AI May Diagnose Health Conditions as Effectively as Health Professionals

Despite correctly detecting disease in 87% of cases, artificial intelligence didn't considerably outperform diagnoses made by humans.

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New research published in The Lancet Digital Health suggests that artificial intelligence (AI) may be able to determine diseases from medical imaging as accurately as health professionals, reports the University of Birmingham in the United Kingdom.

Deep learning is an AI technique that allows computers to examine thousands of medical images to identify patterns of disease using algorithms, big data and computer power to emulate human learning and intelligence. In addition, deep learning could improve the accuracy and speed of diagnosis.

For the study, researchers compared how successful deep learning and health professionals were in detecting diseases from medical imaging. Scientists also evaluated the inquiry's design, reporting and clinical value.

Results showed that AI correctly identified illnesses—including cancers and eye diseases—in 87% of cases compared with 86% of cases accurately recognized by health care professionals. In addition, deep-learning algorithms correctly excluded patients who didn't have disease (known as specificity) at a rate similar to health care professionals (93% versus 91%). But researchers noted that AI did not significantly outperform a diagnosis by a human.

Scientists commented that the biggest flaw in the study's design was the fact that deep learning was mostly assessed in nonclinical settings. To improve future assessments, investigators proposed the use of higher standards of research and reporting.

"A key lesson from our work is that in AI—as with any other part of health care—good study design matters," said Xiaoxuan Liu, a medical doctor at the University of Birmingham and a study author. "Without it, you can easily introduce bias which skews your results. These biases can lead to exaggerated claims of good performance for AI tools which do not translate into the real world. Good design and reporting of these studies is a key part of ensuring that the AI interventions that come through to patients are safe and effective."

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