**Towards Data Efficient Deep Learning in Computer Vision**

Recent years have seen rapid progress in artificial intelligence due to the large-scale deep learning methods with massive amounts of data. The highly scalable algorithms in various visual tasks, including classification, detection, segmentation, etc., empower the learning capabilities under the condition of a rich experience. However, the challenge of deep learning is how to learn efficiently with similar performance in less supervision or with less data, which can be characterized as an issue of suffering the small-data. In reality, these situations of data inefficiency usually happens, especially in healthcare, reinforcement learning, and learning on the edge scenarios. The core machine learning problems such as generalization, imitation of human intelligence, and circuit searching yield severely during the data-limited training and inference. Consequently, learning towards data-efficient deep neural networks without large quantities of data is required increasingly.

**Goal:** This is a satellite special session of the 11th International Conference on Image and Graphics (ICIG). Our goal is to bring attention to data-efficient machine learning methods and unite researchers from different communities interested in approaching the problem of data-efficient deep learning on the top of computer vision (e.g., self-supervised learning, meta-learning, zero-shot/few-shot learning). In particular, the novel models are encouraged to be proposed for real-world applications. The potential algorithmic limitations and challenges are needed to be addressed. Also, concrete problem statements and evaluation protocols are encouraged to be given. For instance, how can we design a sample-efficient meta-learning method? How to utilize the data structure for predictive modeling in self-supervised learning? We recommend that practitioners deal with theoretical, empirical problems of interdisciplinary aspects of data-efficiency. Relevant topics to this special session include but are not limited to:

* Meta-learning
* Few-shot learning
* Self-supervised learning
* Transfer learning / Multi-task learning
* Continual / lifelong learning
* Domain adaptation / domain generalization
* Incorporating structural knowledge of data
* Learning with image, video, graph, and other structured modalities
* Learning to address low-resource scenarios
* Deep reinforcement learning / Imitation Learning

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More information can be found at <https://data-efficiency.github.io/>