

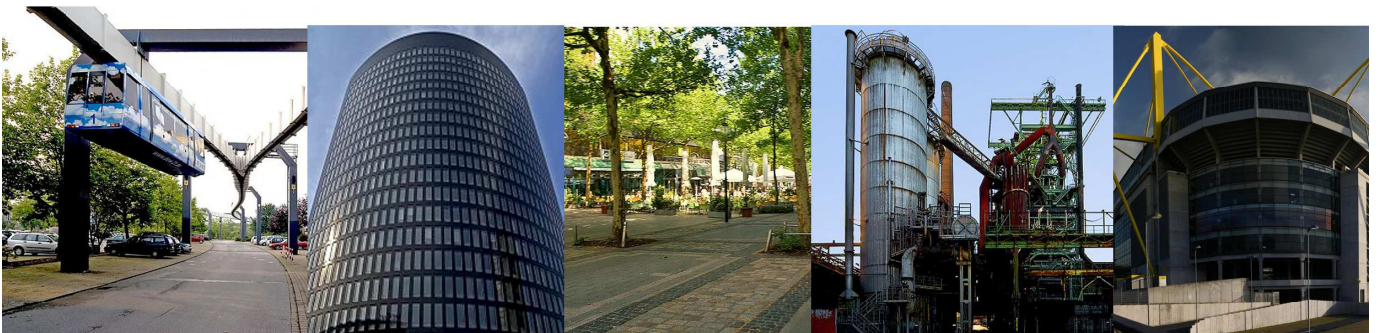
PPSN 2008



Conference Program

10TH INTERNATIONAL CONFERENCE
ON PARALLEL PROBLEM SOLVING FROM NATURE

TECHNISCHE UNIVERSITÄT DORTMUND, GERMANY
SEPTEMBER 13-17, 2008



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**Parallel Problem Solving from Nature 2008
Conference Program**

Preface	3
Program Overview	4
Workshops	7
Tutorials	11
Invited Talks	14
Poster Sessions Monday	15
Poster Sessions Tuesday	18
Poster Sessions Wednesday	21
Social Events	23
Conference Information	24

Preface

The first major gathering of people interested in discussing natural paradigms and their application to solve real-world problems in Europe took place at Dortmund, Germany, in 1990. What was planned originally as a small workshop with about 30 participants finally grew into an international conference named Parallel Problem Solving from Nature (PPSN) with more than 100 participants. The interest in the topics of the conference has increased steadily ever since leading to the pleasant necessity of organizing PPSN conferences biennially within the European region. After visiting Brussels (1992), Jerusalem (1994), Berlin (1996), Amsterdam (1998), Paris (2000), Granada (2002), Birmingham (2004), and Reykjavik (2006) PPSN returned to its birthplace in Dortmund to celebrate its 10th anniversary in 2008. Without any doubt the PPSN conference series evolved to be one of the most respected and highly regarded conferences on natural computing.

This year over 200 papers have been submitted to PPSN with authors from 26 countries spread over Africa, America, Asia, Australia, and Europe. From these submissions the Program Chairs selected the top 114 papers after an extensive peer review process. Not all decisions were easy to make but in all cases we benefited greatly from the careful reviews provided by the international Program Committee. We requested four reviews for each submission leading to a total of 824 requests for reviews. Thanks to these reviews we were able to decide about acceptance on a solid basis.

The papers included in these proceedings have been assigned to six fuzzy clusters (formal theory, new techniques, experimental analysis, multiobjective optimization, hybrid methods, and applications) that can hardly reflect the true variety of research topics presented in the proceedings. Following the tradition and spirit of PPSN, all papers are presented as posters. The 8 poster sessions consisting of about 14 papers each are compiled orthogonally to the fuzzy clusters mentioned above to cover the range of topics as widely as possible. As a consequence, participants with different interests find some relevant papers in every session and poster presenters are able to discuss related work in sessions different to their own. As usual, the conference also includes one day with workshops (Saturday), one day with tutorials (Sunday), and three invited plenary talks (Monday to Wednesday) for free.

The return of the PPSN series is not only a return to the city of Dortmund, but also to the original venue of the first PPSN conference, the Westfalenhallen Congress Center in Dortmund. Here we find all structural needs fulfilled to make this event a success. We find rooms of different sizes for the weekend events next to a beautiful large forum for the poster presentations. Wireless internet access can be provided during the event and the adjacent hotel is able to offer everything to make coffee breaks and lunches a great time for discussions. Moreover, two unique locations in Dortmund and the Ruhrgebiet have been chosen to host the reception and the conference dinner on Monday and Tuesday evening.

Needless to say, the success of such a conference depends on authors, reviewers, and organizers. We are grateful to all authors for submitting their best and latest work, to all the reviewers for the generous way they spent their time and provided their valuable expertise in preparing these reviews, and to the workshop organizers as well as the tutorial presenters for their valorizing contributions to the conference event. From the organizers point of view, we hope to have considered everything to make this conference a success for each of the more than 170 registered participants.

Last but not least, we would like to thank the Collaborative Research Center 'Computational Intelligence' (SFB 531) at the Dortmund University of Technology and the Deutsche Forschungsgemeinschaft (DFG) for financial support as well as the Gesellschaft für Informatik (GI) for administrative support in international monetary transactions.

September 2008

Günter Rudolph

Saturday, September 13: Workshops

Time	Saal 9	Saal 10	Saal 14
	Computational Intelligence and Games	Theory of Randomized Search Heuristics 2008	Hyper-Heuristics - Automating the Heuristic Design Process
8:00 – 17:30	Registration	Registration	Registration
9:00 – 10:45	CI BotShop	Session 1	Session Speakers
10:45 – 11:00			Coffee Break
11:00 – 12:00			Session 1: Hyper-Heuristics Based on Constructive Search I
12:00 – 12:15			Coffee Break
12:15 – 12:30	Regular Papers	Lunch	Session 2: Hyper-Heuristics Based on Perturbative Search
12:30 – 13:00			
13:00 – 14:00			Lunch
14:00 – 14:30			Session 3: Hyper-Heuristics Based on Perturbative Search and Hybrids
14:30 – 15:30	Coffee Break	Session 2	Coffee Break
15:30 – 15:45			
15:45 – 16:00	Coffee Break	Session 4: Hyper-Heuristics Based on Constructive Search II	
16:00 – 16:30	Demonstration Papers		
16:30 – 16:45			
16:45 – 17:00			
17:00 – 17:30	Open Discussion		

Sunday, September 14: Tutorials

Time	Saal 9	Saal 10	Saal 14
8:00 – 18:00			Registration
10:00 – 12:00	Swarm Intelligence (PSO + ACO)	Computational Complexity of Evolutionary Computation in Combinatorial Optimization	Transportation and Logistics
12:00 – 13:30			Lunch
13:30 – 15:30	A Unified Approach to EC	Evolution Strategies and Related Estimation of Distribution Algorithms (ES feat. EDA)	Bioinformatics
15:30 – 16:00			Coffee Break
16:00 – 18:00	Multi-Objective Evolutionary Algorithms (EMOA)	The Future of Experimental Research	Games

Monday, September 15: Poster Sessions

Time			Location
8:00 – 17:30	Registration		
9:00 – 9:10	Opening Address	Günter Rudolph	Silbersaal
9:10 – 9:30	Jubilee Talk	Hans-Paul Schwefel	Silbersaal
9:30 – 10:30	Invited Talk: Semidefinite Programming and Lift-and-Project Methods in Combinatorial Optimization	Levent Tunçel Chair: Thomas Jansen	Silbersaal
10:30 – 11:00	Coffee Break		Panoramaforum
11:00 – 11:20	M.A. Poster Introduction	Günter Rudolph	Silbersaal
11:20 – 12:30	M.A. Poster Session		Panoramaforum
12:30 – 14:00	Lunch		Rosenterrassen
14:00 – 14:20	M.B. Poster Introduction	Simon Lucas	Silbersaal
14:20 – 15:30	M.B. Poster Session		Panoramaforum
15:30 – 16:00	Coffee Break		Panoramaforum
16:00 – 16:20	M.C. Poster Introduction	Günter Rudolph	Silbersaal
16:20 – 17:30	M.C. Poster Session		Panoramaforum
18:30 – 20:30	Reception		Harenberg City Center, Dortmund

