

Study finds robots can detect breast cancer as well as radiologists

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A new paper in the *Journal of the National Cancer Institute* suggests that artificial intelligence systems may be able to perform as accurately as radiologists in the evaluation of digital mammography in breast cancer screening.

Breast cancer is the most common cancer in women, and despite important improvements in therapy, it is still a major cause for cancer-related mortality, accounting for approximately 500,000 annual deaths worldwide. Breast cancer screening programs using mammography are effective in reducing [breast cancer](#)-related mortality. However, current screening programs are highly labor intensive due to the large number of women that have to be screened. Considering the increasing scarcity of breast screening radiologists in some countries, many researchers believe other [screening methods](#) may be worth investigating.

Since the 1990s, computer-aided [detection systems](#) have been developed to detect and classify breast lesions in mammograms automatically. However, no studies to date have found that these systems directly improve screening performance or cost effectiveness. This has precluded their use as a method for screening mammography.

In this study researchers compare, at a case level, the cancer detection performance of a commercially available AI system to that of 101 radiologists who scored nine different cohorts of mammography examinations from four different manufacturers as part of studies previously performed for other purposes.

Each dataset consisted of mammography exams acquired with systems from four different vendors, multiple radiologists' assessments per exam, yielding a total of 2,652 exams (653 malignant) and interpretations by 101 radiologists (28,296 independent interpretations).

The performance of the artificial intelligence system was statistically not inferior to that of the average of the 101 radiologists. The evaluated system achieved a cancer detection accuracy comparable to an average breast [radiologist](#) in this retrospective setting.

"Before we could decide what is the best way for AI systems to be introduced in the realm of [breast cancer screening](#) with mammography, we wanted to know how good can these systems really be," said Ioannis Sechopoulos, one of the paper's authors. "It was exciting to see that these systems have reached the level of matching the performance of not just radiologists, but of radiologists who spend at least a substantial portion of their time reading screening mammograms."

More information: Alejandro Rodriguez-Ruiz et al, Stand-Alone Artificial Intelligence for Breast Cancer Detection in Mammography: Comparison With 101 Radiologists, *JNCI: Journal of the National Cancer Institute* (2018). [DOI: 10.1093/jnci/djy222](https://doi.org/10.1093/jnci/djy222)

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