عنوان مقاله:

Tumor Detection in Digital Mammogram Based on Support Vector Machine Using Co-occurrence Matrix

محل انتشار:

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تعداد صفحات اصل مقاله: 11

نویسندگان:

SayedMasoud Hashemi Amroabadi - *IUT*

MohammadReza Ahmadzadeh - *IUT*

Ali Hekmatnia - *Medicine University of Isfahan*

خلاصه مقاله:

Breast cancer is one of the leading causes of deaths among women. Mammography is currently the best method for early detection. Due to the breast tissue type and different kinds of lesions, by using low dose x-ray in mammography, the detection of lesions in mammograms becomes very ambiguous and a tedious work . Early detection is the most effective ways to reduce the mortality rate. Our main aim in this paper is detection and recognition of tumors in digital mammograms. Mammograms usually have a large size so the processing of the entire mammogram takes a lot of time. To reduce the size and therefore the processing time and also to decrease the False Positive Rate, a two-step algorithm is used. At the first step some unimportant regions such as background and pectoral muscle are eliminated and at the second step an ROI detection algorithm is proposed which extracts the most likely regions to tumors. To recognize the tumors in the detected regions, some features are extracted from each region. To find the most effective features for tumor detection, several data mining feature extraction and feature selection methods are used and then compared. To increase the performance and reduce the number of features a GA based algorithm is proposed. Finally, SVM is used as our classifier, because it has the best results in comparison with other tools in our application. Experimental results show that the performance of proposed methods is better than other previous methods. The True Positive Rate using SVM is ۹۴.۵۹% and the False Positive Rate is ۲۲.۹۵%.

کلمات کلیدی:

Mammogram, fa, Tumor Detection, image processing, Support vector machine