Tuesday, September 16: Poster Sessions

Time			Location
8:00 – 17:00	Registration		
9:00 – 10:00	Invited Talk: The Challenges of Multidisciplinary Optimization in an Automotive Development Process	Thomas Breitling Chair: Simon Lucas	Silbersaal
10:00 – 10:30	Coffee Break		Panoramaforum
10:30 – 10:50	T.A. Poster Introduction	Carlo Poloni	Silbersaal
10:50 – 12:00	T.A. Poster Session		Panoramaforum
12:00 – 13:30	Lunch		Rosenterrassen
13:30 – 13:50	T.B. Poster Introduction	Thomas Jansen	Silbersaal
13:50 – 15:00	T.B. Poster Session		Panoramaforum
15:00 – 15:30	Coffee Break		Panoramaforum
15:30 – 15:50	T.C. Poster Introduction	Simon Lucas	Silbersaal
15:50 – 17:00	T.C. Poster Session		Panoramaforum
18:00 – 24:00	Conference Dinner		Henrichshütte, Hattingen

Wednesday, September 17: Poster Sessions

Time			
8:00 – 15:30	Registration		
9:00 – 10:00	Invited Talk: Phylogenetic Tree Reconstruction: A Challenging Optimization Problem from Nature.	Arndt von Haeseler Chair: Carlo Poloni	Silbersaal
10:00 – 10:30	Coffee Break		Panoramaforum
10:30 – 10:50	W.A. Poster Introduction	Carlo Poloni	Silbersaal
10:50 – 12:00	W.A. Poster Session		Panoramaforum
12:00 – 13:30	Lunch		Rosenterrassen
13:30 – 13:50	W.B. Poster Introduction	Thomas Jansen	Silbersaal
13:50 – 15:00	W.B. Poster Session		Panoramaforum
15:00 – 15:30	Closing, PPSN 2010	Günter Rudolph	Silbersaal

Theory of Randomized Search Heuristics 2008

 Frank Neumann
 Benjamin Doerr

Saturday, September 13
Time: 11:00 – 16:30
Location: Saal 10

Randomized search heuristics such as evolutionary algorithms or ant colony optimization turned out to be highly successful in different applications. However, proving that such an algorithm satisfies certain performance guarantees remains a hard and widely open problem. Understanding this dichotomy and gaining a theoretical understanding of randomized search heuristics therefore is an important task. Since randomized search heuristics, in a sense, are nothing more than particular randomized algorithms, there is a clear connection to the area of design and analysis of randomized algorithms.

Time	Authors	Title
11:00 – 13:00	Marco Laumanns	<i>Stochastic Convergence of Random Search to Fixed Size Pareto Set Approximations</i>
	Carsten Witt	<i>Runtime Analysis of PSO in Continuous Search Spaces</i>
	Daniel Johannsen	<i>Logarithmic Drift Analysis</i>
13:00 – 14:30		Lunch
14:30 – 16:30	Dirk Sudholt	<i>Rigorous Analyses for the Combination of Ant Colony Optimization and Local Search</i>
	Karl Bringmann	<i>Approximating the Volume of Unions and Intersections of High-Dimensional Geometric Objects</i>
	Frank Neumann	<i>Single Source Shortest Paths by EAs with Single-Objective Fitness Functions</i>

CI BotShop

 Simon Lucas
 Thomas P. Runarsson

Saturday, September 13
Time: 9:00 – 12:30
Location: Saal 9

In recent years there have been a significant number of papers demonstrating the use of AI or CI to control non-player characters (also known as NPCs or Bots) within video games such as Quake, Unreal Tournament and OpenArena. However, many researchers are still unsure of the best way of starting research in this area, especially in terms of the software required, the software interfaces needed, and the best sensor models to use for the Bots. The morning workshop will provide a very informal place to discuss these issues and to demonstrate working software, highlighting key parts, and illustrating effects of learning where possible. The idea is that participants will bring their own laptops where possible, and attempt to get some of the software installed and running for themselves. The current aim is to look at at least two platforms: Unreal Tournament as used in <http://botprize.org> (this is running as a competition for IEEE CIG 2008), and the interface to the TORCS racing game used by a series of conference competitions (WCCI 2008, CIG 2008, GECCO 2009, CEC 2009).

Hyper-Heuristics - Automating the Heuristic Design Process

Gabriela Ochoa
Ender Özcan

Saturday, September 13
Time: 9:00 – 16:45
Location: Saal 14

Despite the significant progress in building search methodologies for a wide variety of application areas so far, such approaches still require specialists to integrate their expertise in a given problem domain. Many researchers from computer science, artificial intelligence and operational research fields have already acknowledged the need for developing automated systems to replace the role of a human expert in such situations. Adaptation and learning are two important components of complex problem-solving in nature. Hence, one of the main ideas for automating the design of heuristics requires the incorporation of learning mechanisms into algorithms to adaptively guide the search. Both learning and adaptation processes can be realised on-line or off-line, and be based on constructive or perturbative heuristics. There is an emerging search and optimization tool in this line of thinking: hyper-heuristics. Hyper-heuristics can be thought of as "heuristics to choose heuristics". They are techniques that explore a search space of heuristics. Therefore, they differ from most applications of meta-heuristics which explore a search space of solutions. There might be multiple heuristics from which one can choose for solving a problem, and each heuristic has its own strength and weakness. The idea is to automatically devise algorithms by combining the strength and compensating the weakness of known heuristics. The approach is motivated by the aim of raising the level of generality at which search systems can operate. The goal is to obtain methods applicable to a wider range of problem domains than is possible today. This workshop aims to bring together researchers and practitioners in hyper-heuristics and related approaches, in order to learn from each other, develop common understandings, and inspire new algorithms and approaches.

Time	Authors	Title
9:00 – 10:45	Edmund Burke	TBA
	Roberto Battiti	<i>Reactive Search: Optimization with Online Learning</i>
	Ricardo Poli	TBA
10:45 – 11:00		Coffee Break
11:00 – 12:00	John Woodward, Gabriela Ochoa, Edmund K. Burke	<i>Categorisation of Approaches + Formal Framework for Hyper-Heuristics</i>
	Hugo Terashima-Marín, José Carlos Ortiz-Bayliss, Peter Ross, Manuel Valenzuela-Rendón	<i>Dynamic Variable Ordering for Hard Binary Constraint Satisfaction Problems by Means of Hyper-Heuristics</i>
	Nelisha Pillay, Wolfgang Banzhaf	<i>Evolving Hyper-Heuristics for the Uncapacitated Examination Timetabling Problem</i>
12:00 – 12:15		Coffee Break

12:15 – 13:00	Murat Birben, Kadir Esen, Emin Erkan Korkmaz, Burcu Külahçioğlu, Ender Özcan	<i>Grouping Hyper-Heuristics</i>
	David Meignan, Jean-Charles Créput, Abderrafiâa Koukam	<i>Coalition-Based Metaheuristic: A Self-Adaptive Metaheuristic Using Reinforcement Learning and Mimetism</i>
	Robert E. Keller, Riccardo Poli	<i>Improved Benchmark Results from Subheuristic Search</i>
13:00 – 14:00		Lunch
14:00 – 15:30	Erick R. Fonseca, Richard Fuchshuber, Luis Filipe M. Santos, Alexandre Plastino, Simone de L. Martins	<i>Hybrid DM-GRASP Metaheuristic: Evaluating Mining Frequency</i>
	A. Şima Uyar, Deniz Aldoğan	<i>Application of Hyperheuristics in Dynamic Environments</i>
	Pablo Garrido, María Cristina Riff	<i>Tackling DVRP by an Evolutionary Hyperheuristic</i>
	Ender Özcan, Murat Kalender, Edmund Burke	<i>A Greedy Gradient-Simulated Annealing Hyperheuristic</i>
15:30 – 15:45		Coffee Break
15:45 – 16:45	Thomas Philip Runarsson, Graham Kendall, Edmund Burke	<i>Learning Heuristic Search - A Reinforcement Learning Approach</i>
	Mahmut Ali Gökçe, Berkay Beygo, Turgut Ekmekçi	<i>Multi Level Multi Item Capacitated Lot Sizing and Scheduling Problem – A Hyper-Heuristic Approach</i>
	Gabriela Ochoa, José Antonio Vazquez- Rodriguez, Sanja Petrovic, Edmund K. Burke	<i>Dispatching Rules for Job Shop Scheduling: A Hyper-Heuristic Landscape Analysis</i>

