

# IEEE Transactions on Neural Networks and Learning Systems

## Special Issue on STREAM LEARNING

### Introduction

Machine learning from streaming data, known as ‘stream learning’, has enjoyed tremendous growth and exhibited a wealth of development at both the conceptual and application levels. Stream learning has become a hot topic in recent years, and is highly visible in the fields of machine learning and data science. 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 capabilities in dynamic systems. We have also witnessed compelling evidence of successful investigations in the use of stream learning to support real-time business forecasting and decision making.

In light of these observations, it is instructive, vital and timely to offer a unified view of current trends to improve machine learning, data science and decision support systems, and to establish a broad forum for fundamental research and the practical development of stream learning. This special issue aims at reporting the progress in theoretical principles, practical methodologies, efficient implementations, and real-world applications of stream learning techniques. The special issue also welcomes contributions relating 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: Nov 1, 2021
- Notification of first review: Feb 1, 2022
- Submission of revised manuscript: May 1, 2022
- Notification of final decision: July 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. Include the following instructions in the header of the first page of your manuscript and cover letter: ‘Please submit the manuscript to the Special Issue on Stream Learning’.