

# CURRICULUM VITAE

CHRISTIAN BLUM

Last updated: November 2009

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## PERSONAL INFORMATION

**Birth date and place** April 20, 1972. Annweiler, Germany  
**Nationality** German  
**Title** Dr. Dipl.-Math.

**Desk address** ALBCOM research group  
Dept. Llenguatges i Sistemes Informàtics  
Universitat Politècnica de Catalunya  
Jordi Girona 1-3, Omega 112 Campus Nord  
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## NEWS

- In May 2010 I will give an **invited keynote talk** on *Hybrid Metaheuristics* at BIOMA 2010: Bio-inspired Optimization Methods and their Applications (Ljubljana, Slovenia)
- In July 2009 I gave an invited tutorial on **ant colony optimization** at GECCO 2009: Genetic and Evolutionary Computation Conference (Montreal, Canada)
- In September 2008 I gave an **invited tutorial** on *swarm intelligence* at PPSN 2008: Parallel Problem Solving in Nature (Dortmund, Germany)
- In September 2007 I won the **IEEE Transactions on Evolutionary Computation** outstanding paper award for the paper *Search bias in ant colony optimization: On the role of competition-balanced systems*, co-authored with Marco Dorigo
- In 2007 I was **appointed as an associate editor** of the journal *Swarm Intelligence* (Springer)

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## RESEARCH INTERESTS

My main research interests are in **swarm intelligence** methods for optimization (both combinatorial and continuous problems), and in the **hybridization of metaheuristics** with more classical techniques for optimization. My research in swarm intelligence is mainly focused on a technique called **ant colony optimization (ACO)**, whose inspiring source is the shortest path finding ability of real ant colonies. This functionality is used in ACO for tackling combinatorial and continuous optimization problems, but also for tasks such as routing and load balancing in telecommunications networks. As mentioned above, my second line of research is the hybridization of metaheuristics with more classical artificial intelligence and operations research methods such as, for example, branch & bound techniques or dynamic programming. In my opinion, this is one of the currently most promising research directions in the field of metaheuristics. One of the main motivations for hybridization is that a hybrid metaheuristic may provide a more efficient behavior and a higher flexibility when dealing with **real-world and large-scale problems**. However, the field of hybrid metaheuristics is still in its early days. Many approaches are pre-mature and a substantial amount of further research is necessary in order to develop clearly structured hybrid metaheuristics that are more generally applicable.

In terms of **applications** my interests are in (optimization) problems from the fields of scheduling, telecommunications, bio-informatics, and sensor networks. Concerning scheduling, my work focuses on important shop scheduling problems such as **job and open shop scheduling**, but more recently also on industrial problems such as **assembly line balancing**. In the field of telecommunications I have been working on network design problems such as the  **$k$ -cardinality tree problem**, and on shortest path problems such as the **edge-disjoint path problem**. Currently ongoing work includes the **resource constraint shortest path problem** and the **frequency assignment problem in GSM networks**. In the bio-informatics (respectively, bio-medical) field my current work focuses on **DNA sequencing**, and on **training neural networks** for medical pattern classification.

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## EDUCATION

02/2004

**PhD in Applied Sciences**

*Institution:* Université Libre de Bruxelles, Brussels, Belgium

*Dissertation title:* Theoretical and practical aspects of ant colony optimization

*Supervisor:* Prof. M. Dorigo

05/2002

**DEA in Applied Sciences**

(Belgian Diplôme d'Etudes Approfondies en Sciences Appliquées)

*Institution:* Université Libre de Bruxelles, Brussels, Belgium

*Dissertation title:* Metaheuristics for group shop scheduling

*Supervisor:* Prof. M. Dorigo

- 07/1998      **Diplom in Mathematik**  
(German equivalent to a Masters degree in Mathematics)
- Institution:* Universität Kaiserslautern, Kaiserslautern, Germany  
*Dissertation title:* Optimality criteria and local search methods for node-weighted  $k$ -cardinality tree and subgraph problems (in German)  
*Supervisor:* Prof. H. W. Hamacher
- 10/1994      **Vordiplom in Mathematik**  
(degree necessary to obtain a diploma)
- Institution:* Johannes-Gutenberg Universität Mainz, Mainz, Germany
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## RESEARCH EXPERIENCE