Computational Intelligence and Games

Simon Lucas
Thomas P. Runarsson

Saturday, September 13
Time: 14:00 – 17:30
Location: Saal 9

Games provide an excellent test bed and application domain for a wide range of computational intelligence methods including evolutionary algorithms, neural networks, fuzzy systems, swarm intelligence, and temporal difference learning. There has been a rapid growth in research in this area over the last few years, and this informal workshop aims to stimulate a lively discussion regarding the current state of the art and future directions. We invited prospective participants to submit short papers and proposals for demonstrations. Topics may include but are not limited to:

- Computational Intelligence in Video Games, Games and A-Life
- Learning in games, Working with the games industry
- Games related to social, economic, and financial simulations
- Major challenges and emerging trends for various game genres
- New games genres facilitated by CI techniques
- General game intelligence (e.g. a general purpose ‘drop-n-play’ NPC (Non-Player Character))
- Competitions, Benchmarks, and Interchange Standards

Time	Authors	Title
14:00 – 14:20	Silvano Bonacina, Pier Luca Lanzi, Daniele Loiacono	<i>Evolving Dodging Behavior for OpenArea Using Neuroevolution of Augmenting Topologies</i>
14:20 – 14:40	Veronica Lopez, Jose A. Gamez, Luis de la Ossa	<i>Improvement of a Car Racing Controller by Means of Ant Colony Optimization Algorithms</i>
14:40 – 15:00	Simon M. Lucas	<i>Information Rates in Game Learning</i>
15:00 – 15:20	Timm Meyer, Jonathan L. Shapiro	<i>Opponent Modelling in Heads-Up Poker</i>
15:20 – 15:40	Julian Togelius, Jürgen Schmidhuber	<i>Computational Intelligence and Game Design</i>
15:40 – 16:00		Coffee Break
16:00 – 16:15	Jan Quadflieg, Nicola Beume, Boris Naujoks, Mike Preuss, PG511	<i>Supporting the Player by Means of Intelligent Group Behavior in Realtime Strategy Games</i>
16:15 – 16:30	Matthias Grochowski, Markus Kemmerling, PG529	<i>Emotionally Affected Poker Players</i>
16:30 – 16:45	Simon Wessing, Nicola Beume, Boris Naujoks, Mike Preuss, PG511	<i>CI Enlivened Ghosts for Pac-Man</i>
16:45 – 17:00	Simon M. Lucas	<i>Pac-Man Versus Ghost-Teams: A New Competition</i>
17:00 – 17:30		<i>Open Discussion</i>

Sunday, September 14**10:00 – 12:00**

Swarm Intelligence (PSO + ACO)

Christian Blum**Location: Saal 9**

Swarm intelligence is concerned with the design of intelligent multiagent systems by taking inspiration from the collective behavior of social insects such as ants, termites, bees, and wasps, as well as from other animal societies such as flocks of birds or fish schools. Colonies of social insects have mesmerized researchers for many decades, and the mechanisms that govern their behavior remained unknown for a long time. Even though the single members of these colonies are non-sophisticated individuals, they are able to achieve complex tasks in cooperation. Coordinated colony behavior emerges from relatively simple actions or interactions between the colonies' individual members. Optimization techniques based on swarm intelligence have become increasingly popular during the last decade. They are characterized by a decentralized way of working that mimics the behavior of swarms of social insects, flocks of birds, or fish schools. The advantage of these approaches over traditional techniques is their robustness and flexibility. These properties make swarm intelligence a successful design paradigm for algorithms that deal with increasingly complex problems. After a general introduction, we will focus in this tutorial on two of the most successful examples of optimization techniques inspired by swarm intelligence: ant colony optimization, inspired by the foraging behavior of real ant colonies, and particle swarm optimization, inspired by bird flocking.

Computational Complexity of Evolutionary Computation in Combinatorial Optimization

Frank Neumann, Carsten Witt**Location: Saal 10**

Randomized search heuristics such as evolutionary algorithms or ant colony optimization have been shown to be very successful when dealing with real-world applications or problems from combinatorial optimization. In recent years, a lot of progress has been made in understanding the runtime behavior of these heuristics from a theoretical point of view. This is an important research area where a lot of interesting questions are still open. In this tutorial, we would like to give an overview how to analyze randomized search heuristics with respect to the number of solutions they need to produce until a good one has been found. We start by considering the optimization of artificial pseudo-boolean functions and point out some general methods. After that, we consider some well-known combinatorial optimization problems such as minimum spanning trees, Eulerian cycles, and the NP-hard partition problem and show how the runtime behavior of different randomized search heuristics can be analyzed for these problems

Transportation and Logistics

Jens Gottlieb**Location: Saal 14**

Transportation plays an important role in many industries as well as in daily life. The increase of global trade and growing energy costs leads to an increasing demand for efficient transportation and logistics. We present an overview of problems arising in transportation and review applications of evolutionary computation and other metaheuristics in the context of logistics. Like in other problem domains, the success of evolutionary algorithms depends on the choice of representation and search space, locality of operators and integration of local search. Problems studied in academia typically differ significantly from real-world problems. We give an overview of a commercial transportation management system and its planning capabilities. The system allows solving real-world vehicle routing problems and employs evolutionary local search as solution approach. We contrast the real-world vehicle routing problem from its academic counterparts and give an outlook for challenging problems of high practical relevance, which represent promising research opportunities in the area of transportation, logistics and metaheuristics.

Sunday, September 14

13:30 – 15:30

A Unified Approach to EC

Kenneth De Jong

Location: Saal 9

The field of Evolutionary Computation has experienced tremendous growth over the past 20 years, resulting in a wide variety of evolutionary algorithms and applications. The result poses an interesting dilemma for many practitioners in the sense that, with such a wide variety of algorithms and approaches, it is often hard to see the relationships between them, assess strengths and weaknesses, and make good choices for new application areas. This tutorial is intended to give an overview of a general EC framework that can help compare and contrast approaches, encourages crossbreeding, and facilitates intelligent design choices. The use of this framework is then illustrated by showing how traditional EAs can be compared and contrasted with it, and how new EAs can be effectively designed using it. Finally, the framework is used to identify some important open issues that need further research.

Evolution Strategies and Related Estimation of Distribution Algorithms (ES feat. EDA)

Nikolaus Hansen, Anne Auger

Location: Saal 10

Evolution Strategies and some continuous domain Estimation of Distribution Algorithms are stochastic optimization procedures based on sampling multivariate Gaussian (normal) distributions. They can be formulated in a common, unified, but still very simple framework. Such a framework is very useful to understand subtle differences of algorithms. This tutorial focuses on the most relevant question: how should the parameters of the sample distribution be chosen, and how should they be updated in the generation sequence? The most common and successful approaches are reviewed, including self-adaptation, success rules, path length control, Covariance Matrix Adaptation (CMA), and Estimation of Multivariate Normal Algorithm (EMNA). Methods are motivated with respect to the difficulties one has to face when solving continuous domain non-linear, non-convex optimization problems. Specific problem difficulties will be discussed in the beginning, for example ill-conditioning and non-separability. Finally, the performance of state-of-the art Evolution Strategies is related to other well-known evolutionary and non-evolutionary optimization algorithms, namely BFGS, DE, PSO...

