

Luca Maria Gambardella's Curriculum Vitae

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GENERAL INFORMATION

Name Luca Maria Gambardella
Born January 4th, 1962, Saronno, Varese, Italy
Family Married with Daria Maria Antonioli, two children (Matteo 1993, Marta 1998)
Address *Home:* V.le Marconi 30, 21049 Tradate, Varese, Italy. Tel. +39 0331 810467
Office: IDSIA, Galleria 2, 6928 Lugano-Manno, Switzerland
Tel. +41 91 6108663 Fax +41 91 6108661
e-mail:luca@idsia.ch <http://www.idsia.ch/luca>

EDUCATION

2006 Adjunct Professor at the Informatics Faculty at the University of Lugano.
2003 Professor SUPSI, University of Applied Science of Southern Switzerland.
1980-85 Laurea in Scienze dell'Informazione at the Università degli Studi di Pisa, Facoltà di Scienze Matematiche Fisiche e Naturali, Italy.
1980 Scientific Licence at Scientific Liceum G.B. Grassi, Saronno, Italy.

WORK EXPERIENCE

2007- Director of the Intelligent System Master, University of Lugano.
2006-now Technology consultant for TicinoTransfer. Interface between academic institutions and industrial partners to introduce and promote innovation.
1995-now Director at IDSIA, Istituto Dalle Molle di Studi sull'Intelligenza Artificiale, USI-SUPSI, Lugano, Switzerland.
2001 Chief Scientific Officer and Directory board of AntOptima sa, a spin-off of IDSIA.
1992 Selected for a two-months Visiting Senior Scientist at the International Computer Science Institute (ICSI), Berkeley, California.
1988-1995 Research Director at IDSIA, Lugano, Switzerland.
1986-88 CEO of Archimede sas. Consultant in Expert Systems, Artificial Intelligence, Lisp, Object Oriented Programming.

TEACHING EXPERIENCE

2008- Lecture the Heuristics semester course in the Intelligent System Master, Informatics Faculty, University of Lugano.
2006-now Lecture the bachelor module in Artificial Intelligence in the Knowledge Management semester course, Informatics Faculty, University of Lugano.
2006 Lecture the master and PHD semester course in Applications of Discrete Optimization. Milan Polytechnic.
1998-now Lecture the annual course of Algorithms II, DTI, Department of Technology and Innovation of the University of Applied Science of Southern Switzerland.

CURRENT RESEARCH TOPICS

- Meta-heuristic Algorithms for combinatorial optimization problems.
- Simulation and Scheduling for logistic and routing problems.
- Mobile Robot Navigation, Swarm Intelligence and Collective Robotics Tasks.
- Ad hoc networks, power aware computing.

MANAGEMENT EXPERIENCES

- Director of IDSIA (approximately 50 staff members)
- He has been awarded more than 8 millions CHF in research funding for his research lab, (including other labs and partners the total amounts to more than 20 millions CHF).
- He has been awarded 16 Swiss National Science Foundation projects (14 as principal investigator), 7 European Projects, 5 CTI Projects (3 as principal investigator), 1 Hasler Foundation Project, 5 Industrial projects (5 as principal investigator).

- Supervisor of 10 PhD theses (many in progress)
- Responsible for USI Master in Intelligent Systems, SUPSI Master in Applied Informatics and SUPSI Master Research Unit in Intelligent Systems and networking.
- Chairman of 10 international conferences and in the program committee of 41 conferences.
- Since 2011 president of the Swiss Operations Research Society (SVOR/ASRO).

CITATIONS

- He has proposed and published several state of the art bio-inspired distributed optimization algorithms for the travelling salesman problem, the vehicle routing problem with time windows, the quadratic assignment problem, the sequential ordering problems, and the flexible job shop problem.
- He has published 186 papers including peer review journals (52) international conferences (124) and book chapters (10).
- The total number of citations to his papers is more than 13,000 (source: Google scholar). His h-number is 39.
- His paper on Ant Colony Optimization (IEEE 1997) received more than 4,200 citations and it is the second most cited paper ever published by the IEEE Transactions on Evolutionary Computation.
- His paper on Ant Colony Optimization (Artificial Life 1999) received more than 1,800 citations and it is the most cited paper ever published by the Artificial Life journal.

INTERNATIONAL JOURNALS

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51 A. Giusti, P. Taddei, C. Magli, G. Corani, L. Gambardella, L. Gianaroli, Artificial Defocus for Displaying Markers in Microscopy Z-Stacks. IEEE Transactions on Visualization and Computer Graphics (TVCG), 2012 (to appear)

50 D. Anghinolfi, R. Montemanni, M. Paolucci and L.M. Gambardella, A Hybrid Particle Swarm Optimization approach for the Sequential Ordering Problem Computers and Operations Research 38(7), 1076-1085, 2011

49 A. Giusti, C. Magli, G. Corani, L. Gambardella, L. Gianaroli, Observing the 3-Dimensional Morphology of 4-Cell Embryos using Computer Analysis of Image Z-Stacks. Human Reproduction (Supplement: Abstract book) vol.26 2011.

