

The 10th International Conference on Extreme Learning Machines (ELM2019)

Yangzhou China

December 14 - 16, 2019



Organizer: Nanyang Technological University, Singapore

Co-Organizers: Tsinghua University, Shanghai Jiaotong University, Yangzhou University, City University of Hong Kong, Southeastern University, China



Call for Papers 1st



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Extreme Learning Machines (ELM) aims to enable pervasive learning and pervasive intelligence. As advocated by ELM theories, it is exciting to see the convergence of machine learning and biological learning from the long-term point of view. ELM may be one of the fundamental 'learning particles' filling the gaps between machine learning and biological learning (of which activation functions are even unknown). ELM represents a suite of (machine and biological) learning techniques in which hidden neurons need not be tuned: inherited from their ancestors or randomly generated. ELM learning theories show that effective learning algorithms can be derived based on randomly generated hidden neurons (biological neurons, artificial neurons, wavelets, Fourier series, etc) as long as they are nonlinear piecewise continuous, independent of training data and application environments. Increasingly, evidence from neuroscience suggests that similar principles apply in biological learning systems. ELM theories and algorithms argue that "random hidden neurons" capture an essential aspect of biological learning mechanisms as well as the intuitive sense that the efficiency of biological learning need not rely on computing power of neurons. ELM theories thus hint at possible reasons why the brain is more intelligent and effective than current computers.

The main theme of ELM2019 is: **Hierarchical ELM, AI for IoT, Synergy of Machine Learning and Biological Learning**

Organized by Nanyang Technological University, Singapore, and co-organized by Tsinghua University, Shanghai Jiaotong University, China, Southeastern University, China and City University of Hong Kong, ELM2019 will be held in Yangzhou, China. Yangzhou, a city with a history of 2,500 years, is one of national tourist centers and has attracted tourists worldwide. Yangzhou locates at the junction of the Yangtze, the Grand Canal and the Huaihe River, and is listed as a most livable city by UN. This conference will provide a forum for academics, researchers and engineers to share and exchange R&D experience on both theoretical studies and practical applications of the ELM technique and biological learning.

Tutorial proposals:

All interesting topics on general artificial intelligence and machine learning techniques are welcome, which include but not limited to: deep learning, reinforcement learning, sparse coding, extreme learning machines, etc.

Accepted papers presented in this conference will be published in conference proceedings and selected papers will be recommended to reputable ISI indexed international journals: Cognitive Computation, International Journal of Machine Learning and Cybernetics, Memetic Computing, Neurocomputing, etc.

Topics of interest:

Submissions related to ELM technique are preferred although not compulsory. Topics of interest include but are not limited to:

Theories

- Sciences of artificial Intelligence, machine learning science and data analytics
- Biological learning mechanism and neuroscience

Algorithms

- Real-time learning, reasoning and cognition
- Sequential/incremental learning and kernel learning
- Clustering and feature extraction/selection/learning
- Random projection, dimensionality reduction, and matrix factorization
- Closed form and non-closed form solutions
- Hierarchical solutions of deep learning and ELM

Applications

- AI in IoT (Internet of Things)
- Financial data analysis
- Smart grid and renewable energy systems
- Biometrics and bioinformatics, security and compression
- Human computer interface and brain computer interface
- Cognitive science/computation
- Sentic computing, natural language processing and speech processing

Hardware

- Lower power, low latency hardware / chips
- Artificial biological alike neurons / synapses

Paper submission:

Details on manuscript submission will be given online <http://elm2019.extreme-learning-machines.org> by August 1, 2019

Important dates:

Paper submission deadline: September 15, 2019
Notification of acceptance: September 30, 2019
Registration deadline: October 30, 2019