

## EQUALISATION OF ARCHIVAL MICROSCOPIC IMAGES FROM IMMUNOHISTOCHEMICALLY STAINED TISSUE SECTIONS

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### **Abstract**

A method of image equalisation that reduces non-uniformity of light distribution caused by optical devices and dust on camera sensors is presented. The method explores non-uniformity which occurs in archival images captured by a typical optical set which consists of a light microscope and a digital camera. A sufficient number of images with low density of foreground objects has been used to extract a global map of non-uniformity of the particular microscope and camera. The proposed method consists of two steps: - (1) extraction of the map of non-uniformity based upon a set of chosen images and - (2) correction of images acquired by the optical set. The global map is created based upon a modified value layer, the third layer of HSV colour space. The proposed method has been tested on images of immunohistochemically (IHC) stained samples of a biopsy tissue, and it has been validated using an image segmentation method developed earlier. The results of the light distribution equalization, as well as the equalized images segmentation turn out to be more similar to the reference method results (namely the manual counting results), than the results of the original images segmentation. The equalization method can be used for other types of images, but all of them should be acquired by the same optical set.

**Keywords:** immunohistochemically stained images, image light distribution, image equalization