CALL FOR PAPERS

Special Issue: Real-Time Computational Imaging Systems

Journal of Real-Time Image Processing - JRTIP

Overview

The range of applications for digital cameras has grown rapidly with the increasing availability of digital cameras, processing power and advanced image processing algorithms. For example, the near ubiquitous presence of digital cameras coupled with powerful processors in mobile phones made text recognition, face recognition, iris scanning, QR code scanning, panoramic imaging, HDR imaging, etc. commonplace applications that most people carry in their pockets. In industrial applications, digital image processing is used for more and more challenging applications like autonomous driving, high-precision 3D reconstruction, anti-counterfeiting technology, human-robot interaction and much more.

The journal of “Real-Time Image Processing” is interested in algorithms and concepts that make image processing applicable to typical real-life applications where meeting dedicated processing deadlines in real-time is an essential factor. Take automated visual inspection of industrial processes: typically a full analysis for defects has to be processed in at most 1 second and quite often much quicker.

Over the last couple of years, computational imaging has become an increasingly popular field. The basic idea is that much more of a scene can and should be captured than a single projective image or image stream. One approach is single shot imaging of light fields, which capture the appearance of 3D points from several viewpoints simultaneously. The more information is captured about a scene, the more can be extracted after the fact. However, computational imaging encompasses all forms of direct or indirect recording of all aspects of electromagnetic radiation that need to be processed to result in one or a set of “traditional” images. Alternatively, specialized algorithms can work directly on the raw data to extract the desired properties.

Another important aspect is the standardization of the storage of light fields and of light field videos. This work is driven by JPEG Pleno where real-time aspects of storing, retrieving and transmitting light fields play an important role.

In this special issue, the current state-of-the-art of real-time computational imaging systems that offer advantages compared to the use of traditional cameras or that are potentially an enabling technology for new applications will be presented. Proposals for storing, retrieving and transmitting light fields in applications with real-time requirements complement the presented computational imaging systems. The real-time aspect should be seen in the context of the respective application and their real-time constraints.
Topics of Interest

This special issue aims to solicit contributions reporting the most recent progress on real-time computational imaging systems. The list of possible topics includes, but not limited to:

- Computational imaging systems with real-time image synthetization.
- Real-time image processing of raw computational imaging system data.
- Applications of computational imaging systems including but not limited to industry, medical, automotive, and consumer.
- Real-time aspects of particle image velocimetry
- Multi-view stereo imaging and processing in real-time
- Real-time shape and motion estimation for light field and multi-view video
- Computational imaging for real-time shape, reflectance and material estimation
- Computational imaging for real-time recognition and classification
- Real-time compression, storage, retrieval and transmission of light field images and videos
- Parallel and distributed processing of light field images and videos

Submission Guideline

Authors from academia and industry working in the above research areas are invited to submit original manuscripts that have not been published and are not currently under review by other journals or conferences. All potential authors are requested to volunteer as reviewers in the peer-review process for manuscripts submitted for this special issue.

The review process starts immediately after submission and accepted papers are published Springer Online-first on short term after proof-reading and copyright handling has been settled.

Manuscripts are requested according to the Guide for Authors available from the online submission page of the JRTIP at https://www.editorialmanager.com/rtip/default.aspx. All the papers will be peer-reviewed following the JRTIP reviewing procedures.

Notes: when submitting your manuscript, at the step of “Choose Article Type”, please choose this special issue: “SI: Real-Time Computational Imaging Systems”.

The issue is to be reviewed on a “fast track” basis. Prior to sending full paper submissions, it is highly recommended to query the appropriateness of submissions with a 100-200 word abstract by contacting the guest editors with the following contact information:
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Important Dates

- Paper submission due: December 29, 2017
- Review and revision completed: May 2, 2018
- Camera ready paper due: July 2, 2018