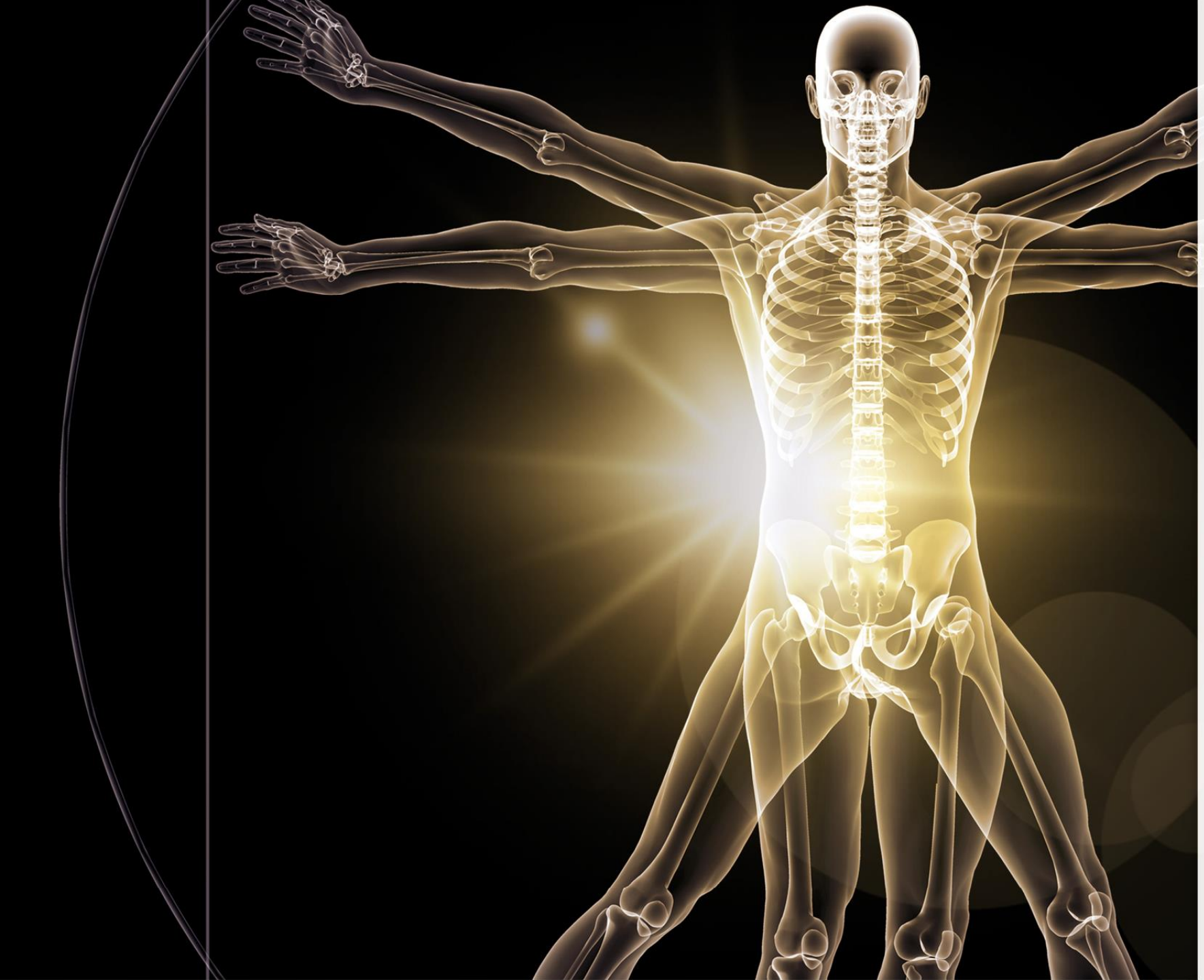

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What New Technologies are Likely to Be Disruptive over the Next 5 to 10 Years, and How Will the Industry Respond?

