



**IS3R 2023**

Berlin/Germany

August 24–26, 2023

**Realization  
of value  
from AI in  
multiple  
domains**

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Radiology is a major area of focus for artificial intelligence products:

**75,23%** of all FDA authorized AI-enabled medical devices are radiology-related\*.

\*<https://www.fda.gov/medical-devices/software-medical-device-samd/artificial-intelligence-and-machine-learning-aiml-enabled-medical-devices>

At In.lab, our artificial intelligence lab, we are developing projects on:



**Optimized Clinical Workflows**

Calculating surgical risk for lung pathologies



**Improved Diagnostic Accuracy**

Using AI in XRs and CTs images for Covid-19



**Efficient Triage and Prioritization**

Lung diseases screening using torax CT images



**Facilitating Research**

7-Tesla MRI denoising

# The tools are already here, but **what does the available evidence** say about their use?

## THE LANCET Oncology

**The Mammography Screening with Artificial Intelligence (MASAI) trial is the first randomized controlled trial evaluating the effect of AI-supported screening.**

Compared with standard double reading, AI-supported mammography screening:

- Resulted in a **similar cancer detection** rate;
- Had a **substantially lower screen-reading workload** (44% lower).

Lång, Kristina, et al. "Artificial intelligence-supported screen reading versus standard double reading in the Mammography Screening with Artificial Intelligence trial (MASAI): a clinical safety analysis of a randomised, controlled, non-inferiority, single-blinded, screening accuracy study." *The Lancet Oncology* 24.8 (2023): 936-944.

## NBER | NATIONAL BUREAU of ECONOMIC RESEARCH

**An experiment with professional radiologists that study the effectiveness of human-AI collaboration and to investigate how to optimize it.**

- Providing AI predictions does not uniformly increase diagnostic quality;
- **The optimal solution involves assigning cases either to humans or to AI**, but rarely to a human assisted by AI.

Agarwal, Nikhil, et al. Combining Human Expertise with Artificial Intelligence: Experimental Evidence from Radiology. No. w31422. National Bureau of Economic Research, 2023.

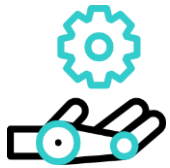
## npj | digital medicine

**A prospective observational study aimed to observe how AI affected the reading times of radiologists in the daily interpretation of CXRs.**

- **Overall reading times shortened** when radiologists referred to AI, especially for normal CXRs;
- **Abnormalities detected by AI on CXR appeared to lengthen** reading times.

Shin, Hyun Joo, et al. "The impact of artificial intelligence on the reading times of radiologists for chest radiographs." *NPJ Digital Medicine* 6.1 (2023): 82.

Even though there are a lot of devices available for use and the promise is great, **how to optimize the collaboration between AI and radiologists is still an open question.**



Optimal collaboration between radiologists and AI **will not be achieved by simply “using it”.**



This interaction must be **designed and facilitated** through novel training approaches



Radiologists can then **confidently rely on AI while being mindful of its constraints.**



15<sup>th</sup> Biennial Symposium  
of the International  
Society for Strategic  
Studies in Radiology

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