Spectral Imaging Processing and Analysis for Civil, Environmental, Engineering and Industrial Applications

A Special Track of the

11th International Symposium on Visual Computing (ISVC'15)

http://www.isvc.net

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Scope:

The recent progress in hardware and software make affordable the use of non-visible image capturing devices/sensors. Examples includes, multi-spectral imaging, hyper-spectral imaging, thermal/infrared sensors, ultraviolet spectrum devices, SWIR, etc. This in the sequel has stimulated a new use of these devices to solve difficult visual problems and/or extend spectral image analysis to other application domains, not well addressing today by the conventional RGB visual sensors. Spectral analysis is nowadays moving from conventional remote sensing applications to ground stations monitoring. Spectral imaging analysis can capture different signatures of object/ humans and can act as material detector improving recognition accuracy in complex visual environment and application cases. Examples include identification of evacuation processes, protection of cultural heritage monuments via the use of non-destructive methods, environmental monitoring (ranging from urban planning, geographic land management to sea surface monitoring), inspection of complex, large-scale constructional environments, (airports, stadia, tunnels, roads, railways, bridges) and industrial processes (automobile construction, medical equipment, cutting) both for products' quality assurance and minimization of industrial working hazards.

This special track is to serve as an international forum for experts from both academia and industry to present their latest research findings, ideas, developments and applications in the wide area of spectral image analysis of any kind (hyper-spectral, multi-spectral, thermal, SWIR, UV, infrared) or even visible spectrum but for non-conventional application scenarios that have been rarely surveyed in the literature.

We also support submission from USA, European Union and other International/National Project activities in the aforementioned areas.

Topics:

Topics of interest include, but are not limited to the following areas:

- Low level processing of spectral imaging
- Spectral imaging registration methods
- Spectral imaging calibration methods
- High level analysis in spectral domain
- Extraction of behaviors and actions using spectral sensors
- High dimensional data reduction in spectral bands
- Visualization methods for spectral bands
- Content-based retrieval in hyper/multi-spectral domain
- Summarization tools in hyper/multi-spectral domain
- Relevance feedback techniques for spectral imaging
- Geographic analysis and mapping spectral image data on geographic systems
- Scalable algorithms, kernel methods in spectral image analysis
- Robotics techniques in spectral image analysis
- Machine learning methods in spectral analysis
    - Neural networks
    - Deep machine learning
    - Support Vector machines
    - Supervised, unsupervised and semi-supervised learning
    - Transfer learning
- Applications to
    - Evacuation
    - Constructional inspections (tunnels, bridges, roads, railways)
    - Pipelines monitoring (oil, water)
    - Complex industrial processes
    - Environmental monitoring
    - Land monitoring
    - Cultural heritage protection

Paper Submission Procedure:

Papers submitted to ISVC 2015 Special Track must not have been previously published and must not be currently under consideration for publication elsewhere. Manuscripts should be submitted in camera-ready format and should not exceed **12 pages**, including figures and tables (see http://www.isvc.net for details). All papers accepted will appear in the symposium proceedings which will be published by **Springer-Verlag** in the **Lecture Notes in Computer Science (LNCS)** series.

Journal Special Issue:

Authors of the best papers presented in this ISVC 2015 Special Track will be invited to submit to the Journal of Multimedia Tools and Application, Springer Press

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