Bioinformatics

David Corne

Location: Saal 14

Bioinformatics is concerned with trying to make sense of the huge and growing amount of biological data that is emerging from modern biotechnology. We have immense amounts of sequence information about genes and proteins, lots of partial information about the roles and functions of proteins and many other biomolecules, and lots of information that connects these data with disease and other state information about biological systems. But, to be able to extract useful knowledge and tools from these data, optimisation, machine learning, and statistics expertise is essential. Even more essential, however, is for there to be scientists who understand both the biology and the advanced computer science. The tutorial will assume that you know about optimisation and machine learning, but you want to learn what the opportunities are for applying your knowledge in the bioinformatics arena. So, the tutorial will start with some relevant biology basics, and then move on to discuss and explore some of the classification and optimisation problems that need your expertise.

Sunday, September 14

16:00 – 18:00

Multi-Objective Evolutionary Algorithms (EMOA)

Eckart Zitzler

Location: Saal 9

Multiple, often conflicting objectives arise naturally in most real-world optimization scenarios. As evolutionary algorithms possess several characteristics that are desirable for this type of problem, this class of search strategies has been used for multiobjective optimization for more than a decade. Meanwhile evolutionary multiobjective optimization has become established as a separate subdiscipline combining the fields of evolutionary computation and classical multiple criteria decision making. This tutorial gives an overview of evolutionary multiobjective optimization with the focus on methods and theory. On the one hand, basic principles of multiobjective optimization are presented, and various algorithmic aspects such as fitness assignment and environmental selection are discussed in the light of state-of-the-art techniques. On the other hand, the tutorial covers several theoretical issues such as performance assessment and running-time analysis.

The Future of Experimental Research

Thomas Bartz-Beielstein, Mike Preuss

Location: Saal 10

It is an open secret that the performance of algorithms depends on their parameterizations – and of the parameterizations of the problem instances. However, these dependencies can be seen as means for understanding algorithm's behavior. Based on modern statistical techniques we demonstrate how to tune and understand algorithms. We present a comprehensive, effective and very efficient methodology for the design and experimental analysis of search heuristics such as evolutionary algorithms, differential evolution, pattern search or even classical deterministic methods such as the Nelder-Mead simplex algorithm. Our approach extends the sequential parameter optimization (SPO) method that has been successfully applied as a tuning procedure to numerous heuristics for practical and theoretical optimization problems. Optimization practitioners receive valuable hints for choosing an adequate heuristic for their optimization problems – theoreticians receive guidelines for testing results systematically on real problem instances. Based on several examples from theory and practice we demonstrate how SPO improves the performance of many search heuristics significantly. However, this performance gain is not available for free. Therefore, costs of this tuning process are discussed.

Games

Simon Lucas

Location: Saal 14

This tutorial provides a practical introduction to game strategy learning with function approximation architectures. The tutorial will cover the two main approaches to learning game strategy: evolution (including co-evolution), and temporal difference learning. We also look at how the choice of input features and function approximation architecture has a critical impact on what is learned, as well as how it is interfaced to the game (e.g. as a value estimator or as an action selector). In addition to standard MLPs, attention is also given to N-Tuple systems and interpolated table-based approximators, as these have recently shown great potential to learn quickly and effectively. Each method will be demonstrated with reference to some simple fragments of software, illustrating how the learning algorithm is connected with the game and with the function approximation architecture. Example games will include Othello, Simulated Car Racing, and Ms. Pac-Man. Recent results on the information rate limits attainable for these learning algorithms (in terms of bits of information gained per game played) will also be discussed, together with a simple test game that enables direct testing of these information rates.

Monday, September 15**9:30 – 10:30****Semidefinite Programming and Lift-and-Project Methods in Combinatorial Optimization**

Levent Tunçel

Location: Silbersaal

Abstract

Semidefinite programming (SDP) is one of the most active research areas in optimization where the variables are represented by symmetric matrices some of which are required to be positive semidefinite. This framework ends up being a powerful generalization of linear programming problems. Lift-and-project methods provide universal ways of applying SDP techniques to combinatorial optimization problems. I will go over the theory of these methods first. Then, I will turn to their performance on various combinatorial optimization problems with a special focus on the maximum weight stable set problem. I will conclude the talk with a very brief discussion of generalizations of these methods to deal with optimization of polynomials over semi-algebraic sets.

Tuesday, September 16**9:00 – 10:00****The Challenges of Multidisciplinary Optimization in an Automotive Development Process**

Thomas Breitling

Location: Silbersaal

Abstract

Many methods in the scope of the PPSN conference are state of the art and are already available in the optimization kernels of commercial tools. The evolutionary principles adapted by these methods, however, were also applied to the algorithms themselves: In the beginnings of Evolutionary Computation, many variants emerged and competed with already established ones, but only a few prevailed and are considered as mainstream nowadays. Now the selection pressure starts rising again: With the increasing complexity of products and product development processes, there is a demand for methods which allow the efficient and reliable validation of product designs regarding a great number of possibly conflicting requirements. The automation of these validation processes exhibits new challenges for optimization tools which are summarized under the term of Multidisciplinary Optimization. By the example of the Daimler passenger car development, the talks describes the special requirements optimization methods have to fulfill in the near future, especially the limited number of single design verifications due to the long simulation times of certain disciplines.

Wednesday, September 17**9:00 – 10:00****Phylogenetic Tree Reconstruction: A Challenging Optimization Problem from Nature**

Arndt von Haeseler

Location: Silbersaal

Abstract

We will give a brief overview about the state of the art of phylogenetic tree reconstruction and will outline the problems biologists and computer scientists face, when trying to reconstruct phylogenetic trees from the vast amount of molecular biology data available today. Finally, we will point out some recent developments in phylogeny reconstruction and explain some open problems.

Poster Session M.A.: Monday 15th, 11:00 – 12:30

Session Chair: Günter Rudolph

Introduction: Silbersaal 11:00 – 11:20

Presentation: Panoramaforum 11:20 – 12:30

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|--------|--|
| M.A.1 | On the Behaviour of the (1+1)-ES for a Simple Constrained Problem
Dirk Arnold, Daniel Brauer |
| M.A.2 | σ-Self-Adaptive Weighted Multirecombination Evolution Strategy with Scaled Weights on the Noisy Sphere
Hans-Georg Beyer, Alexander Melkozerov |
| M.A.3 | When Does Quasi-random Work?
Olivier Teytaud |
| M.A.4 | Fitness Expectation Maximization
Daan Wierstra, Tom Schaul, Jan Peters, Jürgen Schmidhuber |
| M.A.5 | Evolutionary Algorithms for Dynamic Environments: Prediction Using Linear Regression and Markov Chains
Anabela Simões, Ernesto Costa |
| M.A.6 | Evolving Neural Networks for Online Reinforcement Learning
Jan H. Metzen, Mark Edgington, Yohannes Kassahun, Frank Kirchner |
| M.A.7 | The Generalisation Ability of a Selection Architecture for Genetic Programming
David Jackson |
| M.A.8 | Cooperation in Co-evolving Networks: the Prisoner's Dilemma and Stag-Hunt Games
Enea Pestelacci, Marco Tomassini |
| M.A.9 | Analyzing Hypervolume Indicator Based Algorithms
Dimo Brockhoff, Tobias Friedrich, Frank Neumann |
| M.A.10 | Solving Three-Objective Optimization Problems Using a New Hybrid Cellular Genetic Algorithm
Juan J. Durillo, Antonio J. Nebro, Francisco Luna, Enrique Alba |
| M.A.11 | Modeling Human Expertise on a Cheese Ripening Industrial Process Using GP
Olivier Barrière, Evelyne Lutton, Cedric Baudrit, Mariette Sicard, Bruno Pinaud, Nathalie Perrot |
| M.A.12 | Readable and Accurate Rulesets with ORGA
M.N. Ridzuan Daud, David W. Corne |
| M.A.13 | A Multiobjective Evolutionary Algorithm for the Linear Shelf Space Allocation Problem
Anna I. Esparcia-Alcázar, Ana I. Martínez-García, Jose M. Albarracín-Guillem, Marta E. Palmer-Gato, Juan J. Merelo, Ken C. Sharman, Eva Alfaro-Cid |
| M.A.14 | Optimizing Real-Time Ordered-Data Broadcasts in Pervasive Environments Using Evolution Strategy
Rinku Dewri, Darrell Whitley, Indrajit Ray, Indrakshi Ray |

