Springer
the language of science

springer.com

EURASIP Journal on Advances in Signal Processing

Special Issue on Advanced Statistical Tools for Enhanced Quality Digital Imaging with Realistic Capture Models

CALL FOR PAPERS

SpringerOpen

Getting closer to reality in modeling image capture devices is crucial for improving the image quality beyond the limits of image restoration algorithms as we know them today. There is currently an increased interest in modeling distortions and noise coming from real capture devices (Poisson noise, internal nonlinearities, space variant point spread functions due to non ideal optics, chromatic aberrations, etc.). While these effects are often not considered in the restoration algorithms, their impact on the resulting image quality is huge in practice. For example, different nonlinearities (both intrinsic to the imaging device and induced ones, e.g., to make the noise signal independent) can invalidate typically assumed noise models and can also devastate deblurring. Joint modeling of digital and nondigital components (like optics and sensors) or various sources of image distortions (such as color filter array, blur, and noise) will likely yield improvements over the traditional approach to treat them separately.

We are aware that this is a very ambitious goal and that the current state-of-the-art does not have (complete) answers to these problems yet. The goal of this special issue is to put together some of the most recent developments in the field, creating in this way a clearer picture of the current status and generating new ideas for further progress. The scope is open to different imaging technologies, including medical imaging (MRI, PET, SPECT, etc.) and microscopy imaging. While emphasizing real capture models, we encourage submissions that deal with general issues appearing in many realistic situations rather than focusing on very particular technical details. Potential topics include, but are not limited to:

- Realistic noise modeling in digital cameras
- Noise estimation from a single image
- Poisson noise removal
- Estimation of the Point Spread Function (PSF)
- Correction of optical distortions
- Statistical modeling of the imaging chain
- Joint denoising, demosaicing, and deblurring
- Radiometric calibration of digital camera images
- Realistic capture models for restoration of medical images (MRI, PET, SPECT, etc.)
- Restoration of microscopic images

Submission Schedule

- ► Manuscript Due: June 15, 2011
- ► First Round of Reviews: August 1, 2011
- ► Publication Date: November 1, 2011

Submission Instructions:

Before submission authors should carefully read over the Instructions for Authors, which are located at http://asp.eurasipjournals.com/authors/instructions. Prospective authors should submit an electronic copy of their complete manuscript through the SpringerOpen submission system at http://asp.eurasipjournals.com/manuscript according to the submission schedule. They should specify the manuscript as a submission to the "Special Issue on Advanced Statistical Tools for Enhanced Quality Digital Imaging with Realistic Capture Models" in the cover letter. All submissions will undergo initial screening by the Guest Editors for fit to the theme of the Special Issue and prospects for successfully negotiating the review process.

Lead Guest Editor

Aleksandra Pižurica, Department of Telecommunications and Information Processing, Gent University, 9000 Gent, Belgium, Email ► sanja@telin.ugent.be

Guest Editors

Javier Portilla, Imaging and Vision Department, Institute of Optics (CSIC), 28006 Madrid, Spain, Email ► portilla@io.cfmac.csic.es

Keigo Hirakawa, Electrical and Computer Engineering, University of Dayton, Dayton, OH 45469, USA, Email ► k.hirakawa@notes.udayton.edu

Karen Egiazarian, Department of Signal Processing, Tampere University of Technology, 33101 Tampere, Finland, Email ► karen.egiazarian@tut.fi