

Ensemble Deep Learning

Aim and Scope

Deep learning is now undisputed as the new de-facto method for solving a wide range of problems such as computer vision, speech recognition, natural language processing and reinforcement learning. The unifying idea behind such a vast success is the utilization of neural networks with many hidden layers, for the purposes of learning complex feature representations from raw data, rather than relying on handcrafted feature extraction methods. Ensemble learning, at the same time, has been widely employed to improve the performance of a single predictor. In the past decades we have witnessed remarkable progress in ensemble learning, starting from ensemble of simple models such as random forests to ensemble deep learning which dominates the ImageNet Large Scale Visual Recognition Challenges today.

The current capability gaps are huge. Indeed, increasing depth and width of networks and the emerging phenomenon of big dimensionality of data render the inadequacies of ensemble deep learning. There is thus a pressing demand for new scalable and high performing ensemble approaches that can cope with this explosion of network complexity and data dimensionality. Furthermore, in some resource-constrained scenarios such as portable/mobile/wearable devices which have limited computational capabilities and storage space, the demand for efficient and well-performing algorithms in handling large-scale data is rising. In such scenarios, real time performance is of utmost importance to users. Therefore, there is a growing need for ensemble deep learning that are efficient to compute, and yet exhibiting superior discriminability and robustness.

We believe the special issue will offer a timely collection of research updates to benefit the researchers and practitioners working in both ensemble learning and deep learning. Topics of interest include but are not limited to:

- Fusion of Deep Networks
- Deep Multiple Kernel Learning
- Deep Ensemble for Feature Selection
- Deep Multimodal Learning
- Deep Ensemble Metric Learning
- Unsupervised/Self-supervised Deep Ensemble Learning
- Deep Ensemble Knowledge Distillation
- Deep Ensemble Model Compression
- Applications of any of the above methods in any domain
- Comparisons among ensemble deep learners, single deep learners, or shallow learners

Important Dates:

- Submissions Deadline: 15th Jan 2019
- First notification: 1st May 2019
- Revised papers: 1st Aug 2019
- Final notification: 1st Oct 2019
- Publication of special issue: 2020

Organizer:

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Submission Guidelines:

Manuscript must be within the scope of Pattern Recognition journal and the special issue on “ensemble deep learning”. See <https://www.elsevier.com/journals/pattern-recognition/0031-3203/guide-for-authors> for the manuscript preparation guidelines. All papers will be handled via Elsevier Editorial System: <http://ees.elsevier.com/pr>. Please select "SI: ensemble deep learning" when selecting article type name during the submission process. Submissions out of the scope of the PR journal may be rejected.