

## Special Issue on **Recent Applications of Machine Learning and Evolutionary Computation to Solve Real-Life Problems in Neuroscience**

# CALL FOR PAPERS

Nature has been a source of inspiration for problem solving in many fields and especially in science. Techniques based on cell or natural organism behaviors as well as those based on evolutionary theories have had a wide success record when applied to real-life problems. Many machine learning (ML) techniques fall under this category, such as artificial neural networks or deep learning. Evolutionary computation (EC), on the other hand, encompasses algorithms mainly devised for global optimization that are inspired by biological evolution. Examples of the latter include genetic algorithms or genetic programming, among others. Both ML and EC approaches can be applied to solve a variety of problems, with prediction, clustering, and optimization being the most common types.

With the recent technological advancements and the price drop in the field of biomedical sciences, large amounts of data that need processing are being generated. The increasing availability of computational resources has advanced this field and enabled the use of techniques traditionally considered to be computationally costly. However, there is still room for improvement in terms of accuracy, efficiency, and usability, as well as for finding new areas of application of already existing techniques.

The objective of this special issue is to showcase the capabilities of ML and EC techniques to solve real-life problems in the area of neuroscience and develop new methods in ML techniques, as artificial neuroglial networks and applications in real-life problems. For this purpose, recent progress in the field will be presented.

Potential topics include but are not limited to the following:

- ▶ Development of new machine learning methods based on neuroglial networks of the brain (e.g., artificial neuron-glia networks, deep learning)
- ▶ Advances in design, development, and optimization of machine learning methods (e.g., deep learning) in neuroscience
- ▶ Applications of machine learning methods to solve real-life problems in neuroscience (e.g., genomics, cancer, and medical image processing)
- ▶ Applications of hybrid methods of artificial neural networks and evolutionary computation techniques to solve real-life problems in neuroscience (e.g., genomics, cancer, and medical image processing)

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/cin/ralcs/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

### **Lead Guest Editor**

Juan R. Rabuñal, University of A  
Coruña, A Coruña, Spain  
*juanra@udc.es*

### **Guest Editors**

Vanessa Aguiar-Pulido, Weill Cornell  
Medicine, New York, USA  
*vaa2011@med.cornell.edu*

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Institute, Stanford, USA  
*seoane@stanford.edu*

Ana B. Porto-Pazos, University of A  
Coruña, A Coruña, Spain  
*ana.portop@udc.es*

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