

Marco Dorigo Mauro Birattari
Christian Blum Luca M. Gambardella
Francesco Mondada Thomas Stützle (Eds.)

Ant Colony Optimization and Swarm Intelligence

4th International Workshop, ANTS 2004
Brussels, Belgium, September 5 - 8, 2004
Proceedings

4y Springer

Table of Contents

A Comparison Between ACO Algorithms for the Set Covering Problem ...	1
<i>Lucas Lessing, Irina Dumitrescu, and Thomas Stiitzle</i>	
A VLSI Multiplication-and-Add Scheme Based on Swarm Intelligence Approaches.	13
<i>Danilo Pani and Luigi Raffo</i>	
ACO for Continuous and Mixed-Variable Optimization.	25
<i>Krzysztof Socha</i>	
An Ant Approach to Membership Overlay Design.	37
<i>Vittorio Maniezzo, Marco Boschetti, and Mark Jelasity</i>	
An Ant Colony Optimisation Algorithm for the Set Packing Problem. . . .	49
<i>Xavier Gandibleux, Xavier Delorme, and Vincent T'Kindt</i>	
An Empirical Analysis of Multiple Objective Ant Colony Optimization Algorithms for the Bi-criteria TSP.	61
<i>Carlos Garcia-Martinez, Oscar Cordon, and Francisco Herrera</i>	
An External Memory Implementation in Ant Colony Optimization.	73
<i>Adnan Acan</i>	
BeeHive: An Efficient Fault-Tolerant Routing Algorithm Inspired by Honey Bee Behavior.	83
<i>Horst F. Wedde, Muddassar Farooq, and Yue Zhang</i>	
Competition Controlled Pheromone Update for Ant Colony Optimization.	95
<i>Daniel Merkle and Martin Middendorf</i>	
Cooperative Transport of Objects of Different Shapes and Sizes.	106
<i>Roderich Grofi and Marco Dorigo</i>	
Deception in Ant Colony Optimization.	118
<i>Christian Blum and Marco Dorigo</i>	
Evolution of Direct Communication for a Swarm-bot Performing Hole Avoidance.	130
<i>Vito Trianni, Thomas H. Labella, and Marco Dorigo</i>	
Gathering Multiple Robotic A(ge)nts with Limited Sensing Capabilities...	142
<i>Noam Gordon, Israel A. Wagner, and Alfred M. Bruckstein</i>	

X Table of Contents

Improvements on Ant Routing for Sensor Networks.	154
<i>Ying Zhang, Lukas D. Kuhn, and Markus P.J. Fromherz</i>	
Integrating ACO and Constraint Propagation.	166
<i>Bernd Meyer and Andreas Ernst</i>	
Logistic Constraints on 3D Termite Construction.	178
<i>Dan Ladley and Seth Bullock</i>	
Modeling Ant Behavior Under a Variable Environment.	190
<i>Karla Vittori, Jacques Gautrais, Aluizio F.R. Araujo, Vincent Fourcassie, and Guy Theraulaz</i>	
Multi-type Ant Colony: The Edge Disjoint Paths Problem.	202
<i>Ann Nowe, Katja Verbeeck, and Peter Vranckx</i>	
On the Design of ACO for the Biobjective Quadratic Assignment Problem.	214
<i>Manuel Lopez-Ibanez, Luis Paquete, and Thomas Stützle</i>	
Reasons of ACO's Success in TSP.	226
<i>Oswaldo Gomez and Benjamin Bardn</i>	
S-ACO: An Ant-Based Approach to Combinatorial Optimization Under Uncertainty.	238
<i>Walter J. Gutjahr</i>	
Time-Scattered Heuristic for the Hardware Implementation of Population-Based ACO.	250
<i>Bernd Scheuermann, Michael Guntsch, Martin Middendorf, and Hartmut Schmeck</i>	
Short Papers	
Ad Hoc Networking with Swarm Intelligence.	262
<i>Chien- Chung Shen, Chaipom Jaikaeo, Chavalit Srisathapornphat, Zhuochuan Huang, and Sundaram Rajagopalan</i>	
An Ant Colony Heuristic for the Design of Two-Edge Connected Flow Networks.	270
<i>Efstathios Rappos and Eleni Hadjiconstantinou</i>	
An Experimental Analysis of Loop-Free Algorithms for Scale-Free Networks.	278
<i>Shigeo Doi and Masayuki Yamamura</i>	
An Experimental Study of the Ant Colony System for the Period Vehicle Routing Problem.	286
<i>Ana Cristina Matos and Rui Carvalho Oliveira</i>	

