

## **RSNA Statement on the Application of Artificial Intelligence in Radiology Updated 5/9/2024**

- The Radiological Society of North America (RSNA) is a leader in the practical and ethical application of artificial intelligence (AI) in radiology. In addition to presenting cutting-edge research, education and guidance through its journals, annual meeting and instructional programs, RSNA developed the first-ever radiology-specific AI certification program for professionals and has organized numerous AI competitions in radiology.
- There has been a rising interest in the application of artificial intelligence (AI) in radiology, notably due to its relatively recent breakthrough success in the fields of computer vision, speech recognition and natural language understanding. Regarding computer vision, more specific examples of AI approaches in radiology include image acquisition, image classification, image segmentation and quantification, object detection and image translation.
- Multiple studies have demonstrated the potential of AI in radiology, including increasing the efficiency and accuracy of image interpretation, extending radiology services to underserved areas, and having an impact in parts of the world with limited access to trained radiologists. AI has the potential to enable upskilling and support clinical practice, particularly for less experienced or expert practitioners.
- AI has broad application in radiology, extending beyond image interpretation, and many potential use-cases have been described, including facilitating radiology reporting, natural language understanding of radiology reports, radiology workflows, image quantification, population health, study protocoling, education, improving image quality and decreasing scan acquisition time.
- Currently, most of the published peer-reviewed AI studies in radiology have been performed retrospectively, restricted to data obtained from a single institution, and from limited and often urban geographic regions. Studies have shown that the performance of AI models may decrease when applied to external sites due to unintended biases and overfitting to local training data. As such, AI models should be externally validated prior to routine clinical use, and there is a need for more large-scale randomized-controlled prospective research on the clinical applicability and generalization of AI models across institutions. In addition, the performance of AI models has been shown to change and potentially degrade over time, and there is a need for ongoing monitoring and periodic re-calibration of models accordingly.
- Generative AI, such as the large language models (LLM) that back ChatGPT are an exciting development that may contribute to major advances in efficiency and efficacy in radiology. Research and development in fine-tuning these models to medical and radiological content, developing and publishing open-source models, and applying them to clinical problems should be encouraged. Along with the new benefits they provide, generative AIs come with new risks, including the potential to confabulate or ‘hallucinate’ incorrect or non-existent information. These errors have the potential for harm in a medical environment; generative AI must be carefully validated and monitored in clinical deployment with particular attention to mitigating risks that are unique to generative AI.
- There is also a need for learning how to best integrate AI models with point-of-care commonly used information technology systems in radiology and healthcare, including Picture Archive and Communication Systems, Electronic Health Records, and radiology reporting to better understand human-computer interfaces and potential barriers to adoption. RSNA supports the development and adoption of

standards for integrating AI through the work of Integrating the Healthcare Enterprise (IHE) in Radiology.

- Widespread adoption of AI in radiology requires careful attention to its associated ethical and societal implications, as summarized in the 2019 [Joint European and North American Multisociety Statement on the Ethics of AI](#).
- Radiology-based AI systems should be designed with patient care in mind and have an overall positive impact in health care delivery. In regard to radiology AI systems, patients have noted the need for trust, human connection and cultural acceptability, while acknowledging fear of the unknown. Patients have noted that important AI use-cases include improving access and communication, reducing wait times, and increasing diagnostic accuracy, with ultimate goals of improving patient well-being and mental health. RSNA supports the use of AI to advance patient care, safety and access, as well as educational initiatives regarding the potential benefits and risks of AI.
- RSNA maintains the position that fully autonomous diagnostic AI in radiology is not ready for clinical use at this time, as AI systems have limitations, and human understanding remains crucial in medical decision-making. This position was previously stated in a [public workshop held by the American College of Radiology and RSNA](#).
- Creation of large publicly accessible datasets and use of these datasets in the context of challenges is an important method to advance the field of AI, and RSNA has helped support and organize multiple [AI challenges in radiology](#).

*RSNA is committed to excellence in patient care through education and research.*

*RSNA is a strong advocate for quality, safety, equity and strict adherence to appropriateness criteria in medical imaging and radiation oncology. Through its peer-reviewed journals, education programs and annual scientific assembly, RSNA continually informs radiologists, medical physicists, radiation oncologists and other radiology professionals of the latest technologies and research developments designed to optimize dose and improve patient safety.*