

COMPENG, October 21-23, 2020, Florence, Italy



Special Session on Engineering Algorithms in Complex Systems

This special session is organized under the COMPENG workshop, which is one of the most progressive and interesting workshops on complex systems.

This special session is concerned about the use of modern engineering algorithms like bioinspired algorithms or unconventional algorithms belonging to the class of swarm intelligence techniques for example. Those algorithms play today extremely important role in the engineering, that if facing many complex problems in its solution. The complexity in the engineering can be regarded from two points of view.

The first one is the solution of the complex problems as the travelling salesman, chaos system control and design, real time plasma reactor control etc. where bioinspired algorithms are able to find optimal or highly acceptable solution in the real time.

The second one is complexity in the algorithms behavior itself. It has already been reported that chaos and phase transitions has been observed in its dynamics and thus such algorithms as the swarm intelligence, artificial neural networks etc. can be classified also as the complex systems itself. Beside such algorithms like cellular automata, fractal geometry, for example.

This special session is concern about original research papers discussing new results on and with engineering algorithms in complex world, as well as its novel improvements tested on widely accepted test problems.

Scope and Topics:

The proposed special session aims to bring together the latest research on various applications, development and hybridization of engineering algorithms applied on complex systems. It will facilitate knowledge exchange, technical discussions, and networking on topics of interest that include, but are not limited to:

- Application of the modern engineering algorithms on complex systems:
 - Complex system control
 - Complex system design
 - Identification of the complex regimes inside systems (e.g. hidden attractors)
 - Engineering optimization as the complex problem
 - Chaos and fractals
 - Agents
 - Complex networks
 - Non-trivial collective behavior
 - ...
- Complex behaviour of the algorithm (i.e. chaos, phase transitions, edge of chaos...):
 - Swarm intelligence
 - Artificial intelligence
 - Artificial neural networks
 - Cellular automata and artificial life
 - Swarm robotic
 - ...

Publication

All accepted papers will be published according to COMPENG rules. We are also preparing special issue in indexed journals. Watch <https://ivanzelinka.eu/> for updates.



Special Session Chairs:

Ivan Zelinka, Jan Plucar, Lenka Skanderová
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Supported by:

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Important Dates:

Deadline for submission: May 15, 2020

Acceptance/rejection notification: June 15, 2020

Deadline for Early registration: July 31, 2020

Conference website:

<https://compeng2020.ieeesezionetalia.it/>