

博士论坛

基于贝叶斯方法的尿沉渣图像分割

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摘要 通过对贝叶斯分类器的讨论, 提出将贝叶斯方法应用于医学图像分割后的合并策略思想, 旨在提高图像分割的准确性, 为计算机自动识别医学图像中包含的各种元素提供更加可靠的依据。首先让计算机自动识别出尿沉渣图像中的红细胞、白细胞、管型细胞、上皮细胞和结晶等有形成分, 其次将各细胞实体正确地分割出来。由于图像中存在着大量背景噪音, 因此在分割之前需要进行去除噪音的预处理。预处理采用数学形态学的方法, 依次进行边缘提取、梯度图像二值化、腐蚀、膨胀。最后, 在图像分割过程中, 使用最大后验概率法进行破损目标体的合并, 为进一步的特征提取和分类作了基础。在目标体分类中使用朴素贝叶斯分类器进行分类。将本文中的方法应用于尿沉渣检查自动图像分析系统中, 实验结果表明这一方法效果较好。

关键词 [贝叶斯方法](#), [图像分割](#), [贝叶斯分类器](#)

分类号

Image Segmentation of Urinary Sediments Based on Bayesian Method

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Abstract

On the basis of researching of Bayesian classifier, a new merging method based on Bayesian classifier for the medical image Segmentation result is brought out. The new method improves the accuracy of image Segmentation, and provides more reliable support for the computer identifying of elements contained in medical image automatically. Firstly, the computer distinguishes the visible compositions such as erythrocyte, leukocyte, pipe type cells, epithelium and the crystallization in urinary sediment images. Secondly, segments all kinds of cells correctly. For the existing of background noises in images, preprocessing is needed to eliminate those noises before segmentation. Preprocessing adopts the mathematical morphology methods, and carries out edge pick-up, gradient graph double value, corrosion and expansion. In the end, the new method adopts the biggest posterior probability of Bayesian method into the combination of incomplete object entities during image segmentation, which improves the integrality of the segmentation result, and provides good foundation for image identification. Bayesian classifier is used in classifying of object entities. Experiment result shows that the new method is suitable for urinary sediment images auto analysis system.

Key words [Bayesian Method](#) [Image Segmentation](#) [Bayesian classifier](#)

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