

AI as Second Reader Performs Well in Breast Cancer Screening



Researchers from the Cancer Registry of Norway demonstrated that a commercial artificial intelligence (AI) system could detect breast cancer from mammographic images and serve as a second reader in a retrospective study published in *Radiology*.

Examining mammograms gathered as part of a population-based breast cancer screening program produces a significant workload for radiologists. The current study compared the detection by a commercially available AI system to routine independent double reading, as would be performed in a population-based screening program. The study analysed 123,000 examinations performed on 47,877 women at four facilities in Norway's population-based screening program, Breast Screen. According to the study authors, this represents the largest study of its kind to date.

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The AI system rated cancer on a scale from 1 (low risk) to 10 (high risk) for each examination. Those that the AI system rated 10 included 87.6% (653/752) of screen-detected and 44.9% (92/205) of interval cancers. Only 0.7% of screen-detected cancers (5/752) received the lowest AI score of 1. Using a threshold mirroring the average individual radiologist rate of positive interpretation, 80.1% of the screen-detected cancers (602/752) and 30.7% of the interval cancers (63 of 205) were selected.

Given the high percentage of true negative examinations classified with a low AI score (low risk), the AI system could be used to filter out examinations that do not need radiological interpretation and thus substantially reduce the workload on screening radiologists. The AI could be used as one of the two readers in a double-reader setting, where the radiologist could detect cancers undetectable by the AI. The authors note that a few clinically significant tumours remain undetected by the AI and that prospective studies are needed to better their characteristics and why these are not flagged.

Lead researcher Dr Solveig Hofvind said: 'We expect AI to be of great value in the interpretation of screening mammograms in the future. We expect the greatest potential to be in reducing the reading volume by selecting negative examinations.'

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