

Image Enhancement of Histological Slides by Using Nonlinear Transfer Function

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Abstract : Histological slides provide clinical diagnostic information about the subjects from the ancient times. Even with the advent of high resolution imaging cameras the image tend to have some background noise which makes the analysis complex. A study of the histological slides is done by using a nonlinear transfer function based image enhancement method. The method processes the raw, color images acquired from the biological microscope, which, in general, is associated with background noise. The images usually appearing blurred does not convey the intended information. In this regard, an enhancement method is proposed and implemented on 50 histological slides of human tissue by using nonlinear transfer function method. The histological image is converted into HSV color image. The luminance value of the image is enhanced (V component) because change in the H and S components could change the color balance between HSV components. The HSV image is divided into smaller blocks for carrying out the dynamic range compression by using a linear transformation function. Each pixel in the block is enhanced based on the contrast of the center pixel and its neighborhood. After the processing the V component, the HSV image is transformed into a colour image. The study has shown improvement of the characteristics of the image so that the significant details of the histological images were improved.

Keywords : HSV space, histology, enhancement, image

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