



Foundations of Genetic Algorithms XII FOGA 2013

Workshop Program

Wednesday, 16 January 2013

08:30-09:00 Registration

09:00-01:00: Workshop “Problems, Landscape Analysis, Automated Algorithm Selection and Adaptation in Optimization”

Session 1 (Chair: Marcus Gallagher)

9:00-9:30: Marcus Gallagher: Workshop Introduction and Overview

9:30-10:00: Rachael Morgan and Marcus Gallagher : Characterising Continuous Optimization Problems: Length Scale and Sampling Considerations

10:00-10:30: Mario A. Munoz, Michael Kirley and Saman Halgamuge: Some Insights About the Development of Algorithm Selection Models for Continuous Optimization

10:30-11:00: Coffee Break

Session 2 (Chair: Kate Smith-Miles)

11:00-11:30: Kate Smith- Miles: Generalising Algorithm Performance in Instance Space

11:30-12:00: Samadhi Nallaperuma, Markus Wagner and Frank Neumann: Max-Min Ant System and the Traveling Salesperson Problem - An Empirical Study on Problem Hardness

12:00-12:30: Yan Pei and Hideyuki Takagi: Approximating and Analyzing Fitness Landscape for Evolutionary Search Enhancement

12:30-13:00: Krishna Manjari Mishra and Marcus Gallagher: Investigating Variable Importance and Dependencies in Optimization Problems Using Eigen Analysis and Correlation

01:00-2:30: Lunch (on your own)

02:30-04:30: SolveIT Workshop “Applying Modern Heuristic Techniques in a Real-world Setting”

02:30-03:00: Luigi Barone: A hybrid nature-inspired algorithm for long-term mine planning

03:00-03:30: Philipp Rohlfshagen: Solution concepts in dynamic evolutionary computation

03:30-04:00: Zbigniew Michalewicz: Some thoughts of complexity of real-world problems

04:00-04:30: Discussion

04:30-05:00: Coffee

Main Conference Program

Thursday, 17 January 2013

09:30-10:00 Registration

10:00-10:30: Conference Opening

Invited Talk

10:30-12:00: Prof Toby Walsh: Constrainedness of Search

Abstract: Will a problem be satisfiable or unsatisfiable? Will it be hard or easy? How can we develop heuristics for new problem domains? A discuss a general method which helps to answer such questions that is applicable to a wide range of combinatorial problems. My starting point is a definition of the constrainedness of a combinatorial problem. Measuring the constrainedness of problems during search also provides insight into why some problems are harder to solve than others. I show that hard problems are often on a constrainedness "knife-edge", critically constrained between easy, under-constrained instances and obviously over-constrained instances. Heuristics that try to get off this knife-edge as quickly as possible by, for example, minimizing the constrainedness are often therefore very effective.

12:00-02:00: Lunch (on your own)

Technical Session 1 (Chair Frank Neumann)

02:00 - 02:45: Benjamin Doerr, Dirk Sudholt and Carsten Witt: When Do Evolutionary Algorithms Optimize Separable Functions in Parallel?

02:45 - 03:30: Matthias Feldmann and Timo Kötzing: Optimizing Expected Path Lengths with Ant Colony Optimization Using Fitness Proportional Update

3:30-4:00: Coffee Break

Technical Session 2 (Chair Carsten Witt)

04:00 - 04:45: Erik Hemberg, Kalyan Veeramachaneni, Constantin Berzan and Una-May O'Reilly: Introducing Graphical Models to Analyse Genetic Programming Dynamics

04:45 - 05:30: Anh Quang Nguyen, Tommaso Urli and Markus Wagner: Improved Computational Complexity Results for Weighted ORDER and MAJORITY

Friday, 18 January 2013

Technical Session 3 (Chair Dirk Sudholt)

09:00 - 09:45: Hans-Georg Beyer and Michael Hellwig: Controlling Population Size and Mutation Strength by Meta-ES under Fitness Noise

09:45 - 10:30: Olivier Teytaud and Jérémie Decock: Noisy Optimization Complexity

10:30-11:00: Coffee Break

Technical Session 4 (Chair: Erik Hemberg)

11:00 - 11:45: Davide Bresolin, Fernando Jiménez, Gracia Sánchez and Guido Sciavicco: Finite Satisfiability of Propositional Interval Logic Formulas with Multi-Objective Evolutionary Algorithms

11:45 - 12:30: Alan Lockett and Risto Miikkulainen: A Measure-Theoretic Analysis of Stochastic Optimization

12:45: Bus leaves for McLaren Vale and Adelaide Hills (conference dinner)

Saturday, 19 January 2013

Technical Session 5 (Chair: Timo Kötzing)

09:00 - 09:45: Boris Mitavskiy, Jun He: A Further Generalization of the Finite-Population Geiringer-like Theorem for POMDPs to Allow Recombination Over Arbitrary Set Covers

09:45 - 10:30: Yan Pei and Hideyuki Takagi: Triple and Quadruple Comparison-Based Interactive Differential Evolution and Differential Evolution

10:30-11:00: Coffee Break

Technical Session 6 (Chair: Pietro S. Oliveto)

11:00 - 11:45 Per Kristian Lehre and Ender Özcan: A runtime analysis of simple hyper-heuristics: To mix or not to mix operators

11:45 - 12:30 Samadhi Nallaperuma, Markus Wagner, Frank Neumann, Bernd Bischl, Olaf Mersmann and Heike Trautmann: A Feature-Based Comparison of Local Search and the Christofides Algorithm for the Travelling Salesperson Problem

12:30-1:45: Lunch (on your own)

02:00: Bus leaves for Cleland Wildlife Park and Beach Side

Sunday, 20 January 2013

Technical Session 7 (Chair: Kenneth De Jong)

09:00 - 09:45: Youhei Akimoto and Yann Ollivier: Objective Improvement in Information-Geometric Optimization

09:45 - 10:30: Keki Burjorjee: Explaining Adaptation in Genetic Algorithms with Uniform Crossover

10:30-11:00: Coffee Break

Technical Session 8 (Chair: Per Kristian Lehre)

11:00 - 11:45: Thomas Jansen, Pietro S. Oliveto and Christine Zarges: Approximating Vertex Cover Using Edge-Based Representations

11:45 - 12:30: Andrea Mambrini, Luca Manzoni and Alberto Moraglio: Runtime Analysis of Mutation-Based Geometric Semantic Genetic Programming on Boolean Functions

12:30-13:00: Closing remarks

FOGA 2013 is sponsored by

