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Microscopic image segmentation based on pixel classification and dimensionality reduction

Mourtada Benazzouz, Ismahan Baghli, Med Amine Chikh

Abstract :

Pathological image analysis plays a significant role in effective disease diagnostics. In this article, a tool for diagnosis assistance by automatic segmentation of bone marrow images is introduced. The aim of our segmentation is to demarcate cell's component: nucleus, cytoplasm, red cells, and background. Different color spaces were used to extract color's features to profit of their complementarity. We introduce several dimensionality reduction techniques. These techniques are exemplified on a support vector machine pixel-based bone marrow image segmentation problem in which it is shown that it may give significant improvement in segmentation accuracy and time consuming.

Key words : segmentation; color spaces; dimensionality reduction; support vector machine; microscopic images.

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