- From 12/2006      **Research Fellow**
- Institution:* LSI, Universitat Politècnica de Catalunya, Barcelona, Spain  
*Funding:* Programa **Ramon y Cajal**, a program of the Spanish Ministry of Science and Technology
- 12/2004–11/2006      **Post-doctoral Research Fellow**
- Institution:* LSI, Universitat Politècnica de Catalunya, Barcelona, Spain  
*Funding:* Programa **Juan de la Cierva**, a program of the Spanish Ministry of Science and Technology  
*Remark:* 1st place in the list of evaluated applications
- 07/2004–11/2004      **Post-doctoral Researcher**
- Institution:* LSI, Universitat Politècnica de Catalunya, Barcelona, Spain  
*Funding:* Project “SegraVis”, a research training network funded by the European Commission
- 02/2004–06/2004      **Post-doctoral Researcher**
- Institution:* IRIDIA, Université Libre de Bruxelles, Brussels, Belgium  
*Funding:* Project “Metaheuristics Network”, a research training network funded by the European Commission

11/2000–01/2004    **Pre-doctoral Researcher**

*Institution:* IRIDIA, Université Libre de Bruxelles, Brussels, Belgium

*Funding:* Project “Metaheuristics Network”, a research training network funded by the European Commission

10/1997–04/1998    **Scientific Assistant**

*Institution:* Working group of Prof. H. W. Hamacher, Universität Kaiserslautern, Kaiserslautern, Germany

04/1997–06/1997    **Scientific Assistant**

*Institution:* DFKI (German Research Institute for Artificial Intelligence), Kaiserslautern, Germany

*Funding:* German project ”PRODUKTION 2000, GIPP-S1”

01/1996–04/1997    **Scientific Assistant**

*Institution:* Centre for Learning Systems and Applications, Kaiserslautern, Germany

*Funding:* Project “Diagnosis and monitoring of ulnar nerve lesions”

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## PROFESSIONAL EXPERIENCE

10/1999–09/2000    **Scientific Officer**

*Institution:* Imperial Cancer Research Fund (ICRF), Advanced Computation Laboratory, London, United Kingdom

*Task:* Interfacing of a clinical decision support systems with an electronic patient record systems

03/1995–04/1995    **Practical Training**

*Company:* BASF AG, Department of Molecular Modelling, Ludwigshafen, Germany

*Task:* Development of optimization software for the determination of molecule structures

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## RESEARCH PROJECT PARTICIPATIONS

Since 2009

Integrated action grant **AI-ES-AT**, contract MEC HA2008-0005

*Scientist in charge:* Christian Blum (UPC, Barcelona)

- Since 2008 MICINN project **FORMALISM**, contract TIN-2007-66523  
*Scientist in charge:* Fernando Orejas (UPC, Barcelona)
- Since 2008 EU-funded project **FRONTS**, contract EU FP7-ICT-2007-1  
*Scientist in charge:* Josep Diaz (UPC, Barcelona)
- Since 2008 EU-funded project **WISEBED**, contract EU FP7-ICT-2007-1  
*Scientist in charge:* Josep Diaz (UPC, Barcelona)
- Since 2006 CICYT project **OPLINK**, contract TIN-2005-08818-C04  
*Scientist in charge:* Enrique Alba Torres (UMA, Málaga)
- 07/2004–11/2005 CICYT project **TRACER**, contract TIC-2002-04498-C05  
*Scientist in charge:* Joaquim Gabarró (UPC, Barcelona)
- 07/2004–11/2004 EU-funded research training network **SegraVis**,  
contract HPRN-CT-2002-00275  
*Scientist in charge:* Fernando Orejas (UPC, Barcelona)
- 11/2000–06/2004 EU-funded research training network **Metaheuristics Network**,  
contract HPRN-CT-1999-00106  
*Scientist in charge:* Marco Dorigo (ULB, Belgium)
- 04/1997–06/1997 German project **PRODUKTION 2000, GIPP-S1**,  
contract FKZ-02PV41092  
*Scientist in charge:* Harold Boley (DFKI GmbH, Germany)