Poster Session M.B.: Monday 15th, 14:00 – 15:30

Session Chair: Simon Lucas

Introduction: Silbersaal 14:00 – 14:20

Presentation: Panoramaforum 14:20 – 15:30

- M.B.1 **Premature Convergence in Constrained Continuous Search Spaces**
Oliver Kramer
- M.B.2 **On Multiplicative Noise Models for Stochastic Search**
Mohamed Jebalia, Anne Auger
- M.B.3 **Adaptive Encoding: How to Render Search Coordinate System Invariant**
Nikolaus Hansen
- M.B.4 **Enhancing the Efficiency of the ECGA**
Thyago S.P.C. Duque, David E. Goldberg, Kumara Sastry
- M.B.5 **A Developmental Approach to the Uncapacitated Examination Timetabling Problem**
Nelishia Pillay, Wolfgang Banzhaf
- M.B.6 **Evolvable Agents in Static and Dynamic Optimization Problems**
Juan L.J. Laredo, Pedro A. Castillo Valdivieso, Antonio M. Mora, Juan J. Merelo, Agostinho Rosa, Carlos Fernandes
- M.B.7 **The Impact of Global Structure on Search**
Monte Lunacek, Darrell Whitley, Andrew Sutton
- M.B.8 **Improved Lower Limits for Pheromone Trails in Ant Colony Optimization**
David C. Matthews
- M.B.9 **Runtime Analyses for Using Fairness in Evolutionary Multi-Objective Optimization**
Tobias Friedrich, Christian Horoba, Frank Neumann
- M.B.10 **The Parallel Predator-Prey Model: A Step towards Practical Application**
Christian Grimme, Joachim Lepping, Alexander Papaspyrou
- M.B.11 **A Distributed Memetic Algorithm for the Routing and Wavelength Assignment Problem**
Thomas Fischer, Kerstin Bauer, Peter Merz
- M.B.12 **Theoretical Analysis of Initial Particle Swarm Behavior**
Sabine Helwig, Rolf Wanka
- M.B.13 **Nature-inspired Synthesis of Rational Protocols**
Almudena Alcaide, Juan M.E. Tapiador, Julio C. Hernández-Castro, Arturo Ribagorda
- M.B.14 **A Memetic Algorithm for the Delineation of Local Labour Markets**
Francisco Flórez-Revuelta, José M. Casado-Díaz, Lucas Martínez-Bernabeu, Raúl Gómez-Hernández

Poster Session M.C.: Monday 15th, 16:00 – 17:30

Session Chair: Günter Rudolph

Introduction: Silbersaal 16:00 – 16:20

Presentation: Panoramaforum 16:20 – 17:30

M.C.1	Convergence Analysis of Evolution Strategies with Random Numbers of Offspring Olivier François
M.C.2	A Blend of Markov-Chain and Drift Analysis Jens Jägersküpper
M.C.3	Enhancing the Performance of Maximum-Likelihood Gaussian EDAs Using Anticipated Mean Shift Peter A.N. Bosman, Jörn Grahl, Dirk Thierens
M.C.4	New Approaches to Coevolutionary Worst-Case Optimization Jürgen Branke, Johanna Rosenbusch
M.C.5	Enhancing Efficiency of Hierarchical BOA Via Distance-Based Model Restrictions Mark Hauschild, Martin Pelikan
M.C.6	Evolution Strategies for Direct Policy Search Verena Heidrich-Meisner, Christian Igel
M.C.7	Optimal Nesting of Species for Exact Cover: Many against Many Jeffrey Horn
M.C.8	Nonsynonymous to Synonymous Substitution Ratio k_a/k_s: Measurement for Rate of Evolution in Evolutionary Computation Ting Hu, Wolfgang Banzhaf
M.C.9	Functional-Specialization Multi-Objective Real-Coded Genetic Algorithm: FS-MOGA Naoki Hamada, Jun Sakuma, Shigenobu Kobayashi, Isao Ono
M.C.10	Investigations into the Effect of Multiobjectivization in Protein Structure Prediction Julia Handl, Simon C. Lovell, Joshua D. Knowles
M.C.11	Large-Scale Optimization of Non-separable Building-Block Problems David Iclanzan, Dumitru Dumitrescu
M.C.12	Particle Filter with Swarm Move for Optimization Chunlin Ji, Yangyang Zhang, Mengmeng Tong, Shengxiang Yang
M.C.13	Evolving XSLT Stylesheets for Document Transformation Pablo García-Sánchez, Juan J. Merelo, Juan L.J. Laredo, Antonio M. Mora, Pedro Á. Castillo Valdivieso
M.C.14	Fast Multi-objective Scheduling of Jobs to Constrained Resources Using a Hybrid Evolutionary Algorithm Wilfried Jakob, Alexander Quinte, Karl-Uwe Stucky, Wolfgang Süß

Poster Session T.A.: Tuesday 16th, 10:30 – 12:00

Session Chair: Carlo Poloni

Introduction: Silbersaal 10:30 – 10:50

Presentation: Panoramaforum 10:50 – 12:00

T.A.1	Multiobjectivization by Decomposition of Scalar Cost Functions Julia Handl, Simon C. Lovell, Joshua D. Knowles
T.A.2	Approximating Minimum Multicuts by Evolutionary Multi-objective Algorithms Frank Neumann, Joachim Reichel
T.A.3	Covariance Matrix Adaptation Revisited - The CMSA Evolution Strategy Hans-Georg Beyer, Bernhard Sendhoff
T.A.4	Extreme Value Based Adaptive Operator Selection Álvaro Fialho, Luís Da Costa, Marc Schoenauer, Michèle Sebag
T.A.5	Examining the Effect of Elitism in Cellular Genetic Algorithms Using Two Neighborhood Structures Hisao Ishibuchi, Noritaka Tsukamoto, Yusuke Nojima
T.A.6	Costs and Benefits of Tuning Parameters of Evolutionary Algorithms Volker Nannen, Selmar K. Smit, Agoston E. Eiben
T.A.7	How Single Ant ACO Systems Optimize Pseudo-Boolean Functions Benjamin Doerr, Daniel Johannsen, Ching H. Tang
T.A.8	Reinforcement Learning: Insights from Interesting Failures in Parameter Selection Wolfgang Konen, Thomas Bartz-Beielstein
T.A.9	On the Use of Projected Gradients for Constrained Multiobjective Optimization Problems Alfredo G. Hernández-Díaz, Carlos A. Coello Coello, Luis V. Santana-Quintero, Fatima Perez, Julian Molina, Rafael Caballero
T.A.10	Diversity Maintenance Mechanism for Multi-Objective Genetic Algorithms Using Clustering and Network Inversion Tomoyuki Hiroyasu, Kenji Kobayashi, Masashi Nishioka, Mitsunori Miki
T.A.11	A Feasibility-Preserving Crossover and Mutation Operator for Constrained Combinatorial Problems Martin Lukaszewicz, Michael Glaß, Jürgen Teich
T.A.12	A Set-Based Particle Swarm Optimization Method Christian B. Veenhuis
T.A.13	Virus Evolution Strategy for Vehicle Routing Problems with Time Windows Hitoshi Kanoh, Souichi Tsukahara
T.A.14	Evolving Regular Expressions for GeneChip Probe Performance Prediction William B. Langdon, Andrew P. Harrison
T.A.15	A Grouping Genetic Algorithm Using Linear Linkage Encoding for Bin Packing Özgür Ülker, Emin Erkan Korkmaz, Ender Özcan

