

IET Computer Vision

Call for Papers

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Special Issue on: Spectral Imaging Powered Computer Vision

Recent advances in spectral imaging technology make it more convenient and affordable to capture data within and beyond the visual spectrum. They enable computers and AI agents to better observe, understand and interact with the world. Efforts in this area also lead to the construction of new datasets in different modalities such as infrared, ultraviolet, fluorescent, multispectral, and hyperspectral, bringing new opportunities to computer vision research and applications.

Extensive research has been undertaken during the past few years to process, learn and use data captured by spectral imaging technology. Nevertheless, many challenges remain unsolved in computer vision, for example, low-quality image, sparse input, the high dimensionality of data, high cost of data labelling, and lack of methods to analyse and use data in the context of their unique properties. In many mid-level and high-level computer vision tasks, such as object segmentation, detection and recognition, image retrieval and classification, video tracking and understanding, methods that can effectively explore the advantages of spectral information are yet to be developed. Moreover, effective data fusion in different modalities to develop a robust vision system is still an open problem. New computer vision methods and applications are urgently needed to advance this research area.

The goal of this special issue is to provide a forum for researchers, developers, and users in the broad artificial intelligence community to present their novel and original computer vision research powered by spectral imaging technology. Survey papers addressing relevant topics are also welcome.

Topics of interest include, but are not limited to:

- Spectral imaging process
- Spectral image/video enhancement and reconstruction
- Object detection and recognition
- Image retrieval and classification
- Motion and tracking
- Visual Localisation and navigation
- 3D reconstruction
- Video analysis and understanding
- Representation learning, weakly-supervised learning, and contrastive learning of spectral data
- Domain adaption
- Multimodal learning, registration, and fusion
- Large-scale datasets and benchmarking
- Applications in biometrics, medicine, document processing, autonomous driving and robotic vision
- New applications of spectral imaging

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