ECE-16

Computer-Aided Diagnosis System for Medical Laboratory Investigation

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This project applies automatic methods for classification and recognition of urine analysis microscopic images. We found that, it is necessary to apply automatization in the field of microscopic analyses of urine solution as detecting particles in the microscopic image is repeated and time consuming. Furthermore, Particles in many medical laboratory analyses have irregular shapes and blur edges. This project applies medical image processing algorithms and pattern recognition to microscopic images. It is composed of three stages: first, original urinary sediment microscopic images are transformed into binary image by image preprocessing including median filtering, color image conversion to gray scale image and image segmentation. Second, we select and extract some objects from images. Third, we classify the extracted images using SVM to recognize recognizes four kinds of urine sediment components: red blood cells, white blood cells, cast, calcium oxalate.