Randomization-Based Deep and Shallow Learning Algorithms

Call for Papers for a Special Session of the International Joint Conference on Neural Networks (IJCNN 2021)

https://www.ijcnn.org/

SCOPE AND MOTIVATION

Randomization-based learning algorithms have received considerable attention from academics, researchers, and domain workers because randomization-based neural networks can be trained by non-iterative approaches possessing closed-form solutions. Those methods are in general computationally faster than iterative solutions and less sensitive to parameter settings. Even though randomization-based non-iterative methods have attracted much attention in recent years, their deep structures have not been sufficiently developed nor benchmarked. This special session aims to bridge this gap.

The first target of this special session is to present the recent advances of randomization-based learning methods. Randomization based neural networks usually offer non-iterative closed form solutions. Secondly, the focus is on promoting the concepts of non-iterative optimization with respect to counterparts, such as gradient-based methods, derivative-free iterative optimization techniques as well as distributed learning on multiple data sources. Besides the dissemination of the latest research results on randomization-based and/or non-iterative algorithms, it is also expected that this special session will cover some practical applications, present some new ideas and identify directions for future studies.

Original contributions as well as comparative studies among randomization-based and non-randomized-based methods are welcome with unbiased literature review and comparative studies. Typical deep/shallow paradigms include (but not limited to) random vector functional link (RVFL), kernel ridge regression (KRR) with randomization, extreme learning machines (ELM), random forests (RF), and so on.

TOPICS

Topics of the special session include (with randomization-based methods), but are not limited to:

- Randomized convolutional neural networks
- Randomized internal representation learning
- Regression, classification and time series analysis by randomization-based methods
- Kernel methods, such as kernel ridge regression, kernel adaptive filters, etc. with randomization
- Feedforward, recurrent, multilayer, deep and other structures with randomization

- Ensemble learning with randomization
- Moore-Penrose pseudo inverse, SVD and other solution procedures.
- Gaussian process regression
- Randomization-based methods for large-scale problems with and without kernels
- Theoretical analysis of randomization-based methods
- Comparative studies with competing methods without randomization
- Distributed Randomization-based learning
- Hardware implementation of randomization-based architectures
- Applications of randomized methods in domains such as power systems, biomedical, finance, signal processing, sensor networks, big data, etc.

IMPORTANT DATES

- 15th January 2021 – Paper submission deadline*
- 15th March 2021 – Paper acceptance notification
- 18th – 22nd July 2021 – Conference in Shenzhen, China

**Authors are invited to check for possible deadline extensions*

PAPER SUBMISSION

Papers submitted to this Special Session are reviewed according to the same rules as the submissions to the regular sessions of IJCNN 2021. Authors who submit papers to this session are invited to mention it in the form during the submission. Submissions to regular and special sessions follow identical format, instructions, deadlines and procedures of the other papers.

Please, for further information and news refer to the IJCNN website: https://www.ijcnn.org

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