AI in Breast Imaging - A Conversation Between a Data Scientist and a Radiologist

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Artificial intelligence (AI) is a technology which enjoyed a disruptive renaissance in the last decade, evolving from machine learning to deep learning, thanks to the combination of a dramatic increase in computational power, the development of graphic processing units and artificial (convolutional) neural networks as well as the availability of big data and images, exploited for extracting new knowledge by data scientists. Radiologists are again at the forefront of innovation in medicine as it was digital images substituting for films, a process significantly closed by the advent of digital mammography. Breast imaging is one of the most important fields for AI applications in radiology, with peculiar challenges to consider: stratification of breast cancer risk; lesion detection; diagnosis and image-based characterization of malignant tumors; reduction of needle biopsy of benign lesions; prognosis and prediction of response to therapy. The complementary human intelligence of radiologists and data scientists must guide this game change supporting the trend toward personalized predictive medicine.

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