

The promise of AI in radiology



Needless to say, radiology plays a critical role in healthcare delivery. It is rare for a patient to pass through a hospital without requiring the opinion of a **radiologist** somewhere along their journey – be it in triaging patients in the **ER**, assessing the need for treatment, or evaluating the effectiveness of treatment.

Equally important is the role of artificial intelligence (**AI**) in **radiology**. The major hope for **automated intelligent systems** in radiology is to increase accuracy, efficiency, and productivity in order to **improve patient care and outcomes** . However, careful development of these advanced systems is necessary to ensure the patients' and hospital staff's needs are kept priority.

Radiology is not new to the idea of using **AI to support decision-making**. For over 20 years, imaging support analytics have played an imperative role in the progression of diagnostic medicine and imaging analysis. For example, computer aided diagnostics has been widely employed to summarise and standardise digitised medical images in many areas of radiology, including **mammography**.

Of note, recent advances in the field of machine learning and deep learning have the potential to exponentially increase both the computing power potential and output quality of such imaging support analytics. Studies have shown that algorithms can provide standardised clinical care while allowing flexible local level innovation in imaging. Meanwhile, many tech start-ups and companies are trying to **utilise AI to diagnose several diseases, including stroke detection, white matter abnormality detection, and malignancies**. AI solutions developers often collaborate with academic physicians and try to address unmet needs.

Indeed the hypothetical **benefits of AI technology are theoretically unlimited** when thinking of **value to the patient** and to the healthcare system. Hence, recently, the semantics of discourse have been whether radiologists need to fear being replaced by AI. Some healthcare and tech experts emphasise that the goal is simply to design algorithms that match the ground truth in training datasets and to minimise errors.

"I believe that there is a problem with nomenclature and terminology. I think the word 'artificial' is wrong, and the term AI should stand for 'augmented intelligence'," said [Dr. Rasu B. Shrestha](#) at Radiological Society of North America 2017.

There are also ethical and privacy concerns regarding the development and use of augmented intelligence systems. How should consent be obtained from patients for the use of their imaging data? Should permission be obtained from the patients at the time of imaging that their imaging data may be used to train an algorithm? Further, how should data privacy be addressed?

Careful consideration of these questions is essential as AI systems are developed, and having a radiologist informed and always available to advocate for the safety and privacy of the patient is not only recommended, but an absolute requirement as a physician sworn under the [Hippocratic Oath](#). The point should be to improve patient care and patient outcomes, with the ultimate goal of improving quality of life.

Source: [Canadian Association of Radiologists Journal](#)

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