Poster Session T.B.: Tuesday 16th, 13:30 – 15:00

Session Chair: Thomas Jansen

Introduction: Silbersaal 13:30 – 13:50

Presentation: Panoramaforum 13:50 – 15:00

- | | |
|--------|--|
| T.B.1 | Simplified Drift Analysis for Proving Lower Bounds in Evolutionary Computation
Pietro S. Oliveto, Carsten Witt |
| T.B.2 | Uncertainty Handling in Model Selection for Support Vector Machines
Tobias Glasmachers, Christian Igel |
| T.B.3 | A Simple Modification in CMA-ES Achieving Linear Time and Space Complexity
Raymond Ros, Nikolaus Hansen |
| T.B.4 | Bio-inspired Search and Distributed Memory Formation on Power-Law Networks
Tathagata Das, Subrata Nandi, Andreas Deutsch, Niloy Ganguly |
| T.B.5 | Parameter Control Methods for Selection Operators in Genetic Algorithms
Péter Vajda, Agoston E. Eiben, Wim Hordijk |
| T.B.6 | Actuation Constraints and Artificial Physics Control
Chris Ellis, R. Paul Wiegand |
| T.B.7 | Genetic Repair for Optimization under Constraints Inspired by Arabidopsis Thaliana
Amy FitzGerald, Diarmuid P. O'Donoghue |
| T.B.8 | Improved Multilabel Classification with Neural Networks
Rafał Grodzicki, Jacek Mańdziuk, Lipo Wang |
| T.B.9 | A Proposal to Hybridize Multi-Objective Evolutionary Algorithms with Non-gradient Mathematical Programming Techniques
Saúl Zapotecas Martínez, Carlos A. Coello Coello |
| T.B.10 | SPAM: Set Preference Algorithm for Multiobjective Optimization
Eckart Zitzler, Lothar Thiele, Johannes Bader |
| T.B.11 | Many Objective Optimisation: Direct Objective Boundary Identification
Evan J. Hughes |
| T.B.12 | An Iterated Local Search Approach for Finding Provably Good Solutions for Very Large TSP Instances
Peter Merz, Jutta Huhse |
| T.B.13 | Learning Fuzzy Rules with Evolutionary Algorithms-An Analytic Approach
Jens Kroeske, Adam Ghandar, Zbigniew Michalewicz, Frank Neumann |
| T.B.14 | Evolutionary Market Agents for Resource Allocation in Decentralised Systems
Peter R. Lewis, Paul Marrow, Xin Yao |
| T.B.15 | Optimization of Feature Processing Chain in Music Classification by Evolution Strategies
Igor Vatolkin, Wolfgang Theimer |

Poster Session T.C.: Tuesday 16th, 15:30 – 17:00

Session Chair: Simon Lucas

Introduction: Silbersaal 15:30 – 15:50

Presentation: Panoramaforum 15:50 – 17:00

- T.C.1 **Rigorous Runtime Analysis of Inversely Fitness Proportional Mutation Rates**
Christine Zarges
- T.C.2 **Niche Radius Adaptation with Asymmetric Sharing**
Vincent van der Goes, Ofer M. Shir, Thomas Bäck
- T.C.3 **Supervised and Unsupervised Evolutionary Learning of Echo State Networks**
Fei Jiang, Hugues Berry, Marc Schoenauer
- T.C.4 **Dynamic Cooperative Coevolutionary Sensor Deployment Via Localized Fitness Evaluation**
Xingyan Jiang, Yuanzhu P. Chen, Tina Yu
- T.C.5 **Formally Testing Liveness by Means of Compression Rates**
César Andrés, Ismael Rodríguez, Fernando Rubio
- T.C.6 **How a Generative Encoding Fares as Problem-Regularity Decreases**
Jeff Clune, Charles Ofria, Robert T. Pennock
- T.C.7 **Sub-tree Swapping Crossover, Allele Diffusion and GP Convergence**
Stephen Dignum, Riccardo Poli
- T.C.8 **EA-Powered Basin Number Estimation by Means of Preservation and Exploration**
Catalin L. Stoean, Mike Preuss, Ruxandra Stoean, Dumitru Dumitrescu
- T.C.9 **Team Algorithms Based on Ant Colony Optimization. A New Multi-Objective Optimization Approach**
Christian Lezcano, Diego P. Pinto, Benjamín Barán
- T.C.10 **Multiobjective Optimization on a Limited Budget of Evaluations Using Model-Assisted S-Metric Selection**
Wolfgang Ponweiser, Tobias Wagner, Dirk Biermann, Markus Vincze
- T.C.11 **A Study of Convergence Speed in Multi-objective Metaheuristics**
Antonio J. Nebro, Juan J. Durillo, Carlos A. Coello Coello, Francisco Luna, Enrique Alba
- T.C.12 **Intrinsic System Model of the Genetic Algorithm with α -Selection**
André Neubauer
- T.C.13 **GA-Net: A Genetic Algorithm for Community Detection in Social Networks**
Clara Pizzuti
- T.C.14 **Learning Walking Patterns for Kinematically Complex Robots Using Evolution Strategies**
Malte Römmermann, Mark Edgington, Jan H. Metzen, Jose de Gea, Yohannes Kassahun, Frank Kirchner

Poster Session W.A.: Wednesday 17th, 10:30 – 12:00

Session Chair: Carlo Poloni

Introduction: Silbersaal 10:30 – 10:50

Presentation: Panoramaforum 10:50 – 12:00

W.A.1	Lower Bounds for Evolution Strategies Using VC-Dimension Hervé Fournier, Olivier Teytaud
W.A.2	On the Run-Time Dynamics of a Peer-to-Peer Evolutionary Algorithm Juan L.J. Laredo, Agoston E. Eiben, Maarten van Steen, Juan J. Merelo
W.A.3	Mixed-Integer Evolution Strategies with Dynamic Niching Rui Li, Jeroen Eggermont, Ofer M. Shir, Michael T.M. Emmerich, Thomas Bäck, Jouke Dijkstra, Johan H.C. Reiber
W.A.4	A Compass to Guide Genetic Algorithms Jorge Maturana, Frédéric Saubion
W.A.5	A Steady-State Genetic Algorithm with Resampling for Noisy Inventory Control Steven D. Prestwich, S. Armagan Tarim, Roberto Rossi, Brahim Hnich
W.A.6	Preventing Premature Convergence in a Simple EDA Via Global Step Size Setting Petr Pošík
W.A.7	Coevolving Cellular Automata with Memory for Chemical Computing: Boolean Logic Gates in the BZ Reaction Christopher Stone, Rita Toth, Ben de Lacy Costello, Andrew Adamatzky, Larry Bull
W.A.8	The Influence of Mutation on Protein-Ligand Docking Optimization: A Locality Analysis Jorge Tavares, Alexandru-Adrian Tantar, Nouredine Melab, El-Ghazali Talbi
W.A.9	A Convergence Criterion for Multiobjective Evolutionary Algorithms Based on Systematic Statistical Testing Heike Trautmann, Uwe Ligges, Jörn Mehnen, Mike Preuss
W.A.10	A Local Search Based Evolutionary Multi-objective Optimization Approach for Fast and Accurate Convergence Karthik Sindhya, Kalyanmoy Deb, Kaisa Miettinen
W.A.11	Approximating the Knee of an MOP with Stochastic Search Algorithms Oliver Schütze, Marco Laumanns, Carlos A. Coello Coello
W.A.12	Imitation Learning in Uncertain Environments Steffen Priesterjahn, Markus Eberling
W.A.13	Driving Cars by Means of Genetic Algorithms Yago Saez, Diego Perez, Oscar Sanjuan, Pedro Isasi
W.A.14	AGE-P: A Platform for Open Evolution Ralf Salomon, Stefan Goldmann
W.A.15	QFCS: A Fuzzy LCS in Continuous Multi-Step Environments with Continuous Vector Actions José Ramírez-Ruiz, Manuel Valenzuela-Rendón, Hugo Terashima-Marín

Poster Session W.B. Wednesday 17th, 13:30 – 15:00

Session Chair: Thomas Jansen

Introduction: Silbersaal 13:30 – 13:50

Presentation: Panoramaforum 13:50 – 15:00

W.B.1 Ignoble Trails - Where Crossover Is Provably Harmful

J. Neal Richter, Alden Wright, John Paxton

W.B.2 Testing the Intermediate Disturbance Hypothesis: Effect of Asynchronous Population Incorporation on Multi-Deme Evolutionary Algorithms

