

Automatic contrast enhancement for wireless capsule endoscopy videos with spectral optimal contrast-tone mapping

Surya Prasath V., Delhibabu R.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© Springer India 2015. Wireless capsule endoscopy (WCE) is a revolutionary imaging method for visualizing gastrointestinal tract in patients. Each exam of a patient creates large-scale color video data typically in hours and automatic computer aided diagnosis (CAD) are of important in alleviating the strain on expert gastroenterologists. In this work we consider an automatic contrast enhancement method for WCE videos by using an extension of the recently proposed optimal contrast-tone mapping (OCTM) to color images. By utilizing the transformation of each RGB color from of the endoscopy video to the spectral color space $L^*a^*b^*$ and utilizing the OCTM on the intensity channel alone we obtain our spectral OCTM (SOCTM) approach. Experimental results comparing histogram equalization, anisotropic diffusion and original OCTM show that our enhancement works well without creating saturation artifacts in real WCE imagery.

http://dx.doi.org/10.1007/978-81-322-2205-7_23

Keywords

Contrast enhancement, Contrast tone mapping, Endoscopy, Spectral, Wireless capsule