

## Special Issue on **Artificial Neural Networks & Evolutionary Computation Techniques to Solve Real-Life Applications in Civil Engineering**

# CALL FOR PAPERS

Nature has always been a source of inspiration for problem solving in science. Areas such as physics or civil engineering use biological concepts to reach beyond their current limits. Techniques based on cell or natural organism behavior, as well as those based on evolutionary theories, have a wide success record when applied to real-life problems. These types of techniques currently represent a very active area of research, as not only a large number of companies use them, but they are also a hot topic in many high-level scientific conferences.

There are a multitude of situations in which data from experimental and real-world tests are available, for example, data from the resistance of concrete beams and data of the resistance of dikes from assays of different conditions of waves (these are examples of different areas in civil engineering). These examples of different areas in civil engineering are treated in the same way with the aim of obtaining systems that allow them to model and predict their behavior, for example, to predict the resistance of the concrete beams with different materials and to predict the resistance of dikes from different conditions of the waves. In these cases, artificial neural networks and evolutionary computation are techniques that demonstrate a high capacity for success in this type of problems from real life.

The objective of this special issue is to showcase the capabilities of hybrid systems that utilize artificial neural networks (ANNs) and evolutionary computation (EC) techniques to solve real-life problems. For this purpose, this special issue will review recent progress in ANN and EC techniques such as genetic algorithms (GA) and genetic programming (GP) that pertain to information processing, which could potentially be applied in different areas of civil engineering.

The development of hybrid systems (integration of ANNs and EC techniques to solve a real-life problem) will be analyzed in order to shed light on how these systems are designed and how they work. This way, the reader will have a general idea about their applicability and which problems may arise during the development of this kind of systems.

Overall, this represents an opportunity for students, researchers, and other professionals interested in applying ANNs, GA, or GP to access a variety of real-life applications. It draws on the experience of people who have worked with ANNs in combination with EC techniques to solve real-world issues. ANNs and EC techniques are valuable tools to solve a variety of problems in real life.

Potential topics include but are not limited to the following:

- ▶ Advances in design, development, and optimization of artificial neural networks (e.g., deep learning) to solve real-life problems in civil engineering
- ▶ Advances in design, development, and optimization of evolutionary computation techniques (e.g., genetic algorithms and genetic programming) to solve real-life problems in civil engineering
- ▶ Advanced topics in modeling with hybrid systems (ANN and evolutionary computation techniques) to solve real-life problems in civil engineering

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

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

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### **Submission Deadline**

Friday, 29 June 2018

### **Publication Date**

November 2018