

Performance guarantees and reliability in multi-objective optimization

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Overview



- PHD (DOLPHIN Team, LIFL — INRIA Lille Nord-Europe)
 - Topic: "Landscape analysis in multi-objective combinatorial optimization"
 - INRIA Explorateur scholarship (CWI, Amsterdam)
- Postdoc (ALEA Team, INRIA Bordeaux-Sud-Ouest)
 - Research area: adaptive particle methods for multi-objective optimization, rare events simulation.

Currently

- Postdoc AFR- Marie Curie (since October 2010)
 - Research area: Reliability of Multi-Objective optimization techniques
 - "Advanced optimization techniques" - doctoral series, CSC Doctoral School (University of the Greater Region)
 - Invited profesor (CINVESTAV, Mexico city)

Research projects

- Carbon Neutral ICT at the University of Luxembourg
- EvoPerf (with LCSB)
- Co-founder and co-chiar "EVOLVE - A bridge between probability, set oriented numerics and evolutionary computation" (2010-Bordeaux, 2011-Luxembourg, 2012-Mexico).
- GreenIT Evolutionary Computation workshop (GECCO 2011)
- One authored book "Performance guarantees and landscape analysis in multi-objective optimization", Springer Verlag:
 - 3 Springer co-edited books (on going work): "EVOLVE - A bridge between probability, set oriented numerics and evolutionary computation" (2011 and 2012), Studies in Computational Intelligence, Advances in Intelligent and Soft Computing, Springer Verlag.
 - Guest editor: Special issue on the "Soft Computing Journal", "Evolutionary computation & Complex Systems".

Research results

- Convergence of evolutionary algorithms in presence of stochastic factors:
 - On the convergence of distributed EAs under cheating
- Landscape analysis:
 - Mainly, topological studies for multi-objective combinatorial optimization problems;
 - Approximation of multi-modal function's landscape by means of geometric primitives.
- Dynamic multi-objective optimization:
 - New performance metric;
 - New classes of problems: dynamic MNK-landscapes.