

IEEE TRANSACTIONS ON NEURAL NETWORKS AND LEARNING SYSTEMS
Special Issue on
Recent Advances in Theory, Methodology and Applications of Imbalanced Learning

Learning from imbalanced/unbalanced data (aka imbalanced learning or class-imbalance learning) is a challenging task faced by practitioners from a wide variety of communities. In the last two decades, researchers from various disciplines including data mining, machine learning, pattern recognition and statistics have intensively investigated this theme. However, as pointed out in the 2013 book “Imbalanced Learning: Foundations, Algorithms, and Applications” collectively authored by experts in this field, many if not the most approaches to imbalanced learning are very heuristic and ad hoc, and thus many open questions remain there: “What is the assurance that algorithms specifically designed for imbalanced learning could really help, and how and why?”; “Is there a way we could develop a theoretical guidance on which based learning algorithm is most appropriate for a particular type of imbalanced data?”; “What is the relationship between data-imbalanced ratio and learning model complexity?”, for example. Moreover, in recent years the datasets that practitioners are concerned have grown increasingly rapidly and complexly; many new applications, and thus new types of data and new learning paradigms, have emerged. Therefore, this special issue aims to call for the state-of-the-art research work in the theory, methodology and applications of imbalanced learning, and aims to demonstrate the recent efforts made by the relevant researchers from a wide range of disciplines.

We welcome all the original work on topics regarding new theory, methodology and applications of imbalanced learning, including but not limited to:

- Deep learning for large-scale imbalanced data
- Representation learning for imbalanced data
- Reinforcement learning for imbalanced data
- Active learning and passive learning for imbalanced data
- Transfer learning and concept drift for imbalanced data
- Imbalanced learning in non-stationary environments
- Online learning and incremental learning for imbalanced data
- Statistical modelling for (non-Gaussian) imbalanced data
- Statistical machine learning for imbalanced data
- Discriminative learning and generative learning for imbalanced data
- Similarity/metric learning for imbalanced data
- Ensemble learning for imbalanced data
- Related learning problems: one-class classification, novelty/outlier/anomaly detection
- Theoretical analysis of models and algorithms for imbalanced learning
- New evaluation metrics for imbalanced learning
- New applications of imbalanced learning: 1) Object detection, classification, recognition; 2) Image retrieval, segmentation, understanding; 3) Speech recognition, synthesis, anti-spoofing; 4) Document retrieval, categorization, topic model; 5) Biomedical signal processing, medical image analysis, bioinformatics; 6) fault detection/diagnosis, fraud detection, cyber-security; and 7) Other related novel applications

IMPORTANT DATES

30 April 2018 -- Deadline for manuscript submission

31 July 2018 -- Notification of authors

30 September 2018 -- Deadline for submission of revised manuscripts

30 November 2018 -- Final decision of acceptance

January 2019 -- Tentative publication date

GUEST EDITORS

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3. Early submissions are welcome. We will start the review process as soon as we receive your contributions.