ICIE 2012 Tutorial: A Whirlwind Tour of Color Image Processing

Prof. M. Emre Celebi
Department of Computer Science
Louisiana State University in Shreveport
Email: ecelebi@lsus.edu
http://www.lsus.edu/emre-celebi

Color perception plays an important role in object recognition and scene understanding both for humans and intelligent vision systems. Recent advances in digital color imaging and computer hardware technology have led to an explosion in the use of color images in a variety of applications including medical imaging, content-based image retrieval, biometrics, watermarking, digital inpainting, remote sensing, digital multimedia, and visual quality inspection. As a result, automated processing and analysis of color images has become an active area of research, which is witnessed by the large number of publications during the past two decades. The multivariate nature of color image data presents new challenges for researchers and practitioners as the numerous methods developed for single channel images are often not directly applicable to multichannel images.

This tutorial aims to cover the early stages of the color image processing pipeline. The following is a list of topics:

1. Introduction to Color Image Processing
2. Color Spaces
3. Color Image Filtering
4. Color Image Segmentation