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## EDITORIAL ACTIVITIES

- 03/2010 **Co-editor** of a special issue on “Hybrid Metaheuristics” in the journal Computers & Operations Research (vol 37, issue 3, 2010)
- 10/2009 **Co-editor** of the proceedings of Hybrid Metaheuristics (HM) 2009 (LNCS 5818)
- 07/2009 **Co-editor** of the proceedings of the 2009 Genetic and Evolutionary Computation Conference (GECCO 2009), published by ACM press
- 10/2008 **Co-editor** of the proceedings of Hybrid Metaheuristics (HM) 2008 (LNCS 5296)
- 09/2008 **Co-editor** of the proceedings of ANTS 2008: Sixth International Workshop on Ant Colony Optimization and Swarm Intelligence (LNCS)

- 09/2008      **Co-editor** of the book *Swarm Intelligence–Introduction and Applications* published by Springer Verlag
- 05/2008      **Co-editor** of the book *Hybrid Metaheuristics–An Emerging Approach to Optimization* published by Springer Verlag
- 10/2007      **Co-editor** of the proceedings of Hybrid Metaheuristics (HM) 2007 (LNCS 4771)
- Since 12/2006      **Associate editor** of the Swarm Intelligence journal (Springer)
- 10/2006      **Co-editor** of the proceedings of Hybrid Metaheuristics (HM) 2006 (LNCS 4030)
- Since 07/2006      **Member of the editorial board** of the International Journal of Innovative Computing and Applications (IJICA)
- 07/2006      **Co-editor** of the proceedings of the 2006 Genetic and Evolutionary Computation Conference (GECCO 2006), published by ACM press
- 04/2006      **Co-editor** of a special issue on “Hybrid Metaheuristics” in the Journal of Mathematical Modelling and Algorithms (vol 5, issue 1, 2006)
- Since 02/2006      **Member of the editorial board** of the ISE book series on Intelligent System Engineering (by NOVA publishers, NY, USA)
- 12/2005      **Co-editor** of a special issue on “Swarm Intelligence” in the journal Künstliche Intelligenz, the journal of the AI section of the German Society for Informatics (vol 4, 2005)
- 08/2005      **Co-editor** of the proceedings of Hybrid Metaheuristics (HM) 2005 (LNCS 3636)
- Since 08/2005      **Member of the editorial board** of the journal Computers & Operations Research (Elsevier)
- 06/2005      **Co-editor** of the proceedings of the 2005 Genetic and Evolutionary Computation Conference (GECCO 2005), published by ACM press.
- 09/2004      **Co-editor** of the proceedings of ANTS 2004: Fourth International Workshop on Ant Algorithms (LNCS 3172)
- 08/2004      **Co-editor** of the proceedings of Hybrid Metaheuristics (HM 2004) (ISBN 3-00-015331-4)

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## ORGANIZATIONAL ACTIVITIES

