Journal of Sensors

Special Issue on
Deep Learning for Remote Sensing Image Understanding

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In recent years, deep learning approaches have gained significant interest as a way of building hierarchical representations from unlabeled data. Deep architectures attempt to learn hierarchical structures and seem promising in learning simple concepts first and then successfully building up more complex concepts by composing the simpler ones together. In intelligent remote sensing field, the automatic target detection (or recognition) and high-resolution satellite image classification are two hot topics, and both of the two tasks are carried out by first computing the low level features in the raw images. For different kinds of remote sensing images (e.g., SAR images and hyperspectral images), the corresponding specific feature representations are available. Through applying deep learning methods, we are free of these hand-crafted low-level features and can automatically learn mid-level and higher-level features from a large amount of unlabeled raw samples beyond types and domains of remote sensing images. Deep leaning methods can undoubtedly offer better feature representations for the related remote sensing task, and there is a bright prospect of seeing more and more researchers dedicated to learning better features for the target detection and scene classification tasks by utilizing deep learning methods appropriately. This special issue seeks to provide a venue for ongoing research in new methods, algorithms, and architectures of deep learning to handle the practical challenges in remote sensing image processing.

Potential topics include, but are not limited to:

- Deep hierarchical representation of remote sensing images
- Unsupervised feature learning from remote sensing images
- Databases for learning deep hierarchies in remote sensing image analysis
- Feature dimensionality reduction
- Learning deep structures for multisource heterogeneous remote sensing images fusion
- Deep learning algorithms in hyperspectral image processing, such as target detection and unmixing
- Learning deep hierarchies for scene segmentation, classification, and understanding
- Deep learning concepts in the application of large-scale remote sensing images

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