

AI could allow quicker, better MRI scans

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Facebook and radiologists are working together on artificial intelligence that could make MRI scans ten times faster, with appointments lasting five minutes.

The tech company's AI researchers are collaborating with NYU School of Medicine, with the goal of reducing waiting times and making the diagnostic tool more widely accessible. Unlike projects such as IBM's Watson for Oncology that use AI to analyse existing medical images and suggest a diagnosis, this collaboration focuses on applying machine-learning to change how the images are made.

MRI (magnetic resonance imaging) scanners use magnetic fields and radio waves to gather signals from the millions of protons in the body then use the data to build cross-sectional images of internal structures that distinguish

between types of tissue. The collection of so much data takes time and most scans last between 15 and 90 minutes.

The fastMRI team's proposal is to capture less data and therefore scan faster, using AI trained on millions of other scans to fill in the gaps by recognising underlying structures in the body. They believe that the work could even enhance the quality of information.

Early work at NYU School of Medicine indicates that artificial "neural networks" can accomplish this by generating high-quality images from far less data than was thought necessary. They will use about 3 million images from 10,000 clinical cases to train the AI. All data has been anonymised.

The team admit that the task will be difficult. Writing on Facebook's website, the lead researchers Daniel Sodickson and Michael Recht, of NYU,

and Larry Zitnick, of Facebook, said: "Reconstructing images from partial information poses an exceedingly hard problem. Neural networks must be able to effectively bridge the gaps in scanning data without sacrificing accuracy. A few missing or incorrectly modelled pixels could mean the difference between an all-clear scan and one in which radiologists find a torn ligament or a possible tumour."

Nevertheless, Mr Zitnick told *Forbes* that the team expected to have usable results within a year.

Professor Andrea Rockall, a researcher in AI and imaging at Imperial College London and a member of the Royal College of Radiologists' AI expert panel, said that the principle was sound and the work exciting. She said the research and similar work from other teams could lead to improved outcomes for patients in a few years.

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