Publications:

**A Runtime Analysis of Parallel Evolutionary Algorithms in Dynamic Optimization**
Publication: Research - peer-review › Journal article – Annual report year: 2016

**Lower bounds on the run time of the univariate marginal distribution algorithm on OneMax**
Publication: Research - peer-review › Article in proceedings – Annual report year: 2017

**The (1+λ) evolutionary algorithm with self-adjusting mutation rate**
Publication: Research - peer-review › Article in proceedings – Annual report year: 2017

**The Impact of a Sparse Migration Topology on the Runtime of Island Models in Dynamic Optimization**
Publication: Research - peer-review › Journal article – Annual report year: 2017

**The Impact of Parametrization on Randomized Search Heuristics**
Publication: Research › Ph.D. thesis – Annual report year: 2017

**The Interplay of Population Size and Mutation Probability in the (1+λ) EA on OneMax**
Publication: Research - peer-review › Journal article – Annual report year: 2016

**Upper bounds on the runtime of the univariate marginal distribution algorithm on OneMax**
Publication: Research - peer-review › Article in proceedings – Annual report year: 2017

**Analysis of Ant Colony Optimization and Population-Based Evolutionary Algorithms on Dynamic Problems**
Publication: Research › Ph.D. thesis – Annual report year: 2016

**Detecting structural breaks in time series via genetic algorithms**
Publication: Research - peer-review › Journal article – Annual report year: 2016

**Guest Editorial: Theory of Evolutionary Computation**
Publication: Research - peer-review › Editorial – Annual report year: 2016

**Optimal mutation rates for the (1+λ) EA on OneMax**
Publication: Research - peer-review › Article in proceedings – Annual report year: 2016

**The impact of migration topology on the runtime of island models in dynamic optimization**
Publication: Research - peer-review › Article in proceedings – Annual report year: 2016
Update Strength in EDAs and ACO: How to Avoid Genetic Drift
Publication: Research - peer-review › Article in proceedings – Annual report year: 2016

(1+1) EA on Generalized Dynamic OneMax
Publication: Research - peer-review › Article in proceedings – Annual report year: 2015

Improved time complexity analysis of the Simple Genetic Algorithm
Publication: Research - peer-review › Journal article – Annual report year: 2015

MMAS Versus Population-Based EA on a Family of Dynamic Fitness Functions
Publication: Research - peer-review › Article in proceedings – Annual report year: 2015

On the Runtime of Randomized Local Search and Simple Evolutionary Algorithms for Dynamic Makespan Scheduling
Publication: Research - peer-review › Article in proceedings – Annual report year: 2015

On the Utility of Island Models in Dynamic Optimization
Publication: Research - peer-review › Article in proceedings – Annual report year: 2015

Part E: Evolutionary Computation
Publication: Research - peer-review › Book chapter – Annual report year: 2015

Population Size vs. Mutation Strength for the (1+λ) EA on OneMax
Publication: Research - peer-review › Article in proceedings – Annual report year: 2015

Runtime analysis of ant colony optimization on dynamic shortest path problems
Publication: Research - peer-review › Journal article – Annual report year: 2015

Bioinspired computation in combinatorial optimization - Algorithms and their computational complexity
Publication: Research - peer-review › Article in proceedings – Annual report year: 2014

Concentrated Hitting Times of Randomized Search Heuristics with Variable Drift
Publication: Research - peer-review › Article in proceedings – Annual report year: 2014

Fitness levels with tail bounds for the analysis of randomized search heuristics
Publication: Research - peer-review › Journal article – Annual report year: 2014

MMAS vs. Population-based EA on a family of dynamic fitness functions
Publication: Research - peer-review › Article in proceedings – Annual report year: 2014

On the runtime analysis of the Simple Genetic Algorithm
Publication: Research - peer-review › Journal article – Annual report year: 2014

Revised analysis of the (1+1) EA for the minimum spanning tree problem
Publication: Research - peer-review › Article in proceedings – Annual report year: 2014

A method to derive fixed budget results from expected optimisation times
Publication: Research - peer-review › Article in proceedings – Annual report year: 2013

Bioinspired computation in combinatorial optimization - Algorithms and their computational complexity
Publication: Research - peer-review › Article in proceedings – Annual report year: 2013
Evolutionary Algorithms for the Detection of Structural Breaks in Time Series
Publication: Research - peer-review › Article in proceedings – Annual report year: 2013

