DOCS' 2022 Special Session on "Data-driven Evolutionary Transfer Optimization"

Traditional evolutionary optimization often starts a search from scratch or at a "ground zero" knowledge state, which assumes all search problems are independent and so search capability does not grow or evolve along with the problem to be solved. However, common information exists between tasks/problems which can be effective for problem-solving when they are properly harnessed. Nowadays, inspired by transfer learning which can reuse past experiences to solve relevant problems, transfer learning-based methods have been widely used in evolutionary algorithms (EAs), and evolutionary transfer optimization (ETO) has become an emerging paradigm in evolutionary computation, which aims to improve the performance of traditional separate EA solvers in terms of the solution's quality and convergence speed by learning and transferring useful traits across related problems in the form of solutions, and structured knowledge. The design of effective knowledge learning and transfer approaches driven from data is necessary for developing advanced ETO algorithms.

The aim of this special session on data-driven evolutionary transfer optimization is to provide a forum for researchers in this field to exchange the latest advances in theories, technologies, and practice of evolutionary transfer optimization.

Scope and Topics

The scope of this special session covers, but is not limited to:

- Data-driven ETO in uncertain environment
- Multi-task optimization
- Sequential transfer optimization
- ETO for complex optimization applications
- ETO for single-objective optimization
- ETO for multi/many-objective optimization
- ETO for machine learning applications
- ETO for large-scale optimization
- Multi-form optimization
- ETO for deep learning
- ETO in complex data environment
- Data-driven ETO for espensive optimization

- Theoretical studies of ETO

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