

工程与应用

Top-hat与SVM在乳腺微钙化点检测中的应用

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摘要 乳腺X线图像中微钙化点的检测对于乳腺癌的早期诊断非常有意义, 然而目前常用的钙化点检测方法普遍存在假阳性高的缺点。采用小波与Top-hat算子相结合的方法对乳腺图像进行钙化点粗检测, 并在此基础上, 用SVM对钙化点粗检结果进一步甄别, 去假存真。这样做可以在基本不降低真阳性率的情况下, 大大降低假阳性率。仿真实验证明, 该方法的钙化点检出率达到98.46%, 错检率仅为3.597%, 说明该方法能够有效地从复杂背景中提取出微钙化点。

关键词 [微钙化点](#) [小波](#) [Top-hat](#) [支持向量机](#)

分类号

Application of Top-hat and SVM in micro-calcification detection of mammograms

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Abstract

It is very meaningful for early diagnosis of breast cancer with detecting micro-calcifications in breast cancer. However, used methods of detecting micro-calcifications have shortcomings of high false positive. Micro-calcifications of mammograms are detected with the method of combining wavelet with Top-hat filter. And on this basis, it can farther detect the results of coarse calcifications with SVM, eliminate the false and retain the true. This method can reduce the rate of false positive greatly, on the base of not reducing the rate of true positive. Simulating experiment results show that the rate of detection calcifications achieves 98.46%, and the rate of false positive is less than 3.597%. The method can effectively extract micro-calcifications from complex background.

Key words [micro-calcifications](#); [wavelet](#); [Top-hat](#); [Support Vector Machine \(SVM\)](#)

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