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IEEE Transactions on Neural Networks and Learning Systems
Special Issue on STREAM LEARNING

Introduction

In recent years, machine learning from streaming data (called **Stream Learning**) has enjoyed tremendous growth and exhibited a wealth of development at both the conceptual and application levels. Stream Learning is highly visible in both the machine learning and data science fields, and become a new hot direction in recent years. Research developments in Stream Learning include learning under concept drift detection (whether a drift occurs), understanding (where, when, and how a drift occurs), and adaptation (to actively or passively update models). Recently we have seen several new successful developments in Stream Learning such as massive stream learning algorithms; incremental and online learning for streaming data; and streaming data-based decision-making methods. These developments have demonstrated how Stream Learning technologies can contribute to the implementation of machine learning capability in dynamic systems. We have also witnessed compelling evidence of successful investigations on the use of Stream Learning to support business real-time prediction and decision making.

In light of these observations, it is instructive, vital, and timely to offer a unified view of the current trends and form a broad forum for the fundamental and applied research as well as the practical development of Stream Learning for improving machine learning, data science and practical decision support systems of business. This special issue aims at reporting the progress in fundamental principles; practical methodologies; efficient implementations; and applications of Stream Learning methods and related applications. The special issue also welcomes contributions in relation to data streams, incremental learning and reinforcement learning in data streaming situations.

Scope of the Special Issue

We invite submissions on all topics of Stream Learning, including but not limited to:

- *Data stream prediction*
- *Concept drift detection, understanding and adaptation*
- *Recurrent concepts*
- *Experimental setup and Evaluation methods for stream learning*
- *Reinforcement learning on streaming data*
- *Streaming data-based real-time decision making*
- *Ensemble methods for stream learning*
- *Auto machine learning for stream algorithms*
- *Neural networks for big data streams*
- *Transfer learning for streaming data*
- *Real-world applications of stream learning*

- *Active learning for streaming data*
- *Online learning for streaming data*
- *Imbalance learning for streaming data*
- *Lifelong learning for streaming data*
- *Incremental learning for streaming data*
- *Continuous learning for streaming data*
- *Clustering for streaming data*
- *Audio/speech/music streams processing*
- *Stream learning benchmark datasets*
- *Multi-drift and multi-stream learning*
- *Stream processing platforms*

Timeline

- Submission deadline: **Dec 15, 2021**
- Notification of first review: March 1, 2022
- Submission of revised manuscript: Jun 1, 2022
- Notification of final decision: Aug 1, 2022

Guest Editors

- Jie Lu (University of Technology Sydney, Australia)
- Joao Gama (University of Porto, Portugal)
- Xin Yao (Southern University of Science and Technology, China)
- Leandro Minku (University of Birmingham, UK)

Submission Instructions

- Read the Information for Authors at http://cis.ieee.org/tnnls

- Submit your manuscript at the TNNLS webpage (http://mc.manuscriptcentral.com/tnnls) and follow the submission procedure. Please, clearly indicate on the first page of the manuscript and in the cover letter that the manuscript is submitted to this special issue. Early submissions are welcome.