

Special Issue on **Recent Developments in Deep Learning for Engineering Applications**

CALL FOR PAPERS

Deep learning allows computational models of multiple processing layers to learn and represent data with multiple levels of abstraction mimicking how the brain perceives and understands multimodal information, thus implicitly capturing intricate structures of large-scale data. Deep learning is a rich family of methods, encompassing neural networks, hierarchical probabilistic models, and a variety of unsupervised and supervised feature learning algorithms. The recent surge of interest in deep learning methods is due to the fact that they have been shown to outperform previous state-of-the-art techniques in several tasks, as well as the abundance of complex data from different sources (e.g., visual, audio, medical, social, sensor, etc.).

At the same time, recent advances in machine learning have brought about tremendous development to many areas of interest to the engineering community. Data-driven or domain-oriented engineering applications can significantly benefit or even promote the development of algorithms, optimization approaches, fusion techniques, novel hardware, and network architectures. Great strides have been made, but significant challenges remain, and further insights must be gained into the strengths and limitations of deep learning methods.

This special issue will provide a forum to present new research on deep learning for engineering applications, focusing on state-of-the-art methods, such as Convolutional Neural Networks (CNN), Recurrent Neural Networks (RNN), deep Restricted Boltzmann Machines (RBM), Deep Belief Networks (DBN), Long Short-Term Memory (LSTM), autoencoders, and their graphical model, sparse coding, and kernel machine based variants. The special issue aims at original research papers covering new theories, algorithms, systems, and new implementations and applications incorporating deep learning techniques. Review articles works on performance evaluation and benchmark datasets are also solicited.

Potential topics include but are not limited to the following:

- ▶ Computer vision and multimedia analysis: object detection and tracking, activity recognition, anomaly detection, multimedia annotation, classification, and retrieval
- ▶ Robotics and automation: robotic grasping and manipulation, robotic vision, autonomous vehicles navigation, and neurorobotics
- ▶ Remote sensing and civil and geospatial engineering: hyperspectral image classification, mining and construction optimization, seismic data processing, and urban planning
- ▶ Biomedical and neural engineering: medical imaging, neuroimaging (MRI, PET), brain computer interfaces, and bio-, sensor-, and neuroinformatics
- ▶ Online social media and big data analysis: social media analytics, ranking and recommendation, event detection and sentiment analysis, and social cognitive neuroscience applications

Authors can submit their manuscripts through the Manuscript Tracking System at <http://mts.hindawi.com/submit/journals/cin/rdml/>.

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