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MIDACO-SOLVER

Global Optimization of MINLP by Evolutionary Algorithms

Abstract:

A general introduction to evolutionary algorithms (esp. Ant Colony Optimization) for MINLP will be given with a focus on the MIDACO optimization software. Numerical results comparing the performance of MIDACO with another evolutionary algorithm and three established deterministic MINLP solvers will be presented. It will be show, that MIDACO can outperform the considered codes in reaching the global optimal solution in reasonable time. Two challenging MINLP space applications, a launch vehicle control and an interplanetary space mission, will be presented additionally.

Biography:

Martin Schlueter is a post-doctoral researcher at the Hokkaido University (Japan). In 2006 he received his diploma in mathematics from the University of Bayreuth (Germany) under supervision of Klaus Schittkowski. In 2012 he received his PhD from the University of Birmingham (UK) under supervision of Jan Rueckmann. His line of research is focused on the development and implementation of evolutionary algorithms for MINLP with special focus on space applications, in particular interplanetary space missions. Co-funded by the European Space Agency (ESA) and EADS-Astrium he developed the optimization software MIDACO, which currently holds several best known record solutions on challenging NLP space mission benchmarks, published by the European Space Agency.

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