- 01/2010            **Chair of the Program Committee** of Learning and Intelligent Optimization (LION 4), (Venice, Italy)
- 10/2009            **Program co-chair** of the 6th International Workshop on Hybrid Metaheuristics (HM 2009), (Udine, Italy)
- 07/2009            **Co-chair** of the “Combinatorial Optimization” track of GECCO 2009: Genetic and Evolutionary Computation Conference (Montreal, Canada)
- 10/2008            **Program co-chair** of the 5th International Workshop on Hybrid Metaheuristics (HM 2008), (Málaga, Spain)
- 09/2008            **Program co-chair** of the Sixth International Conference on Ant Colony Optimization and Swarm Intelligence (ANTS 2008), (Brussels, Belgium)
- 10/2007            **Program co-chair** of the 4th International Workshop on Hybrid Metaheuristics (HM 2007), (Dortmund, Germany)
- 02/2007            **Organizer** of a special session on *hybrid metaheuristics* at the Congreso Español sobre Metaheurísticas, Algoritmos Evolutivos y Bioinspirados (MAEB 2007), (Tenerife, Spain)
- 10/2006            **Co-organizer** of the 3rd international workshop on Hybrid Metaheuristics (HM 2006), (Gran Canaria, Spain)
- 07/2006            **Chair** of the “ACO”/“swarm intelligence” track of GECCO 2006: Genetic and Evolutionary Computation Conference (Seattle, USA)
- 08/2005            **Co-organizer** of the 2nd international workshop on Hybrid Metaheuristics (HM 2005), (Barcelona, Spain)
- 06/2005            **Chair** of the “ACO”/“swarm intelligence” track of GECCO 2005: Genetic and Evolutionary Computation Conference (Washington, USA)
- 09/2004            **Publication co-chair** of ANTS 2004: Fourth International Workshop on Ant Algorithms (Brussels, Belgium)
- 08/2004            **Co-organizer** of the workshop Hybrid Metaheuristics (HM 2004) at ECAI 2004 (Valencia, Spain)
- 09/2002            **Member** of the *Local Organizations Committee* of ANTS 2002: 3rd International Workshop on Ant Algorithms (Brussels, Belgium)

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## PROGRAM COMMITTEES

- 09/2010      **Member** of the *Program Committee* of PPSN 2010: Eleventh International Conference on Parallel Problem Solving From Nature (Krakow, Poland)
- 09/2010      **Member** of the *Program Committee* of ANTS 2010: Seventh International Conference on Swarm Intelligence (Brussels, Belgium)
- 08/2010      **Member** of the *Program Committee* of HIS 2010: 9th International Conference on Hybrid Intelligent Systems (Atlanta, USA)
- 07/2010      **Member** of the *Program Committee* of GECCO 2010: Genetic and Evolutionary Computatution Conference (Portland, USA)
- 06/2010      **Member** of the *Program Committee* of ICSI 2010: International Conference on Swarm Intelligence (Beijing, China)
- 05/2010      **Member** of the *Program Committee* of BIOMA 2010: The 4th International Conference on Bioinspired Optimization Methods and their Applications (Ljubljana, Slovenia)
- 04/2010      **Member** of the *Program Committee* of EvoTRANSLOG 2010: 2nd International Workshop on Evolutionary Computation in Logistics (Istanbul, Turkey)
- 03/2010      **Member** of the *Program Committee* of BIOTECH 2010: The Second International Conference on Advances in Biotechnologies (Cancun, Mexico)
- 11/2009      **Member** of the *Program Committee* of CAEPIA-TTIA 2009: 13th Conference of the Spanish Association of Artificial Intelligence (Seville, Spain)
- 10/2009      **Member** of the *Program Committee* of ICEC 2009: International Conference on Evolutionary Computation (Madeira, Portugal)
- 10/2009      **Member** of the *Program Committee* of EMERGING 2009: First International Conference on Emerging Network Intelligence (Sliema, Malta)
- 10/2009      **Member** of the *Program Committee* of MEDES 2009: The International ACM Conference on Management of Emergent Digital EcoSystems (Lyon, France)
- 09/2009      **Member** of the *Program Committee* of SLS 2009: 2nd International Workshop on Engineering Stochastic Local Search Algorithms (Brussels, Belgium)

