Important Dates:
Submission due: December 31, 2015
Results of first round: February, 2016
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Machine Learning in Medical Imaging

Call For Papers: Special issue of *Pattern Recognition*

Machine learning plays an essential role in the medical imaging field, including computer-aided diagnosis, image segmentation, registration and fusion, image-guided therapy, image annotation, and image database retrieval. With advances in medical imaging, new imaging modalities/methodologies and new machine-learning algorithms/applications are demanded in the medical imaging field. Single-sample evidence provided by the patient's imaging data is often not sufficient to provide satisfactory performance. Because of large variations and complexity, it is generally difficult to derive analytic solutions or simple formula to represent objects such as lesions and anatomies in medical images. Therefore, tasks in medical imaging require learning from examples for accurate representation of data and prior knowledge. Researchers are now beginning to adapt modern machine learning (ML) and pattern recognition (PR) techniques such as supervised, unsupervised, semi-supervised, and deep learning to solve medical imaging related problems. Compared with generic image analysis, medical imaging applications are specifically characterized by the challenges of divergent inputs, the high dimensional features versus inadequate samples, the subtle key patterns hidden by the large individual variations, and sometimes the unknown mechanism of the diseases.

The main scope of this special issue is to help advance the scientific research within the broad field of machine learning in medical imaging. This special issue will focus on major trends and challenges in this area, and will present work aimed to identify new cutting-edge techniques and their use in medical imaging.

Topics of interests include, but are not limited to machine learning methods (e.g., deep learning, support vector machines, statistical methods, manifold-space-based methods, artificial neural networks, and extreme learning machines) with their applications to

• Image analysis of anatomical structures and lesions
• Computer-aided detection/diagnosis
• Multi-modality fusion for diagnosis, image analysis and image guided interventions
• Medical image reconstruction
• Medical image retrieval
• Cellular image analysis
• Molecular/pathologic image analysis
• Dynamic, functional, and physiologic imaging

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