Juan J. Merelo, Antonio Mora, Pedro A. Castillo, Juan L.J. Laredo, Lourdes Araujo, Ken C. Sharman, Anna I. Esparcia Alcázar, Eva Alfaro-Cid, Carlos Cotta

W.B.3 Combination of Natural and Numerical Optimization Methods at the Example of an Internal Gas Turbine Cooling Channel

Helga Steinbrück, Sebastian Zehner, S. Olaf Neumann, Bernhard Weigand

W.B.4 Testing the CAX on a Real-World Problem and Other Benchmarks

Ariel Tchougang, Alexandre Blansché, Laurent Baumes, Nicolas Lachiche, Pierre Collet

W.B.5 Countering Poisonous Inputs with Memetic Neuroevolution

Julian Togelius, Tom Schaul, Jürgen Schmidhuber, Faustino Gomez

W.B.6 Evaluation and Diversity in Co-Evolution

Rients P.T. van Wijngaarden, Edwin D. de Jong

W.B.7 Comparison of Adaptive Approaches for Differential Evolution

Karin Zielinski, Xinwei Wang, Rainer Laur

W.B.8 Use of Heuristic Local Search for Single-Objective Optimization in Multiobjective Memetic Algorithms

Hisao Ishibuchi, Yasuhiro Hitotsuyanagi, Noritaka Tsukamoto, Yusuke Nojima

W.B.9 Distance Based Ranking in Many-Objective Particle Swarm Optimization

Sanaz Mostaghim, Hartmut Schneck,

W.B.10 Approximate Solutions in Space Mission Design

Oliver Schütze, Massimiliano Vasile, Carlos A. Coello Coello

W.B.11 Using Ants' Task Division for Better Game Engines. A Contribution to Game Accessibility for Impaired Players

Alexis Sepchat, Romain Clair, Nicolas Monmarché, Mohamed Slimane

W.B.12 Adding Probabilistic Dependencies to the Search of Protein Side Chain Configurations Using EDAs

Roberto Santana, Pedro Larrañaga, Jose A. Lozano

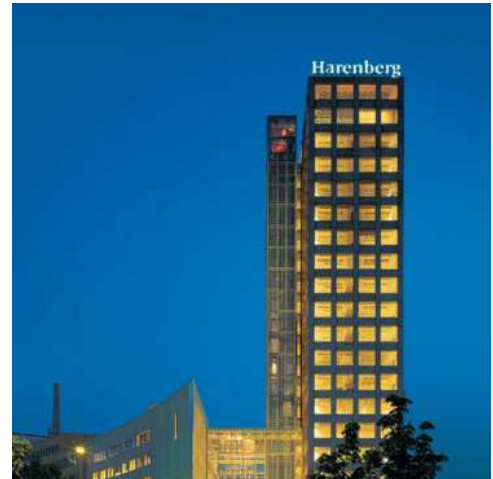
W.B.13 A Scalable Formal Framework for Analyzing the Behavior of Nature-Inspired Routing Protocols

Muhammad Shahzad, Saira Zahid, Muddassar Farooq

Harenberg City-Center, Reception on Monday

Königswall 21
44137 Dortmund

The reception in the evening of September 15th will take place at the Harenberg City-Center starting at 6:30pm. To get there you have to take the subway U45/46 to the Central Station (Dortmund Hauptbahnhof). You have to leave the station through the main entrance and keep to the right. You will find the tall building just behind the first traffic lights. Out of the Panorama-Lounge in the 18th floor the conference participants will have a beautiful view over the city. The reception will last until 8:30pm.



Henrichshütte Hattingen, Dinner on Tuesday

Werkstrasse 31-33
45527 Hattingen

The conference dinner in the evening of September 16th will take place at the restaurant Henrichs of the Henrichshütte in Hattingen. The Henrichshütte is a former ironworks factory and today a symbol of the industrial heritage of the Ruhrgebiet forming a beautiful contrast to the hi-tech conference ambiance. The conference participants will have the chance to explore the old steel works premises within a short guided tour and later enjoy a gourmet dinner at the modern restaurant. Buses will catch up all participants at the entrance of the Congress Center on Tuesday at 6pm. The return by buses will be approximately at midnight.





Registration Desk

The Registration Desk for the PPSN is located in the hallway in front of Saal 14. It is open from 8am till the end of the daily program. During conference hours you can call the organization at +49(0)231-7557743.

Lunch and Coffee Breaks

Lunch, Coffee, and Softdrinks during the breaks are included in the Conference fee. The Lunch takes place in the restaurant Rosenterrassen located at the ground floor of the Conference Center.

Instructions for Poster Presenters

Each poster session starts with a short plenary introduction (20 min.) of the presented papers in the Silbersaal where the session chair summarizes the main results of each paper. The poster presentations are located in the Panoramaforum. Poster presenters should set up their poster on their assigned poster boards 15min before each session. Please remove your poster after the session. The presenters of the posters shall stand next to their poster and be prepared to talk about their work and answering specific questions.

Wi-Fi Access

We offer a free wireless internet access for all PPSN participants during the whole conference. You will receive the necessary access information at the registration desk.



Special Warning: Soccer Game on Saturday

On the first conference day there will be the Bundesliga football game Borussia Dortmund vs. Schalke 04 at the Signal Iduna Park Stadium next to the Westfalenhallen. More than 80.000 visitors are expected. You should be aware that the underground railway and trains in Dortmund may be crowded with football fans. Expect delays between 11am and 7pm!