- 05/2009      **Member** of the *Program Committee* of CEC 2009: IEEE Congress on Evolutionary Computation (Trondheim, Norway)
- 04/2009      **Member** of the *Program Committee* of EvoCOP 2009: 9th European Conference on Evolutionary Computation in Combinatorial Optimization (Tübingen, Germany)
- 03/2009      **Member** of the *Program Committee* of SIS 2009: IEEE Symposium on Swarm Intelligence (Nashville, USA)
- 02/2009      **Member** of the *Program Committee* of MAEB 2009: VI Congreso Español sobre Metaheurísticas, Algoritmos Evolutivos y Bioinspirados (Malaga, Spain)
- 01/2009      **Member** of the *Program Committee* of LION 3: Intelligent Learning and Optimization (Trento, Italy)
- 11/2008      **Member** of the *Program Committee* of ISDA 2008: International Conference on Intelligent Systems Design and Applications (Kachsiung, Taiwan)
- 10/2008      **Member** of the *Program Committee* of CSTST 2008: Fifth International Conference on Soft Computing as Transdisciplinary Science and Technology (Paris, France)
- 10/2008      **Member** of the *Program Committee* of META 2008: 2nd International Conference on Metaheuristics and Nature Inspired Computing (Hammamet, Tunisia)
- 09/2008      **Member** of the *Program Committee* of ANTS 2008: Sixth International Conference on Ant Colony Optimization and Swarm Intelligence (Brussels, Belgium)
- 09/2008      **Member** of the *Program Committee* of PPSN 2008: International Conference on Parallel Processing in Nature (Dortmund, Germany)
- 07/2008      **Member** of the *Program Committee* of GWAL 2008: 8th German Workshop on Artificial Life (Leipzig, Germany)
- 07/2008      **Member** of the *Program Committee* of HEUNET 2008: Workshop on Heuristic Methods for the Design, Deployment, and Reliability of Networks and Network Applications (Turku, Finland)
- 07/2008      **Member** of the *Program Committee* of GECCO 2008: Genetic and Evolutionary Computation Conference (Atlanta, USA)

- 04/2008      **Member** of the *Program Committee* of EvoCOP 2008: 7th European Conference on Evolutionary Computation in Combinatorial Optimization (Naples, Italy)
- 10/2007      **Member** of the *Program Committee* of WSC12: 12th Online World Conference on Soft Computing in Industrial Applications (World Wide Web)
- 10/2007      **Member** of the *Program Committee* of ISDA 2007: International Conference on Intelligent Systems Design and Applications (Rio de Janeiro, Brasil)
- 09/2007      **Member** of the *Program Committee* of CEC 2007: IEEE Congress on Evolutionary Computation (Singapore, Malaysia)
- 09/2007      **Member** of the *Program Committee* of SLS 2007: International Workshop on Stochastic Local Search (London, UK)
- 07/2007      **Member** of the *Program Committee* of GECCO 2007: Genetic and Evolutionary Computation Conference (London, UK)
- 04/2007      **Member** of the *Program Committee* of EvoCOP 2007: 6th European Conference on Evolutionary Computation in Combinatorial Optimization (Valencia, Spain)
- 04/2007      **Member** of the *Program Committee* of SIS 2007: IEEE Swarm Intelligence Symposium (Hawaii, US)
- 02/2007      **Member** of the *Program Committee* of MAEB 2007: IV Congreso Español de Metaheurísticas, Algoritmos Evolutivos y Bioinspirados (Tenerife, Spain)
- 11/2006      **Member** of the *Program Committee* of CIS 2006: International Conference on Computational Intelligence and Security (Guangzhou, China)
- 09/2006      **Member** of the *Program Committee* of ANTS 2006: Fifth International Conference on Ant Colony Optimization and Swarm Intelligence (Brussels, Belgium)
- 09/2006      **Member** of the *Program Committee* of PPSN 2006: International Conference on Parallel Processing in Nature (Reykjavik, Iceland)
- 09/2006      **Member** of the *Program Committee* of WSC11: 11th Online World Conference on Soft Computing in Industrial Applications (World Wide Web)
- 07/2006      **Member** of the *Program Committee* of CEC 2006: IEEE Congress on Evolutionary Computation (Vancouver, Canada)

