**Multi-modality Sensing and Pattern Analysis**

Multi-modality Sensing and Pattern Analysis (MSPA) target the emerging field of research on the fusion of multimodal sensors, its mathematical and statistical foundations, as well as practical applications of spatial, temporal, frequency-based data processing algorithms. Patterns analysis is pervasive and represents contextual information of the underlying generative process. There is, however, a lack of intelligent systems that can leverage on the volume, velocity, and veracity of data that best provide predictive and prescriptive information. This has created the requirement for the creation of novel intelligent signal processing and data fusion methods from multimodal sensors to best extract meaningful information from these high volumes of data. MSPA bridges the boundary between the theory and applications through the development of novel theoretically-inspired methodologies targeting on both longstanding and emergent sensing as well as signal processing applications. The core of MSPA lies in its use of multimodal sensors, intelligent, nonlinear data processing methodologies combined with computational optimization methods. Since application domains provide unique problem constraints/assumptions and thus motivate and drive signal processing advances, it is only natural that MSPA research has a broad application base. MSPA covers novel multimodal sensors, pattern analysis and mining theory, real-time algorithms, performance analysis and applications of techniques. Potential topics of interest include, but are not limited to:

* Multimodality Sensing and Integration(including sensors in nondestructive testing and structural health monitoring)
* Big Data – Algorithms, Data Science and Analytics
* Deep Machine Learning and Neural Computational Intelligence for pattern analysis
* Multi-dimensional Tensor Analysis and Sparse Decomposition
* Signal Processing for Pattern Recognition Applications (such as network structure analysis)
* Physics-based Pattern Analysis (such as thermal, electromagnetic, sonar)
* Computational intelligence sensing network (such as smart grid and internet of thing)
* Neural sensing strategy

**Keywords:** Multimodality Sensing, Computational Intelligence, Pattern Recognition, Big Data, Machine Learning, Data Mining

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