عنوان مقاله:

Thermogram Breast Cancer Detection Using Deep Learning Techniques: A review

محل انتشار:

پنجمین کنفرانس ملی فناوری های نوین در مهندسی برق و کامپیوتر (سال: 1401)

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خلاصه مقاله:

In general, using thermal images and applying imageprocessing on them with the help of deep learning models hasfacilitated the early diagnosis of breast cancer for doctors andhas accelerated the treatment process. Since screening has been achallenging and vital issue for a long time, this study hasinvestigated various imaging methods in general and classifiedeach based on their advantages and disadvantages. However,thermal imaging is particularly discussed in this paper. Thermalimaging makes it possible to identify tumors in the early stagesby examining the temperature distribution in both breasts. Dueto being a non-invasive screening method and not involving anyphysical touch, injections or the use of special tools during theprocess, thermal imaging is considered as more preferred amongthe medical practitioners. The interpretation of thermal imagesand its classification into categories such as normal andabnormal for cancer diagnosis is carried out by deep learningmodels such as convolutional neural network (CNN), U-NETnetwork, etc. This article provides a review of recent studies donein the field of breast cancer diagnosis using deep learning modelsin thermal images. According to the results reported in recentresearches, it seems that the combination of U-NET and CNNmodels enjoys the best result with ۹۹.۳۳% accuracy and ۱۰۰%sensitivity while the weakest performance goes to Bayesianclassification with the accuracy of ۷۱.۸۸% and the sensitivity of۳۷%.

کلمات کلیدی:

component; Breast Cancer; Thermal Images; Deep Learning; Convolution Neural Network