

工程与应用

一种更高效的尿沉渣自动识别算法

张灿龙¹, 唐艳平², 王强¹, 韦春荣³

1.广西师范大学 计算机科学与信息工程学院, 广西 桂林 541004

2.桂林电子科技大学 信息材料科学与工程系, 广西 桂林 541004

3.广西师范大学 物理与电子工程学院, 广西 桂林 541004

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摘要 提出了一种综合支持向量机 (Support Vector Machine, SVM) 和模板匹配的尿沉渣识别算法。首先根据面积特征将有形成分粗分成大目标类和小目标类, 然后对小目标类中的草酸钙结晶以模板匹配法识别, 而红、白细胞采用SVM的方法进行分类, 最后对大目标类中的上皮细胞和管型则根据其狭长度加以区分。实验表明, 该算法在将尿沉渣识别率提高到96.7%的同时还节约了22.4%的识别时间。

关键词 [尿沉渣](#) [支持向量机](#) [模板匹配](#) [狭长度](#)

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A more effective algorithm of automatic recognition urinary sediment

ZHANG Can-long¹, TANG Yan-ping², WANG Qiang¹, WEI Chun-rong³

1.College of Computer Science and Information Engineering, Guangxi Normal University, Guilin, Guangxi 541004, China

2.Department of Information Material Science and Engineering, Guilin University of Electronic Technology, Guilin, Guangxi 541004, China

3.College of Physics and Electronic Engineering, Guangxi Normal University, Guilin, Guangxi 541004, China

Abstract

An algorithm based on Support Vector Machine (SVM) and template matching is designed to classify the urinary sediment. Firstly, visible compositions in urinary sediment are classified roughly into big object and small object following their area, the former includes epithelial cells and pipe type, the latter includes crystallization, leukocyte and erythrocyte. Secondly, the template matching method is used to identify the crystallization, and by constructing an optimal SVM classifier, leukocyte and erythrocyte are different in the most extent. Finally, these big objects are classified into epithelial cells and pipe type following narrow extent. Experiment shows that the proposed method not only can gain better recognition rate (96.7%), but also reduces 22.4% computing time.

Key words [urinary sediment](#) [Support Vector Machine \(SVM\)](#) [template matching](#) [narrow extent](#)

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通讯作者 张灿龙 clzhang@mailbox.gxnu.edu.cn

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