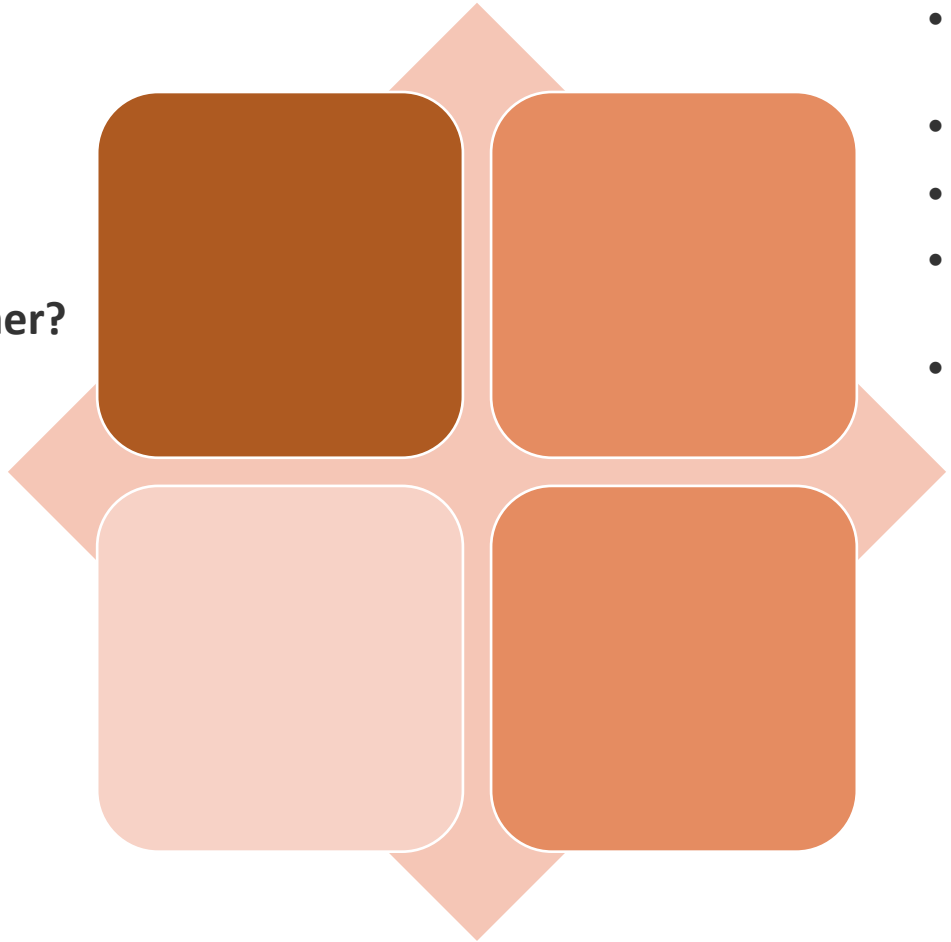
In which imaging modality do you foresee the next disruptive progress ?

Hybrid Imaging

- past: anatomical + functional
- now: theragnostics
- 1+1>2
- better localization and characterization of diseases
- **Cons: cost?/bigger energy consumer?**
- PET+OR?

Molecular Imaging

- visualization and characterization of biological processes at the molecular and cellular levels
- beneficial to early stage disease
- **new radiotracers and contrast agents** enhance the sensitivity and specificity of imaging
- PET\MR\CT



Point-of-Care Imaging

- allows imaging to be performed at the patient's bedside.
- smartphone-based imaging
- handheld /portable/movable
- remote areas, emergency situations, and resource-limited settings
- US/CT/MR/NM

Functional Imaging

- provide information about tissue function and physiological processes
- We are still on the way~
- MR: fMRI\DTI\CEST
- photon counting CT: multi-energy
- NM

