



Reshaping the future of AI education in radiology

- Artificial intelligence (AI) has been revolutionising the medical field, particularly radiology.
- However, most radiologists are not familiar with AI, and many report a fear of being replaced by AI.
- Most offered courses in AI are costly and time-consuming.
- To provide an alternative, Dr Jordan Perchik from the University of Alabama at Birmingham, USA, designed a free online 'AI Literacy Course', which reached more than 500 radiology trainees from 10 countries.

Artificial intelligence (AI) is a fast-growing area of computer science that is making a significant impact on medicine, especially in the field of radiology. AI algorithms can be unique tools to help radiologists reach a faster and more precise diagnosis. Despite the obvious advantages, many radiologists remain reluctant to incorporate AI into their domain, while the majority of them have limited knowledge of AI applications. Dr Jordan Perchik from the University of Alabama at Birmingham, USA and his coworkers designed a free online course packed with the essential tools for AI use in radiology, targeting radiology residents as well as medical students. This course ran at an international level and managed to increase understanding of AI,

The course reached more than 500 participants, which is more than threefold higher than the number of participants reached in 2021.

while also proving to be an excellent tool for encouraging radiologists to familiarise themselves with AI.

In recent years, AI has seen a dramatic increase in the field of radiology, while AI applications remain at the centre of healthcare. In essence, AI can be described as a set of tools that are programmed to perform tasks. Among many other applications, AI aims to solve practical problems in healthcare, particularly in radiology. Radiology is the medical domain that specialises in using imaging technology such as X-ray, CT, MRI, and ultrasound to diagnose and treat diseases. What AI can do is assist the radiologist by automatically detecting (through programming) complex patterns in the images, thus reducing the diagnosis burden and shortening the diagnosis time. Despite the obvious benefits, radiologists seem to lack appropriate AI training; additionally, they seem very reluctant for AI to enter their field.

Ongoing challenges in AI education

As AI becomes the centre of attention by being a common subject in a plethora of conferences and publications, incorporating AI education into the curriculum still seems to be challenging. Few AI courses are available for radiologists looking to learn more about AI, and these courses are often expensive and require an extensive time



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commitment. Additionally, these courses often spend a substantial amount of time covering materials not relevant to the clinical use of AI in radiology. These barriers to AI education access are even more pronounced for radiologists in low- and middle-income countries. As a consequence, radiologists globally report they lack training in AI. But is this irreversible? And if so, how is it possible to provide AI education on a global level? Perchik and colleagues believe that a free and online training course could become the catalyst needed for the adoption of AI applications in radiology.

How it started

Indeed, studies have shown that radiologists who have received some training on AI seem to value the possible AI applications in their everyday work. That is why Perchik and colleagues designed 'The AI Literacy Course', led by the Artificial Intelligence in Radiology Education (AIRE) group at the University of Alabama at Birmingham since 2020. In 2021, the week-long online course included nine training programmes and reached over 150 radiology trainees. Specifically, the participants targeted were from training programmes in the Southeast and Mid-Atlantic United States. The curriculum for the

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AI Literacy Course curriculum was developed by a panel of three attending radiologists and a lead radiology resident, and contained core subjects such as Algorithm Bias and Ethics of AI. The course was incredibly successful and managed to improve familiarity and comfort with AI terminology and applications.

In 2022, Perchik and colleagues further expanded the AI Literacy Course by addressing participants on an international level, from a total of 25 residency programmes. Participants from 10 countries registered for the course, including the US, Colombia, Grenada, the Netherlands, Cameroon, Nigeria, Egypt, Lebanon, Saudi Arabia, and India. The course covered a wide range of topics, from introductory lectures on AI to lectures on applications of AI in the subspecialties of Nuclear Medicine,

Paediatric Imaging and Musculoskeletal Radiology and finally, special topics lectures, such as 'The future of AI radiology' and 'The federated learning in AI'.

A hands-on session was also added to the 2022 curriculum, giving the participants the opportunity to familiarise themselves with an FDA-approved AI tool for advanced cancer. In addition, the courses were recorded and uploaded on YouTube, giving participants the opportunity to watch the curriculum in their own time. In fact, the course managed to reach more than 500 participants, which is more than threefold higher than the number of participants reached in 2021.

The aftermath

The week-long course for radiology trainees was held from 3–7 October 2022. The course was evaluated by handing out a survey before and after the completion of the course. Before the course, a huge percentage of the participants (64.2%) reported a low familiarity with fundamental terms, methods, and applications of AI in radiology. Impressively, at the end of the course, almost all participants (93.2%) reported that the course increased their understanding of AI, and many of them (86.4%) reported interest in participating in radiology AI courses in the future. Interestingly, more than half of the participants (59.1%) reported that this course was their first chance to cover AI in radiology.

These spectacular results can be attributed to the general format of the course, such as the quality of the curriculum which covered from fundamental AI topics to more in-depth AI applications in radiology, as well as the hands-on session which helped the participants to familiarise themselves with an AI tool. In particular, it is important to mention that the remote element of this course played a major role in its success, as this gave participants the opportunity to join, no matter their location. Additionally, since all lectures were recorded, the participants were able to follow the course at their own pace.

Reshaping the future

The AI Literacy Course proved to be an effective tool for increasing accessibility to AI education for radiology trainees around the world. These remote education seminars managed to reach out to different participants, from radiology trainees to medical students, and served as a free source of practical and easily accessible AI education. AIRE aims to repeat the free courses on an annual basis, using the same remote education format, with the ultimate goal to keep AI education accessible and help radiologists identify the grand benefit they could have by using AI in their practice.

Personal response

What would you change in the next course?

In future courses, we are hoping to add more opportunities for hands-on experiences. We want participants to be able to see AI in action, whether this is with a demonstration of a current commercial AI product or training an algorithm themselves on a pre-prepared set of radiology images.

How do you think this course will affect any hesitance radiologists might have towards AI in radiology?

It has been shown that fear of AI goes down when experience with AI goes up. Much of the fear of AI in radiology comes from uncertainty of how AI will affect the radiologist's role in healthcare. For many of our participants, this course is their first experience with AI in radiology. Our goal is that after our participants see what AI can do, and just as importantly, what it

can't do, they will be more welcoming of AI integration into the practice of radiology.

What do you imagine the impact of the AI Literacy Course will be on the institutional curriculums lacking AI education?

We hope that our course will make AI education more accessible to the radiology community. In the near future, when AI is more widely clinically integrated and concepts of AI are tested on radiology licensing exams, it will be necessary for programmes to have their own AI curricula and their own AI experts on site. This is not the reality we are in currently, and many programmes in the US and internationally do not have these resources in place. In the meantime, we hope our course can serve as a bridge to provide free and accessible AI education to radiologists in training and to also serve as a model for programmes looking to start their own programmes in the future.

Details



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www.youtube.com/AlinradiologyeducationAIRE22

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Funding

Radiological Society of North America (RSNA)

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Bio

Dr Jordan Perchik is an Abdominal Imaging and Informatics fellow at the University of Alabama at Birmingham, USA. He is the president and co-founder of Artificial Intelligence in Radiology Education, a collaborative group of educators seeking to bring practical and accessible AI education to radiology trainees around the world.

Further reading

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- Huisman, M, et al, (2021) [An international survey on AI in radiology in 1,041 radiologists and radiology residents part 1: fear of replacement, knowledge, and attitude](#), *European Radiology*, 31(9), 7058–7066.

Competing interest statement

Jordan Perchik is the president and co-founder of Artificial Intelligence in Radiology Education.

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