**Conference Location
Westfalahallen Dortmund
Strobelallee 45
44139 Dortmund**

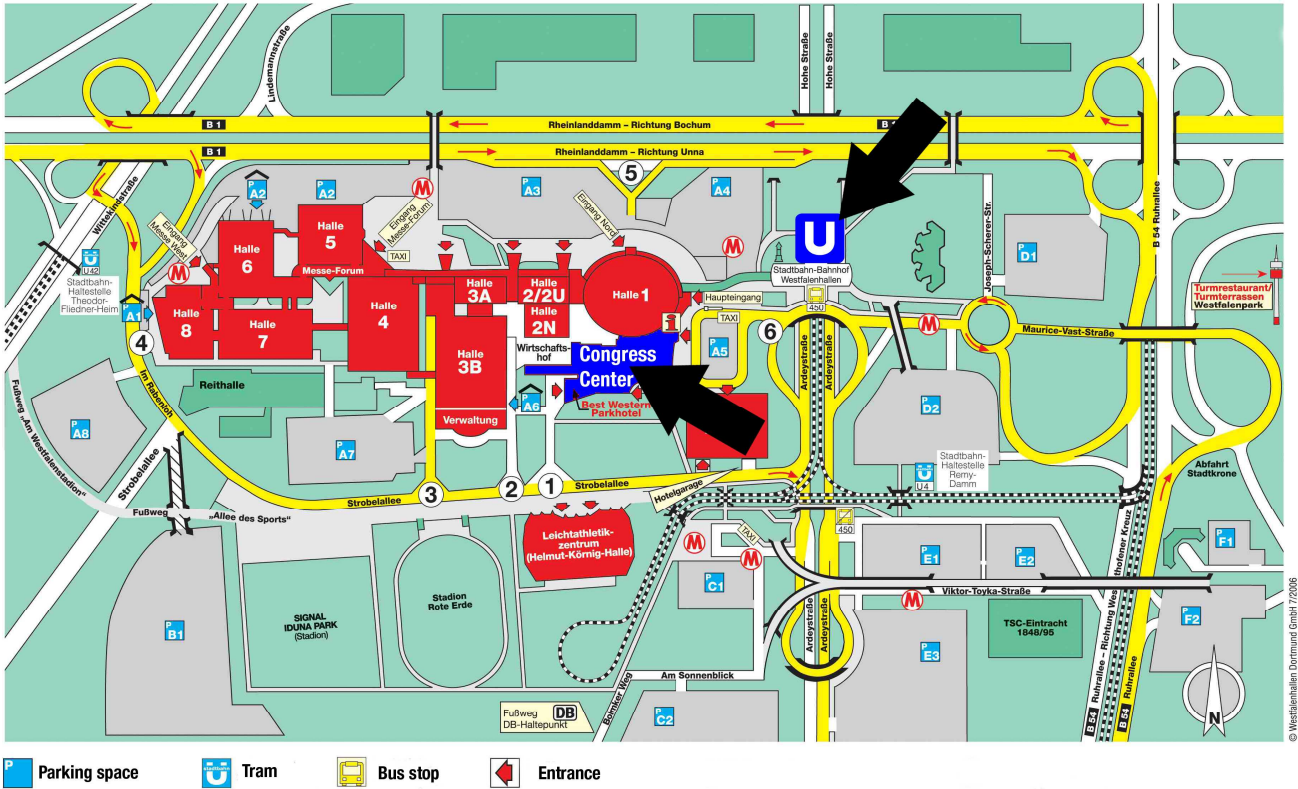


Figure 1: Westfalahallen map

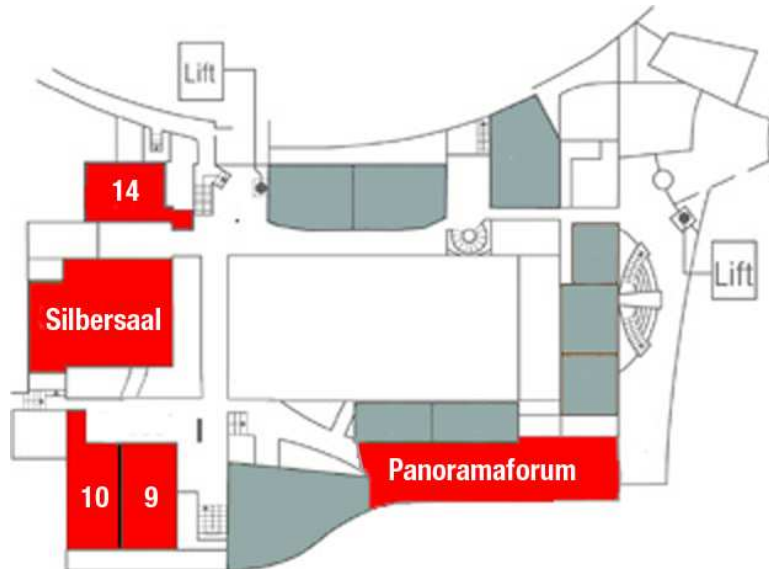


Figure 2: Congress center, 1st floor

You Get to the Congress Center...

...by Plane (Dortmund Airport)

via the AirportExpress Bus which takes about 22 minutes to reach the Dortmund Central Station (Hauptbahnhof, Hbf), only at particular time. Or via regular public bus 440 to Dortmund-Aplerbeck and then change to the public tram service U47 to reach Dortmund Central Station. Then change to U45/U46 to reach the Westfalenhallen Trade-Fair, Congress and Event Center.

...by Public Transport

with the Underground Railway U45/U46 when arriving at Dortmund Central Station to Westfalenhallen Trade-Fair, Congress and Event Center.

Further information: <http://www.vrr.de/en/>

<http://www.bahn.de/international/view/en/>

...by Car

via the B1 (A40) to the motorways A1 (Hansalinie), A45 (Sauerlandlinie), A2 (Berlin - Dortmund - Oberhausen), A42 (Duisburg - Dortmund), B1 (A44) (Dortmund - Kassel). Please follow the signs to Dortmund and pay attention to the Westfalenhallen information signs. For better orientation within the Westfalenhallen complex, please make use of the Westfalenhallen map.



Dortmund is a city located in the western part of Germany in the famous Ruhrgebiet. Its population of over half a million people makes it the largest city in the region, 7th-largest in Germany. Nearly half the municipal territory consists of waterways, woodland, agriculture and green spaces with spacious parks such as Westfalenpark (not far away from the Conference Center). This contrasts with nearly a hundred years of extensive coal mining and steel milling in the city. Since the last decades Dortmund has performed a change from heavy industries to modern technologies. The map beyond shows the relevant locations during the PPSN 2008. We hope you will enjoy your stay in Dortmund!

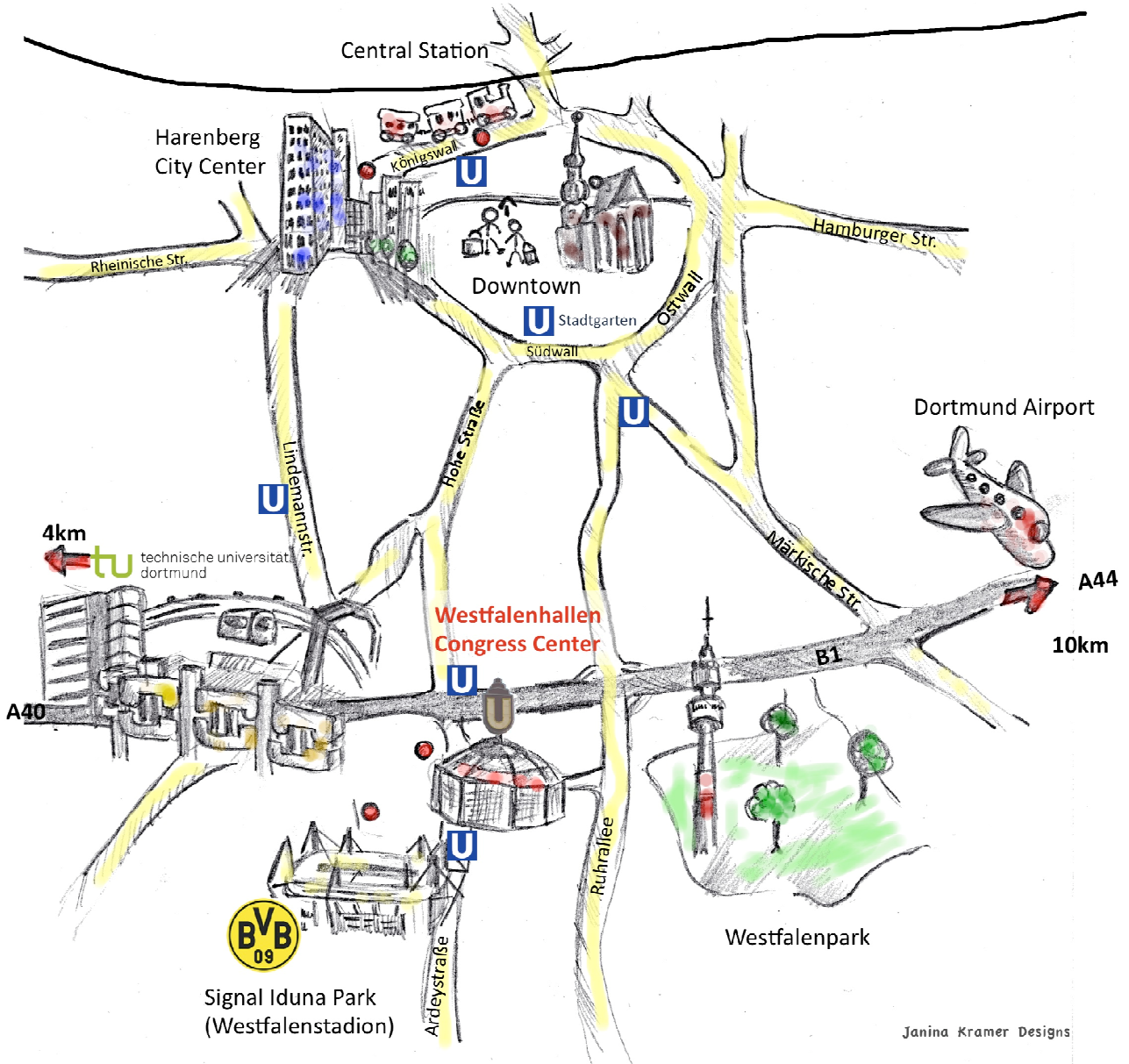


Figure 3: Dortmund City

Conference Program Editors:
Holger Danielsiek
Patrick Koch
Oliver Kramer
Andreas Thom

