

Automatic Detection of Proliferative Cells in Immunohistochemically Images of Meningioma Using Fuzzy C-Means Clustering and HSV Color Space

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Abstract : Visual search and identification of immunohistochemically stained tissue of meningioma was performed manually in pathologic laboratories to detect and diagnose the cancers type of meningioma. This task is very tedious and time-consuming. Moreover, because of cell's complex nature, it still remains a challenging task to segment cells from its background and analyze them automatically. In this paper, we develop and test a computerized scheme that can automatically identify cells in microscopic images of meningioma and classify them into positive (proliferative) and negative (normal) cells. Dataset including 150 images are used to test the scheme. The scheme uses Fuzzy C-means algorithm as a color clustering method based on perceptually uniform hue, saturation, value (HSV) color space. Since the cells are distinguishable by the human eye, the accuracy and stability of the algorithm are quantitatively compared through application to a wide variety of real images.

Keywords : positive cell, color segmentation, HSV color space, immunohistochemistry, meningioma, thresholding, fuzzy c-means

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