An advanced technique for analyzing breast cancer using thermography

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Thermography is an entirely non-invasive and non-contact imaging technique that is widely used in the medicinal field. Since the early detection of cancer is very important, the computer-aided system can increase the rate of diagnosis, cure, and survival of the affected person. Considering the high cost of treatment in addition to the high prevalence of affected persons, early diagnosis is the most important step in reducing the health and social complications of this disease. Currently, mammography is the main method used for screening breast cancer. However, for young woman, mammography is not recommended due to the low contrast that results from the dense breast, and alternative techniques must be considered for this purpose. Breast cancer is the main cause of cancer-related mortality among women. Early detection of cancer—especially breast cancer—will aid the treatment process. Our goal is to develop software for detecting breast cancer automatically that uses image-processing techniques and algorithms to analyze thermal breast images to detect the signs of the disease in these images, allowing the early detection of breast cancer. A new algorithm is planned for the extraction of the breast characteristic features based on bio-data, image analysis, and image statistics. These features have been extracted from the thermal images captured by a thermal camera, and will be used to classify the breast images as normal or suspected to be affected by using convolutional neural networks (CNNs).

Keywords
Breast cancer, breast thermal image, convolutional neural network, image analysis, thermography