- 05/2006      **Member** of the *Program Committee* of WEA 2006: 5th International Workshop on Efficient and Experimental Algorithms (Menorca Island, Spain)
- 04/2006      **Member** of the *Program Committee* of EvoCOP 2006: 5th European Conference on Evolutionary Computation in Combinatorial Optimization (Budapest, Hungary)
- 10/2005      **Member** of the *Program Committee* of LSCS 2005: Second International Workshop on Local Search Techniques in Constraint Satisfaction (Sitges, Spain)
- 10/2005      **Member** of the *Program Committee* of EA 2005: International Conference on Artificial Evolution (Lille, France)
- 09/2005      **Member** of the *Program Committee* of WSC10: 10th Online World Conference on Soft Computing in Industrial Applications (World Wide Web)
- 09/2005      **Member** of the *Program Committee* of MAEB 2005: IV Congreso Español de Metaheurísticas, Algoritmos Evolutivos y Bioinspirados (Granada, Spain)
- 08/2005      **Member** of the *Program Committee* of MIC 2005: 6th Metaheuristics International Conference (Vienna, Austria)
- 07/2005      **Member** of the *Program Committee* of AD 2005: Agent Days (Malaga, Spain)
- 03/2005      **Member** of the *Program Committee* of EvoCOP 2005: 5th European Conference on Evolutionary Computation in Combinatorial Optimization (Lausanne, Switzerland)
- 09/2004      **Member** of the *Program Committee* of PPSN 2004: International Conference on Parallel Processing in Nature (Birmingham, UK)
- 09/2004      **Member** of the *Program Committee* of ANTS 2004: Fourth International Workshop on Ant Algorithms (Brussels, Belgium)

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## REFEREE ACTIVITIES

- Conferences**      Belgian-Dutch Conference on Artificial Intelligence (BNAIC 2001)
- non-PC member**      Metaheuristics International Conference (MIC 2001)
- First International Joint Conference on Autonomous Agents and Multi-Agent Systems (AAMAS 2002)

From Ant Colonies to Artificial Ants: 3rd International Workshop on Ant Algorithms (ANTS 2002)  
Belgian-Dutch Conference on Artificial Intelligence (BNAIC 2002)  
Congress on Evolutionary Computation (CEC 2002)  
Genetic and Evolutionary Computation Conference (GECCO 2002)  
Parallel Processing from Nature (PPSN 2002)  
First Australian Conference on Artificial Life (ACAL 2003)  
American Control Conference (ACC 2003)  
3rd European Workshop on Evolutionary Computation in Combinatorial Optimization (EvoCOP 2003)  
Evolutionary Computation in Combinatorial Optimization, 4th European Conference (EvoCOP 2004)  
International Conference on Computer Aided Design (ICCAD 2004)

## **Journals**

Annals of Operations Research  
Artificial Life  
Computational Optimization and Applications  
Computer Science Reviews  
Computers & Operations Research  
Constraints  
European Journal of Operational Research  
Evolutionary Computing  
IEEE Transactions on Evolutionary Computation  
IEEE Transactions on Systems, Man and Cybernetics – Part B  
Information Processing Letters  
Information Sciences  
INFORMS Journal on Computing  
International Journal of Approximate Reasoning  
International Journal of Control, Automation, and Systems  
International Journal of Production Research  
International Journal of Systems Science  
Journal of Artificial Intelligence Reviews  
Journal of Engineering Manufacture  
Journal of Experimental Algorithmics  
Journal of Heuristics  
Journal of Mathematical Modelling and Algorithms  
Journal of Scheduling  
Journal of Sound and Vibration  
Management Science  
Memetic Computing  
Networks  
Neurocomputing  
Novatica  
Optimization Letters  
Pattern Analysis and Applications

