



# machine learning & knowledge extraction



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## Recent Developments in Extreme Learning Machines

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### Message from the Guest Editor

Dear Colleagues,

For many years, the general research around Extreme Learning Machines (ELM) has been establishing it as a meaningful and peculiar approach that can be used as stepping stone for creating application oriented models, as well as complex, elaborate machine learning models. Recent work has also been attempting to bridge these current ideas with that of biological learning mechanisms. As such, the original name of ELM nowadays refers not only to the original technique proposed by Guangbin Huang, but also serves as an umbrella term for numerous related approaches directly using the core concepts of the original technique. The focus of this special issue is both on novel theoretical improvements and approaches directly using ELM, and on applications of such techniques to data and network security and privacy issues for future networks, such as in Internet of Things, 5G and Software Defined Networks contexts.

We look forward to receiving novel and disruptive research that addresses the aforementioned topics as well as related ones.

Dr. Yoan Miche  
Guest Editor



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# Special Issue



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## Message from the Editor-in-Chief

Machine learning deals with understanding intelligence to design algorithms that can learn from data, gain knowledge from experience and improve their learning behaviour over time. The challenge is to extract relevant structural and/or temporal patterns (“knowledge”) from data, which is often hidden in high dimensional spaces, thus not accessible to humans. Many application domains, e.g., smart health, smart factory, etc. affect our daily life, e.g., recommender systems, speech recognition, autonomous driving, etc. The grand challenge is to understand the context in the real-world under uncertainty. Probabilistic inference can be of great help here as the inverse probability allows to learn from data, to infer unknowns, and to make predictions to support decision making.

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