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图形、图像、模式识别

粗糙神经智能疑似乳癌图像分类方法研究

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摘要 提出了一种用于乳腺X线图像分类的粗糙神经智能方法，该方法是一种混合智能计算技术。首先使用模糊图像处理算法来提高整个原始图像的对比度以提取感兴趣区域以及增强区域边缘；然后建立灰度共生矩阵，提取出表征感兴趣区域纹理的特征属性；接着使用粗糙集方法进行属性约简并产生规则；最后，设计出粗糙神经网络，用来将感兴趣区域区分为良性或是恶性。为了对所提出的粗糙集神经网络进行性能评价，对若干乳腺X线图像样本进行了测试，实验结果表明：用该方法进行乳癌识别的整体准确率要高于使用其他技术。

关键词 粗糙集 神经网络 决策树 模糊集

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Rough neural intelligent approach of mammogram image classification with suspected breast cancer

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Abstract

A rough neural intelligent approach for rule generation and image classification is introduced.This method is a hybridization of intelligent computing techniques.Algorithms based on fuzzy image processing are first applied to enhance the contrast of the whole original image，to extract the region of interest and to enhance the edges surrounding that region.Then，this paper extracts features characterizing the underlying texture of the regions of interest by using the gray-level co-occurrence matrix.Then，the rough set approach to attribute reduction and rule generation is presented.Finally，rough neural network is designed for discrimination of different regions of interest to test whether they represent malignant cancer or benign cancer.To evaluate performance of the presented rough neural approach，this paper runs tests over different mammogram images.The experimental results show that the overall classification accuracy offered by rough neural approach is high compared with other intelligent techniques.

Key words rough sets neural networks decision trees fuzzy sets

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