An Extension of Ant Colony System to Continuous Optimization Problems.	294
<i>Seid H. Pourtakdoust and Hadi Nobahari</i>	
Ant Algorithms for Urban Waste Collection Routing	302
<i>Joaquin Bautista and Jordi Pereira</i>	
Ants Can Play Music.	310
<i>Christelle Gueret, Nicolas Monmarche, and Mohamed Slimane</i>	
Backtracking Ant System for the Traveling Salesman Problem.	318
<i>Sameh Al-Shihabi</i>	
Colored Ants for Distributed Simulations.	326
<i>Cyrille Bertelle, Antoine Dutot, Frederic Guinand, and Damien Olivier</i>	
Dynamic Routing in Mobile Wireless Networks Using ABC-AdHoc.	334
<i>Bogdan Tatomir and Leon Rothkrantz</i>	
Fuzzy Ant Based Clustering.	342
<i>Steven Schockaert, Martine De Cock, Chris Cornells, and Etienne E. Kerre</i>	
How to Use Ants for Hierarchical Clustering.	350
<i>Hanene Azzag, Christiane Guinot, and Gilles Venturini</i>	
Inversing Mechanical Parameters of Concrete Gravity Dams Using Ant Colony Optimization.	358
<i>Mingjun Tian and Jing Zhou</i>	
Large Pheromones: A Case Study with Multi-agent Physical A*.	366
<i>Ariel Felner, Yaron Shoshani, Israel A. Wagner, and Alfred M. Bruckstein</i>	
Near Parameter Free Ant Colony Optimisation.	374
<i>Marcus Randall</i>	
Particle Swarm Optimization Algorithm for Permutation Flowshop Sequencing Problem.	382
<i>M. Fatih Tasgetiren, Mehmet Sevkli, Yun-Chia Liang, and Gunes Gencyilmaz</i>	
Search Bias in Constructive Metaheuristics and Implications for Ant Colony Optimisation.	390
<i>James Montgomery, Marcus Randall, and Tim Hendtlass</i>	
Task Oriented Functional Self-organization of Mobile Agents Team: Memory Optimization Based on Correlation Feature.	398
<i>Sorinel Adrian Oprisan</i>	

XII Table of Contents

Towards a Real Micro Robotic Swarm.	406
<i>Ramon Estana, Marc Szymanski, Natalie Bender, and Jorg Seyfried</i>	
Posters	
A Hybrid Ant Colony System Approach for the Capacitated Vehicle Routing Problem.	414
<i>Lyamine Bouhafs, Amir Hajjam, and Abderrafaa Koukam</i>	
A Swarm-Based Approach for Selection of Signal Plans in Urban Scenarios.	416
<i>Denise de Oliveira, Paulo Roberto Ferreira Jr., Ana L.C. Bazzan, and Franziska Kliegl</i>	
Ant Colony Behaviour as Routing Mechanism to Provide Quality of Service.	418
<i>Liliana Carrillo, Jose L. Marzo, Lluís Fdbrega, Pere Vila, and Carles Guadall</i>	
Applying Ant Colony Optimization to the Capacitated Arc Routing Problem.	420
<i>Karl F. Doerner, Richard F. Hartl, Vittorio Maniezzo, and Marc Reimann</i>	
Dynamic Optimization Through Continuous Interacting Ant Colony.	422
<i>Johann Dreö and Patrick Siarry</i>	
Dynamic Routing in Traffic Networks Using AntNet	424
<i>Bogdan Tatomir, Ronald Kroon, and Leon Rothkrantz</i>	
First Competitive Ant Colony Scheme for the CARP.	426
<i>Philippe Lacomme, Christian Prins, and Alain Tanguy</i>	
Hypothesis Corroboration in Semantic Spaces with Swarming Agents.	428
<i>Peter Weinstein, H. Van Dyke Parunak, Paul Chiusano, and Sven Brueckner</i>	
Mesh-Partitioning with the Multiple Ant-Colony Algorithm.	430
<i>Peter Korosec, Jurij Silc, and Borut Robic</i>	
Author Index.	433