Soft Computing  
Swarm Intelligence

**Projects** Project referee for the Austrian Science Fund

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#### TUTORIALS

- 07/2009 Invited tutorial on *ant colony optimization* at GECCO 2009: Genetic and Evolutionary Computation Conference (Montreal, Canada)
- 09/2008 Invited tutorial *Swarm Intelligence* at PPSN 2008: Parallel Problem Solving in Nature (Dortmund, Germany)
- 09/2007 Invited tutorial *Ant colony optimization: Introduction and recent hybridizations* at HIS 2007: Hybrid Intelligent Systems (Kaiserslautern, Germany)
- 07/2007 Invited tutorial on *ant colony optimization* at GECCO 2007: Genetic and Evolutionary Computation Conference (London, UK)
- 07/2006 Invited tutorial on *ant colony optimization* at GECCO 2006: Genetic and Evolutionary Computation Conference (Seattle, USA)
- 11/2005 Tutorial *Ant colony optimization: Introduction and recent advances* at HIS 2005: Hybrid Intelligent Systems (Rio de Janeiro, Brasil)
- 06/2005 Invited tutorial on *ant colony optimization* at GECCO 2005: Genetic and Evolutionary Computation Conference (Washington, USA)
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#### INVITED TALKS AND PANEL DISCUSSIONS

- 05/2010 Keynote talk on *Hybrid metaheuristics* at BIOMA 2010, Ljubljana, Slovenia. Invited by **Jurij Silc**
- 12/2009 Talk on *Solving the k-cardinality tree problem*, EPFL, Lausanne, Switzerland. Invited by **Pascal Fua**
- 06/2009 Talk on *Integrating Beam-ACO with constraint programming for single machine job scheduling*, University of Viena, Austria. Invited by **Richard Hartl**

- 06/2009      Talk on *Integrating Beam-ACO with constraint programming for single machine job scheduling*, Technical University of Viena, Austria. Invited by **Günther Raidl**
- 09/2008      Talk on *Ant colony optimization hybrids* at ANTS 2008, Brussels, Belgium. Invited by **Marco Dorigo**
- 07/2008      Talk on *Ant colony optimization*, Center for Genomic Regulation, Comparative Bioinformatics Group, Barcelona. Invited by **Cedric Notredame**
- 01/2008      Talk on *Beam-ACO: Hybridizing ant colony optimization with beam search*, University of Viena, Austria. Invited by **Karl Dörner and Richard Hartl**
- 12/2007      Talk on *Beam-ACO: A hybrid between ant colony optimization and beam search*, University of Porto, Portugal. Invited by **Joao Pedroso**
- 09/2007      Member of a panel discussion on *The future and challenges of stochastic local search engineering* at SLS 2007, Brussels, Belgium. Invited by **Holger Hoos and Thomas Stützle**
- 03/2006      Talk on *Introduction to ant colony optimization*, University of Trento, Italy. Invited by **Roberto Battiti**

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#### PARTICIPATIONS IN PHD DEFENSE JURIES

- 06/2008      **Todd James Treangen**, *Novel Computational Methods for Large-Scale Genome Comparison*
- 05/2007      **Stephen Gilmore**, *Meshing Structural Knowledge And Heuristics: Improving Ant Colony Optimization Via Kernelization-Based Templates*

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#### TEACHING

- Fall 2009      Programming in C++ (P1), Facultat d'Informàtica, UPC, Barcelona (56 hours)
- Fall 2009      Responsible professor for "Seminar of Algorithms and Programming" (SAP), Master program on software, Department LSI, UPC, Barcelona
- Spring 2009      Programming in C++ (P1), Facultat d'Informàtica, UPC, Barcelona (28 hours)

