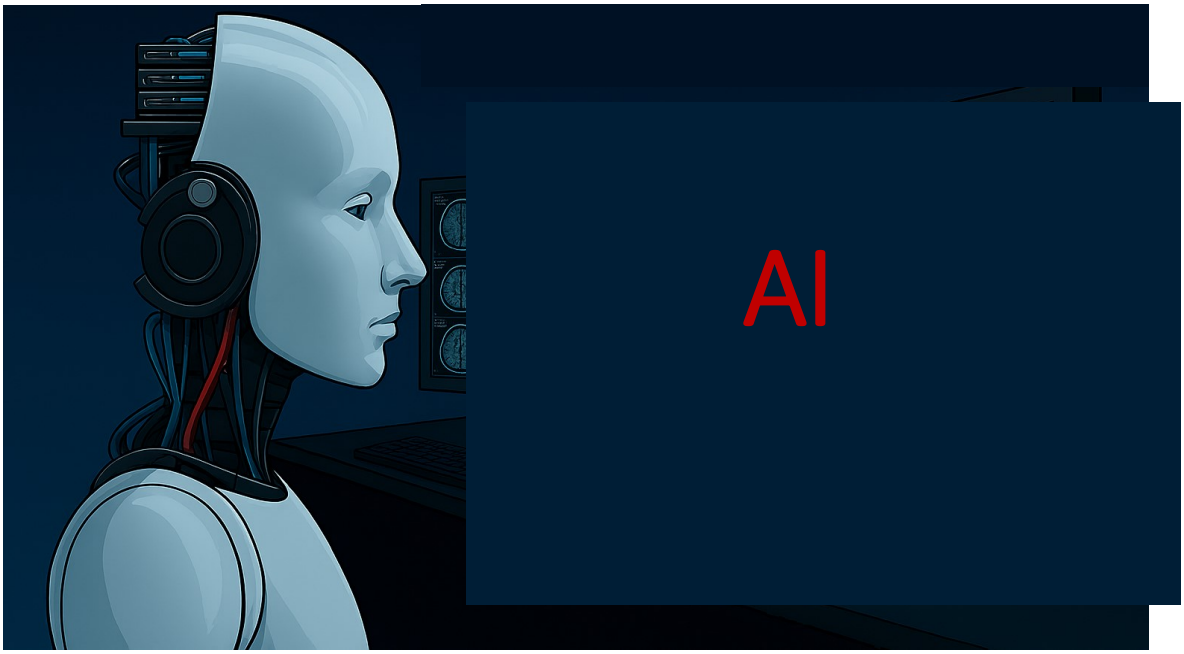
RCR: Follow procurement standards, monitor AI tools in radiology workflows, maintain patient safety.

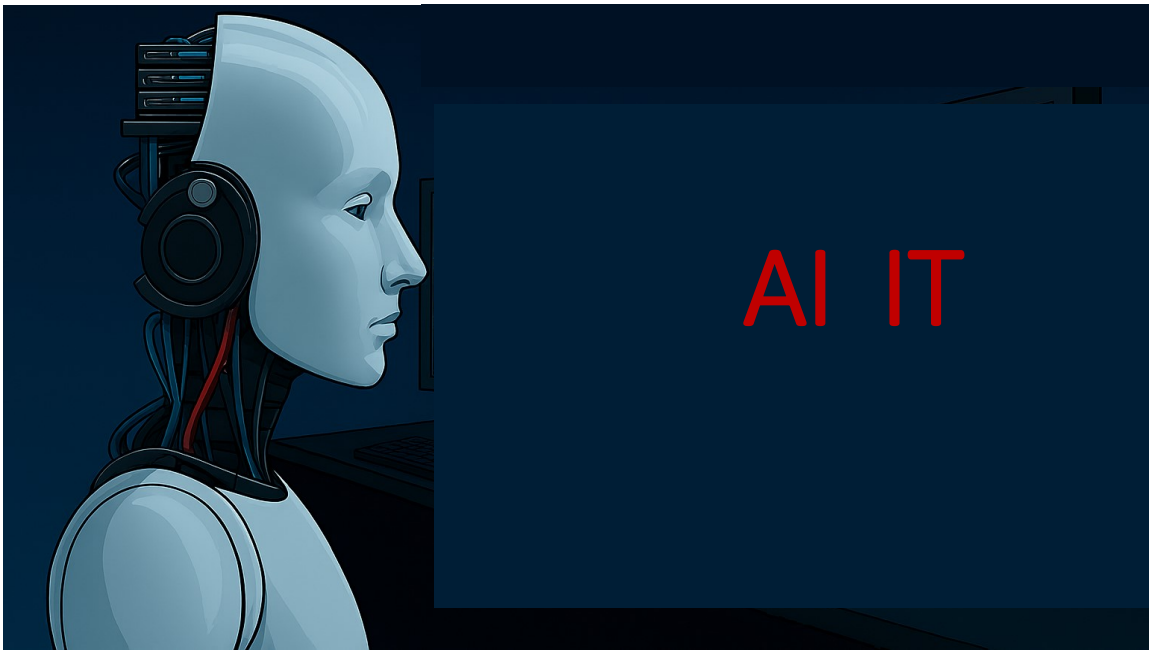
RCN: Provide training for nurses, ensure ethical use, and support research networks.

