

INVITED SESSION SUMMARY

Title of Session:

Modern Metaheuristics

Name, Title and Affiliation of Chair:

Dr hab. Urszula Boryczka, University of Silesia, Institute of Computer Science

Details of Session (including aim and scope):

Modern Metaheuristics algorithms often inspired by communication and interaction between social agents such as ants or bees, play important role in Artificial Intelligence. Different learning and adaptive mechanisms incorporated in these techniques (applied in real-world applications), are the research area that currently becomes the main field of computational intelligence algorithms.

TOPICS OF INTEREST

The session will gather experts in adjacent and seemingly related fields of

- Ant Colony Optimization
- Artificial Life
- Artificial Bee Colony
- Particle Swarm Optimization
- Multi-agent systems
- Differential Evolution
- Evolutionary Techniques
- Simulated Annealing
- Information Theoretic Learning.

This session proposes that modern metaheuristics is an autonomous aggregate of techniques that so far have not been unified, especially in the context of efficient applications. We are looking for a mathematical, algorithmic framework which will enable us to understand and analyze these algorithms and the self-adaptive mechanisms and learning schemas.

The session will seek to define the metaheuristics of computational intelligence algorithms. A common framework is desirable for a number of reasons, including the following:

- Better understanding of the learning algorithms employed for different tasks of data mining and optimization in Computational Swarm Intelligence techniques.
- Discovering the relationships between parameter values and the interactions between parts of the analyzed approaches in the context of optimization.
- Suggestions for creating novel and hybrid metaheuristics in parallel implementations as well as in new applications.

The session aims at addressing such issues from a heuristic, practical and theoretical perspectives. The

following contributions are welcomed:

- Position papers and reports of work in progress
- Papers proposing and advancing the metaheuristics of popular swarm intelligence techniques such as PSO, EA, ACO, BCO and DE.
- Contributions from adjacent fields e.g. Computational Learning Models, Evolutionary Techniques, Multi-Agent Systems.

Main Contributing Researchers / Research Centres (tentative, if known at this stage):

Website URL of Call for Papers (if any):

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Research Area: Ant Colony Optimization, Particle Swarm Optimization, Artificial Bee Colony, Modern Metaheuristics