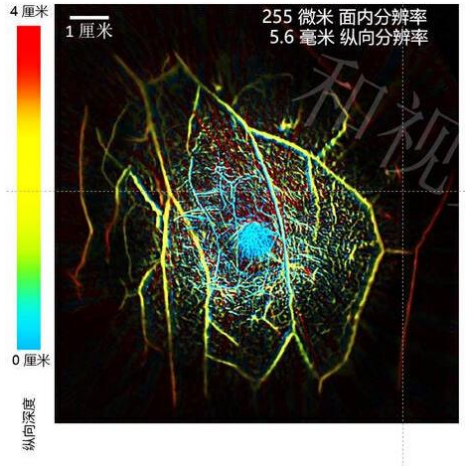
Movable SPECT

Movable MR

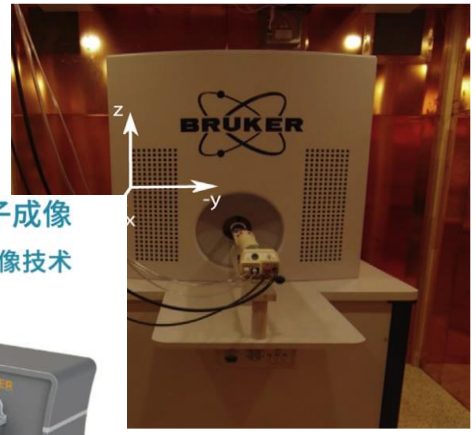
Handheld US

Point-of-Care Imaging

Some pre-clinical imaging devices

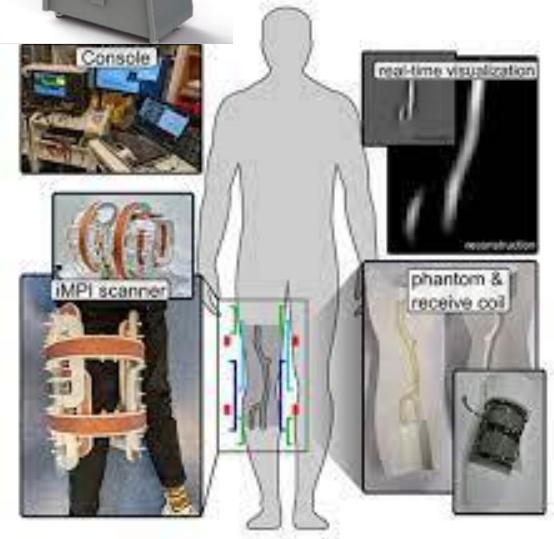


Photoacoustic Vascular Imaging?

