

1st GECCO Workshop on Decomposition Techniques in Evolutionary Optimization (DTEO)

<https://sites.google.com/view/dteo/>

To be Held in conjunction with the 27th ACM Genetic and Evolutionary Computation Conference (GECCO 2018), Kyoto, Japan, 15-19 July 2018.

1 Important Dates

- Submission deadline: 27 March 2018
- Acceptance notification: 10 April 2018
- Camera-ready deadline: 24 April 2018
- Workshop date: 15 or 16 July 2018

2 Scope

Tackling an optimization problem using decomposition consists in transforming (or re-modeling or re-thinking) it into multiple, a priori smaller and easier, problems that can be solved cooperatively. A number of techniques are being actively developed by the evolutionary computing community in order to explicitly or implicitly design decomposition with respect to four facets of an optimization problem: (i) the environmental parameters, (ii) the decision variables, (iii) the objective functions, and (iv) the available computing resources. The workshop aims to be a unified opportunity to report the recent advances in the design, analysis and understanding of evolutionary decomposition techniques and to discuss the current and future challenges in applying decomposition to the increasingly big and complex nature of optimization problems (e.g., large number of variables, large number of objectives, multi-modal problems, simulation optimization, uncertain scenario-based optimization) and its suitability to modern large scale compute environments (e.g., massively parallel and decentralized algorithms, large scale divide-and-conquer parallel algorithms, expensive optimization).

The workshop focus is there-by on (but not limited to) the developmental, implementational, theoretical and applied aspects of:

- Large scale evolutionary decomposition, e.g., decomposition in decision space, co-evolutionary algorithms, grouping and cooperative techniques, decomposition for constraint handling.
- Multi- and Many- objective decomposition, e.g., aggregation and scalarizing approaches, cooperative and hybrid island-based design, (sub-)population decomposition and mapping.
- Parallel and distributed evolutionary decomposition, e.g., scalability with respect to decision and objective spaces, divide-and-conquer decentralized techniques, distribution of compute efforts, scalable deployments on heterogeneous and massively parallel compute environments.

- Novel general purpose decomposition techniques, e.g., machine-learning and model assisted decomposition, offline and on-line configuration of decomposition, search region decomposition and multiple surrogates, parallel expensive optimization.
- Understanding and benchmarking decomposition techniques.
- General purpose software tools and libraries for evolutionary decomposition.

3 Submissions

We invite submissions of the following types of papers:

- Research papers (up to 8 pages)
- Position papers (up to 2 pages)

Accepted papers will be presented during the workshop and will appear in the GECCO Companion ACM proceedings. Paper's format should follow the GECCO 2018 ACM instructions.

Submissions of early and in-progress work are encouraged. Authors of accepted papers proposing novel software developments will be encouraged to give a demo or a short introductory tutorial. Authors of accepted papers describing novel software or technical developments will be encouraged to give a demonstration during the workshop.

4 Organizers/Contact

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