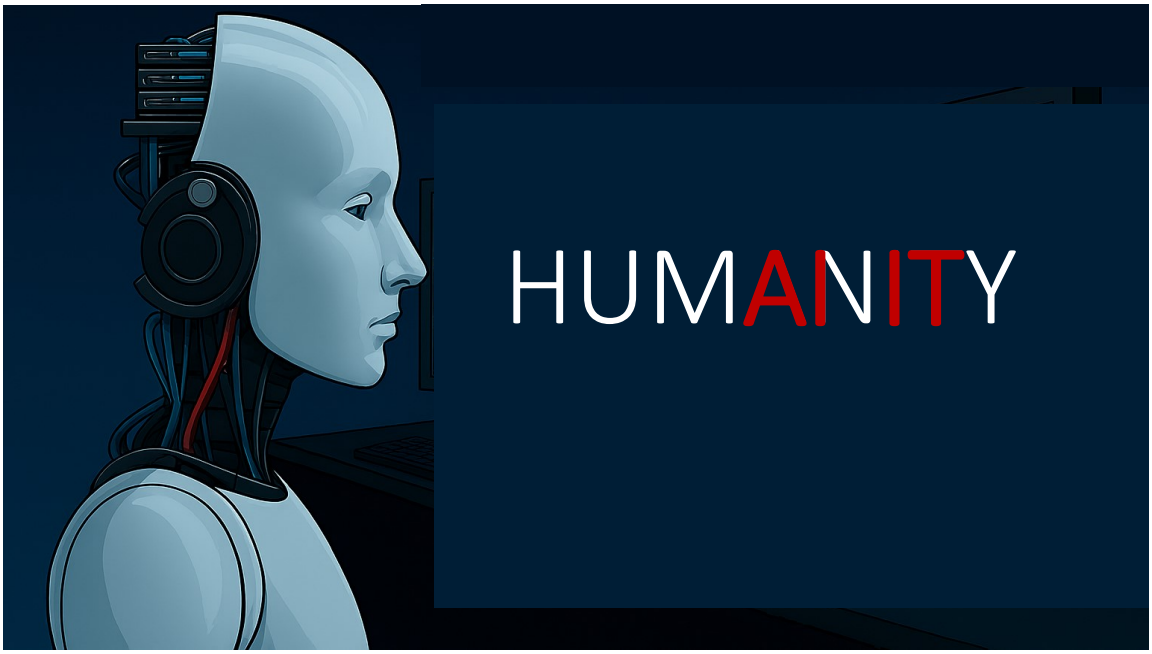
Moravec's Paradox

"it is comparatively easy to make computers exhibit adult level performance on intelligence tests or playing checkers, and difficult or impossible to give them the skills of a one-year-old when it comes to perception and mobility".

TASK	AI STRENGTHS	HUMAN STRENGTHS
Data Analysis	Excellent at processing large datasets	Limited by time and cognitive load
Empathy and Emotional Support	Cannot genuinely empathize	Strong emotional intelligence and compassion
Documentation	Automates and speeds up record-keeping	May be slower but adds context and nuance
Physical Care (e.g., lifting, positioning)	Limited by robotics and dexterity	Highly skilled in physical tasks
Clinical Judgement	Supports decisions with data	Integrates experience, ethics, and patient cues




AI IT


HUMANITY

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