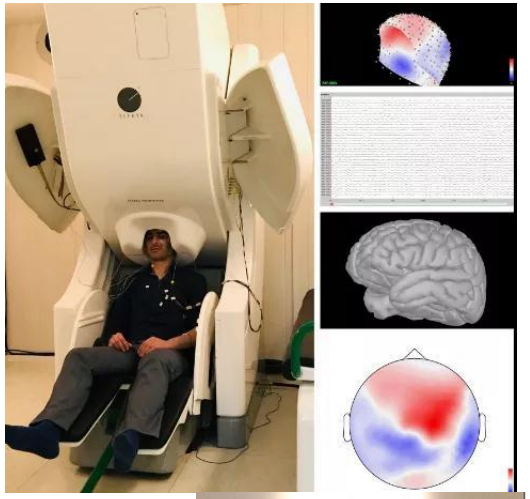


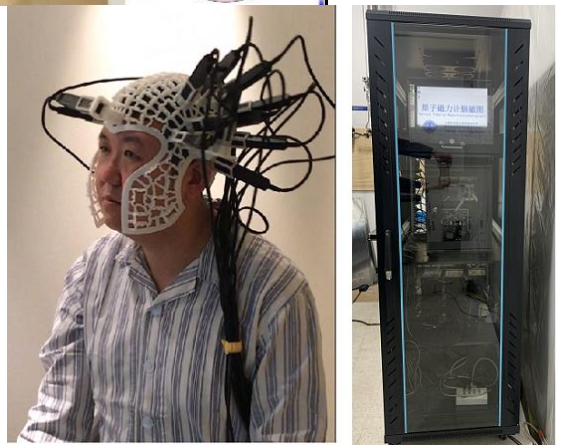
MPI磁粒子成像

最新一代活体成像技术



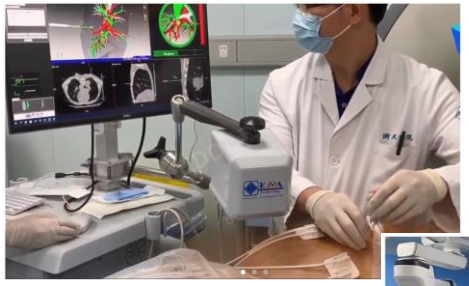
Magnetic Particle Imaging?





Magnetoencephalography, MEG?

Do you foresee a new technology besides the usual imaging modalities ? Will theragnostics be part of it ?



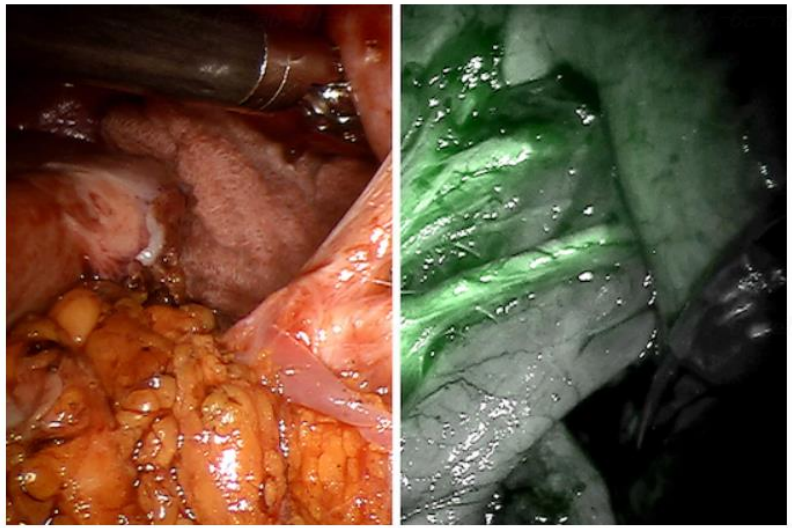
- YES – it benefits

- **precise** – minimizing unnecessary damages
- **effective**
- **individualized** treatment planning
- **real-time** information for adjustment/monitoring

Additionally,

imaging guided therapeutic agents delivery ~ ***radiotracers+pharmaceutical agent***

MR-HIFU
MR-Linac
MR guided LITT (laser interstitial thermal therapy)
etc…



Intra-operation imaging?
Optical Imaging

Surgery Robot?
Image guidance

Are we still part of these?
Will we still be part of these?

What will be the role of generative AI and Large Language Models over the Next 5 to 10 Years in radiology field?

Assistant

- Generate, refine, expand, and correct standardized reports
- expedite the workflow of patient consultations

Educator ?

- providing vast amount of knowledge
- ultra fast
- 7*24, convenient
- cons: accuracy?

Creator
Decision-maker
Communicator

- Medical/natural sciences
- humanities and social sciences
- behavioral sciences

What will be the role of generative AI and Large Language Models over the Next 5 to 10 Years in radiology field?