Improved Runtime Analysis of the Simple Genetic Algorithm
Publication: Research - peer-review › Article in proceedings – Annual report year: 2013

Runtime analysis of ant colony optimization on dynamic shortest path problems
Publication: Research - peer-review › Article in proceedings – Annual report year: 2013

Tight Bounds on the Optimization Time of a Randomized Search Heuristic on Linear Functions
Publication: Research - peer-review › Journal article – Annual report year: 2013

When do evolutionary algorithms optimize separable functions in parallel?
Publication: Research - peer-review › Article in proceedings – Annual report year: 2013

Analysis of an iterated local search algorithm for vertex cover in sparse random graphs
Publication: Research - peer-review › Journal article – Annual report year: 2012

Bioinspired computation in combinatorial optimization: algorithms and their computational complexity
Publication: Research - peer-review › Article in proceedings – Annual report year: 2012

Black-Box Search by Unbiased Variation
Publication: Research - peer-review › Journal article – Annual report year: 2012

On the Analysis of the Simple Genetic Algorithm
Publication: Research - peer-review › Article in proceedings – Annual report year: 2012

Optimizing Linear Functions with Randomized Search Heuristics - The Robustness of Mutation
Publication: Research - peer-review › Article in proceedings – Annual report year: 2012

Theoretical analysis of two ACO approaches for the traveling salesman problem
Publication: Research - peer-review › Journal article – Annual report year: 2012

Theory of Randomized Search Heuristics
Publication: Research - peer-review › Editorial – Annual report year: 2012

Edge-Matching Problems with Rotations
Publication: Research - peer-review › Article in proceedings – Annual report year: 2011

Runtime analysis of the 1-ANT ant colony optimizer
Publication: Research - peer-review › Journal article – Annual report year: 2011

Sharp Bounds by Probability-Generating Functions and Variable Drift
Publication: Research - peer-review › Article in proceedings – Annual report year: 2011

Simplified Drift Analysis for Proving Lower Bounds in Evolutionary Computation
Publication: Research - peer-review › Journal article – Annual report year: 2011

Theory of Randomized Search Heuristics in Combinatorial Optimization
Publication: Research › Sound/Visual production (digital) – Annual report year: 2011
A few ants are enough: ACO with iteration-best update
Publication: Research - peer-review › Article in proceedings – Annual report year: 2010

Ant Colony Optimization and the minimum spanning tree problem
Publication: Research - peer-review › Journal article – Annual report year: 2010

Approximating covering problems by randomized search heuristics using multi-objective models
Publication: Research - peer-review › Journal article – Annual report year: 2010

Bioinspired Computation in Combinatorial Optimization: Algorithms and Their Computational Complexity
Publication: Research - peer-review › Book – Annual report year: 2011

Black-Box Search by Unbiased Variation
Publication: Research - peer-review › Article in proceedings – Annual report year: 2010

Quasirandom evolutionary algorithms
Publication: Research - peer-review › Article in proceedings – Annual report year: 2010

Runtime analysis of a binary particle swarm optimizer
Publication: Research - peer-review › Journal article – Annual report year: 2010

Theoretical properties of two ACO approaches for the traveling salesman problem
Publication: Research - peer-review › Book chapter – Annual report year: 2010

Theory of randomised search heuristics in combinatorial optimisation
Publication: Research › Book chapter – Annual report year: 2010

Analysis of Diversity-Preserving Mechanisms for Global Exploration
Publication: Research - peer-review › Journal article – Annual report year: 2009

Greedy Local Search and Vertex Cover in Sparse Random Graphs
Publication: Research - peer-review › Article in proceedings – Annual report year: 2009

Projects:

Algorithms for Compressed Computation
Project: PhD

Bridging the Gap Between Theory and Practice in Nature-inspired algorithms
Project: PhD

Matching and Compression of Strings with Automata and Word Packing
Project: PhD

Logical and Computational Aspects of Infinite Games
Project: PhD

Algorithms for Metadata
Project: PhD
Exploring the boundaries of nature-inspired algorithms
Project: PhD

Approximate Text Indexing and String Matching Algorithms
Project: PhD