**Call for Papers**

**IEEE CEC 2023 Special Session on “Large-scale multi-objective optimization in emerging applications”**

**Aim**

With the explosion of heterogeneous data in many scientific and engineering areas, the corresponding optimization tasks turn out to be challenging in terms of both efficiency and effectiveness. Specifically, these optimization tasks are usually characterized by multiple conflicting objectives and hundreds of decision variables, which hinder algorithms from obtaining well-converged and diversified solutions. Despite the remarkable performance of evolutionary algorithms on multi-objective optimization, they suffer from the curse of dimensionality when tackling large-scale multi-objective optimization problems (LSMOPs). The complicated landscapes and variable linkages in real-world scenarios further retard the convergence of populations. Thus, more practical and versatile algorithms for solving LSMOPs are expected, which can assist the development of computational intelligence and contribute to other emerging areas.

**Scope**

The topics of this special session include, but are not limited to, the follows:

* Novel algorithms (e.g., evolutionary algorithms, swarm intelligence algorithms, mathematical programming methods, reinforcement learning methods, and other optimizers) for solving LSMOPs.
* Tailored algorithms for solving special LSMOPs, e.g., sparse problems, constrained problems, expensive problems, dynamic problems, multimodal problems, robust problems, and so on.
* Effective algorithms for solving combinatorial LSMOPs, e.g., subset selection problems, vehicle routing problems, recommendation problems, hybrid encoding problems, and so on.
* Applications of existing algorithms to LSMOPs in emerging areas, e.g., machine learning, data mining, manufacturing, scheduling, electrics, economics, bioinformatics, medicine, and so on.
* Special techniques for handling large-scale search spaces, e.g., dimensionality reduction, gradient guidance, generative models, parallelization, and so on.
* Performance assessment, theoretical analysis, and benchmarking of algorithms on LSMOPs.

**Submissions**

Papers should be submitted following the instructions at the [IEEE CEC 2023 website](https://2023.ieee-cec.org/paper-submission/). Please select the main research topic as the Special Session on “Large-scale multi-objective optimization in emerging applications”. Accepted papers will be included and published in the conference proceedings.

Deadline: 13th January 2023

Notification: 31st March 2023

**Organizers**

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[A survey paper on large-scale multi-objective optimization.](https://www.researchgate.net/publication/352444598)

[Download PlatEMO to obtain the source codes of existing algorithms and benchmark problems.](https://github.com/BIMK/PlatEMO)