- Current LLMs are still limited to **learning from existing medical literature**, they can only acquire knowledge that humans have already summarized and are **unable to spontaneously generate new knowledge**.
- Thus, based on the current training methods in deep learning, it is anticipated that future models will continue to follow the process below.

senior doctors summarizing knowledge

↓

AI learning from knowledge

↓

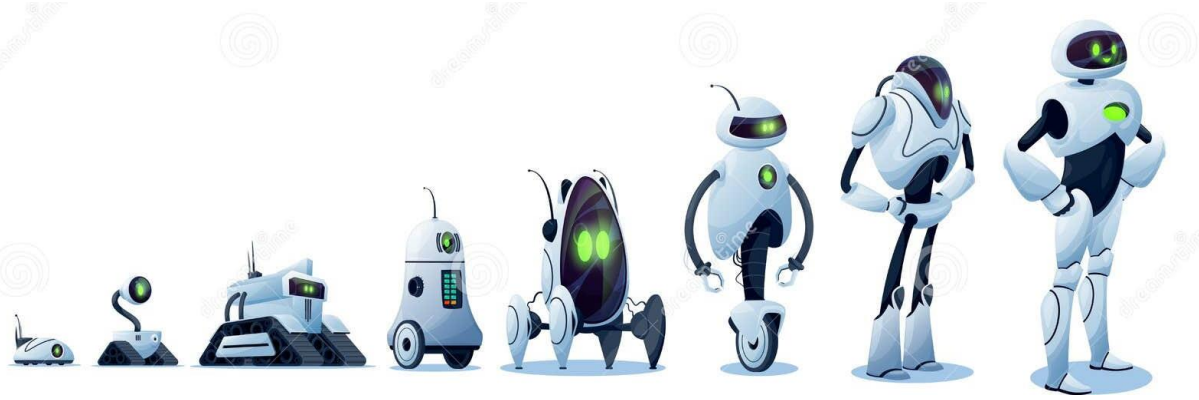
AI helps to instructing junior doctors

- The **origin of medical knowledge remains with humans**, AI can only learn and teach.

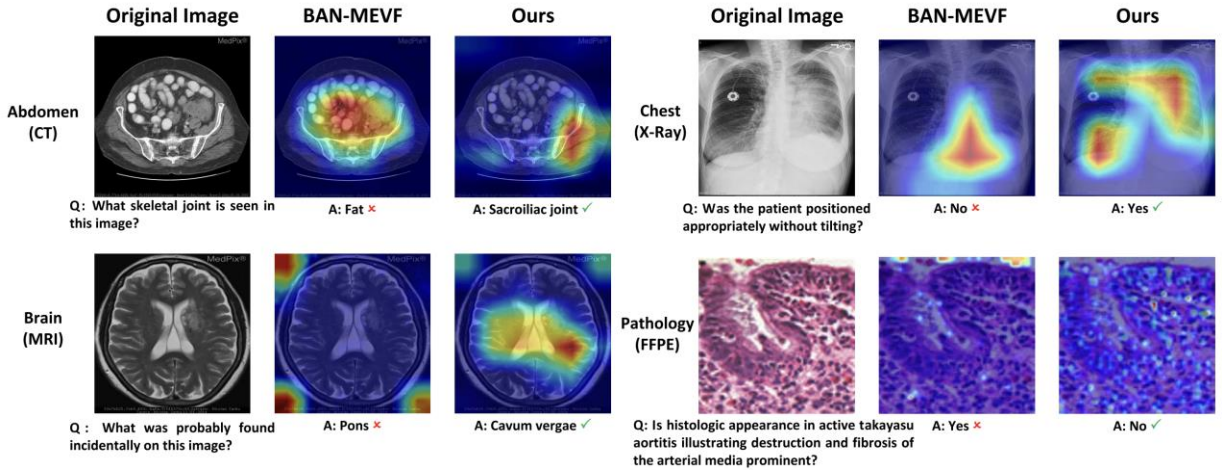
In the near future, generative AI and LLMs could

