**Artificial neural networks in image processing for early detection of breast cancer**

## ABSTRACT

Medical imaging techniques have widely been in use in the diagnosis and detection of breast cancer. The drawback of applying these techniques is the large time consumption in the manual diagnosis of each image pattern by a professional radiologist. Automated classifiers could substantially upgrade the diagnosis process, in terms of both accuracy and time requirement by distinguishing benign and malignant patterns automatically. Neural network (NN) plays an important role in this respect, especially in the application of breast cancer detection. Despite the large number of publications that describe the utilization of NN in various medical techniques, only a few reviews are available that guide the development of these algorithms to enhance the detection techniques with respect to specificity and sensitivity. The purpose of this review is to analyze the contents of recently published literature with special attention to techniques and states of the art of NN in medical imaging. We discuss the usage of NN in four different medical imaging applications to show that NN is not restricted to few areas of medicine. Types of NN used, along with the various types of feeding data, have been reviewed. We also address hybrid NN adaptation in breast cancer detection.