International Conference on Image Processing Theory, Tools & Applications

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Advances in variational image processing

Variational methods have long been the reference in image processing. These approaches have been widely used to solve ill-posed inverse problems as they propose an explicit modeling framework and may easily embed prior knowledge from experts. With the rise of computing power, deep learning has drastically transformed the research landscape, in particular in image processing and computer vision. However, deep learning approaches still yield mixed results in some applications including (bio)medical imaging as annotated databases are scarcer than in other domains due to the image complexity and the high-level of expertise required.

In this context, variational methods are undergoing a renew as they offer robust and interpretable solutions which are two highly desired properties that are usually missing with deep learning solutions. Especially works introducing hybrid models trying to get the best of both worlds have emerged to give very promising results.

The goal of this special session is to highlight researches in image processing using variational approaches by classic or hybrid strategies. Topics of the session include, without being exhaustive:

- Image processing applications: segmentation, registration, denoising, tracking, deblurring, restoration, *etc*.

- Classic variational and hybrid (variational/ machine learning) models: model-based, plug-and-play, deep unfolding, *etc*.

- All application fields are welcome (medical/biomedical, remote sensing, computer vision, *etc*.).

The best paper of this special session may be invited to publish an extended version to one of the following journals:

- Signal Processing: Image Communication, Elsevier ;

- Innovation and Research in BioMedical Engeneering, Elsevier ;

- International Journal of Signal and Imaging Systems Engineering, Inderscience.

For any further information, please contact the Special Session Chairs.