|             |   |
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| Spring 2009 | Algoritmia (ALG), Facultat d'Informàtica, UPC, Barcelona (22 hours)   |
| Fall 2009   | Programming in C++ (P1), Facultat d'Informàtica, UPC, Barcelona (56 hours)  |
| Fall 2009   | 16 hours module on <i>metaheuristics</i> within the "Seminar of Algorithms and Programming" (SAP), Master program on software, Department LSI, UPC, Barcelona |
| Spring 2008 | Algoritmia (ALG), Facultat d'Informàtica, UPC, Barcelona (22 hours)   |
| Fall 2007   | 16 hours module on <i>metaheuristics</i> within the "Seminar of Algorithms and Programming" (SAP), Master program on software, Department LSI, UPC, Barcelona |
| Spring 2007 | Algoritmia (ALG), Facultat d'Informàtica, UPC, Barcelona (20 hours)   |
| Fall 2006   | Informàtica I, Facultat de Matemàtiques i Estadístiques , UPC, Barcelona (28 hours)   |
| Fall 2006   | 12 hours module on <i>metaheuristics</i> within the "Seminar of Algorithms and Programming" (SAP), Master program on software, Department LSI, UPC, Barcelona |
| 03/2006     | 20 hours course on <i>metaheuristics</i> , Universidad de Málaga, Málaga, Spain (2 credits)   |
| 05/2004     | 2 hours course for undergraduate students on <i>metaheuristics in combinatorial optimization</i> , Universitat Politècnica de Catalunya, Barcelona, Spain     |
| 02/2004     | 2 hours course for PhD students on <i>metaheuristics in combinatorial optimization</i> at the Universitat Politècnica de Catalunya, Barcelona, Spain          |
| 11/2003     | 3 hours course for undergraduate students on <i>metaheuristics in combinatorial optimization</i> , Université Libre de Bruxelles, Brussels, Belgium           |

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#### FORMER MASTER STUDENTS

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|---------|--|
| 07/2008 | <b>Hugo Hernández Pibernat</b> , <i>Ant Colony Optimization for Energy-Efficient Multi-Casting in Wireless Ad-Hoc Networks</i> |
| 07/2008 | <b>Pedro Jesús Copado Méndez</b> , <i>Hibridación de la Metaheurística ACO para el Shortest Capacitated Paths Problem</i>      |

07/2006

**Mateu Yábar Vallès**, *Ant Colony Optimization for DNA Sequencing by Hybridization*

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#### CURRENT PHD STUDENTS

Since 07/2008

**Hugo Hernández Pibernat**, *Swarm Intelligence Methods for the Management of Large-Scale Sensor Networks*

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#### SUPERVISION OF OTHER PROJECTS

03/2004

**Co-supervisor** of a pilot project on hybridizing ant colony optimization and constraint programming. In cooperation with Bernd Meyer, Monash University, Australia

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#### VARIOUS

##### **Programming**

**Java** (Swing, RMI, Jini, CORBA, JDBC, XML DOM)

*Experience: 3 years*

**C++** (development of optimization software)

*Experience: 10 years*

**Smalltalk** (development of AI applications)

*Experience: 3 years*

Basic knowledge of **Pascal, Modula2, Fortran, Lisp, Prolog**

##### **Languages**

**German** (mother language)

**English** (fluent, written and spoken)

**Spanish** (fluent, written and spoken)

**French** (basic knowledge)

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## PUBLICATIONS

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### THESES

- [1] C. Blum. Optimality criteria and local search methods for node-weighted  $k$ -cardinality tree and subgraph problems. Master's thesis, Department of Mathematics, University of Kaiserslautern, Germany, 1998. Thesis to obtain the title of a Diplom-Mathematiker (in german).
- [2] C. Blum. Metaheuristics for Group Shop Scheduling. Master's thesis, IRIDIA, Université Libre de Bruxelles, Brussels, Belgium, 2002. Thesis to obtain the Diplôme d'Etudes Approfondies en Sciences Appliquées (DEA).
- [3] C. Blum. *Theoretical and Practical Aspects of Ant Colony Optimization*. PhD thesis, IRIDIA, Université Libre de Bruxelles, Brussels, Belgium, February 2004.

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### BOOKS

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