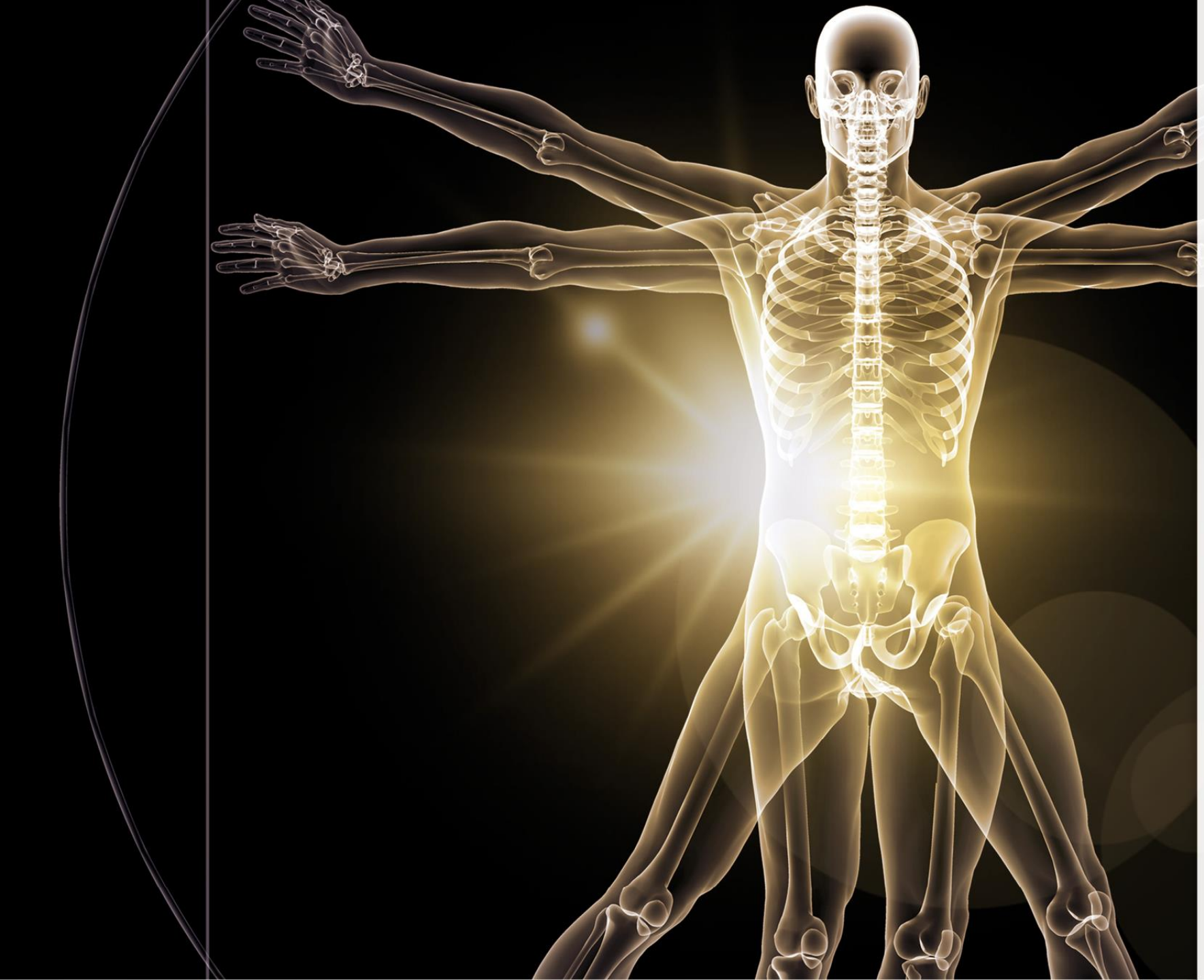
- contribute to **enhancing the upper limit** of medical diagnostic capabilities
  - *providing supports on the economically disadvantaged areas with limited medical resources?*
- take responsibility of **maintaining the lower limit** of diagnostics service quality.

No doubt, generative AI and LLMs is evolving with the help from human-beings



Outcome? Process?
Black box?
How does AI THINK?
Do we need interpretations?





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