48 Ducatelle F., Di Caro G.A., Pinciroli C., Gambardella L., Self-organized cooperation in robotic swarms, Swarm Intelligence Journal, Volume 5, Issue 2, pp. 73-96, 2011

47 M. Dorigo, M. Birattari, G. A. Di Caro, R. Doursat, A. Engelbrecht, L. M. Gambardella, R. Gross, E. Sahin, T. Stuetzle (Eds.), Editorial, ANTS 2010 Special Issue , Swarm Intelligence, Springer, Vol. 5, N. 3-4, 2011

46 Ciresan, D. C., U. Meier, L. M. Gambardella & J. Schmidhuber. 2010. Deep Big Simple Neural Nets For Handwritten Digit Recognition. Neural Computation 22(12): 3207-3220.

45 A. de Moura Meneses, L. M. Gambardella, R. Schirru, A Class-Based Search for the In-Core Fuel Management Optimization of a Pressurized Water Reactor, Annals of Nuclear Energy, Volume 37, Issue 11, November 2010, Pages 1554-1560

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- 43 A. de Moura Meneses, C. J. G. Pinheiro, P. Rancoita, T. Schaul, L. M. Gambardella, R. Schirru, Assessment of neural networks training strategies for histomorphometric analysis of synchrotron radiation medical images. *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, Volume 621, Issues 1-3, 1 September 2010-21 September 2010, Pages 662-669
- 42 A de Moura Meneses, L.M. Gambardella, R. Schirru. A new approach for heuristics-guided search in the In-Core Fuel Management Optimization, *Progress in Nuclear Energy* 52 (2010) 339–351
- 41 Engelbrecht, A., Li, X., Gambardella, L. and Middendorf, M. (2009), Guest editorial: "Special Issue: Swarm Intelligence", *IEEE Transactions on Evolutionary Computation*, 13(13): 676-677, August 2009.
- 40 R. Montemanni, D.H. Smith, A.E. Rizzoli and L.M. Gambardella. Sequential Ordering Problems for Crane Scheduling in Port Terminals. *International Journal of Simulation and Process Modelling*, Volume 5, Number 4 / 2009 pp. 348 – 361.
- 39 R. Montemanni and L.M. Gambardella. Ant Colony System for Team Orienteering Problems with Time Windows. *Foundations of Computing and Decision Sciences* 34, 2009.
- 38 L.M. Gambardella, A. Hertz, F. Maffray, M. Widmer, 2009, Sixth International Conference on Graphs and Optimization 2007: Foreward, *Discrete Applied Mathematics* 157(17), 3495-3496.
- 37 Montemanni R., Smith D.H., Gambardella L.M, A heuristic manipulation technique for the sequential ordering problem, *Computers and Operations Research*, Volume 35, Number 12, December 2008, 3931-3944
- 36 Bianchi L., Dorigo M., Gambardella L.M., and Gutjahr W.j, A survey on metaheuristics for stochastic combinatorial optimization.. *Natural Computing*, July 2008.
- 35 Donati A.V., Montemanni R., Casagrande N., Rizzoli A.E. and Gambardella L.M.. Time dependent vehicle routine problem with a multi ant colony system, *European Journal of Operational Research*, 185 (3), p.1174-1191, March 2008
- 34 A.E. Rizzoli, R. Montemanni, E. Lucibello and L.M. Gambardella. Ant Colony Optimisation for real world vehicle routing problems: from theory to applications. *Swarm Intelligence*, Vol. 1, No 2, p. 135-151, December 2007.
- 33 Montemanni R., Barta J., Mastrolilli M. and Gambardella L.M., The robust traveling salesman problem with interval data, *Transportation Science*, Vol . 41, No 3, pp. 366-381, August 2007.
- 32 Babaoglu O., Canright G., Deutsch A., Di Caro G., Ducatelle F., Gambardella L.M., Ganguly N., Jelasity M., Montemanni R., Montessor A. and Urnes T.. Design patterns from biology for distributed computing. *ACM Transactions on Autonomous and Adaptive Systems*, Vol.1, No.1, 26-66, September 2006.
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- 30 Montemanni R., Gambardella L.M., Rizzoli A.E. and Donati A.V.. Ant colony system for a dynamic vehicle routing problem. *Journal of Combinatorial Optimization*, 10, 327-343, December 2005.

- 29 Di Caro G.A., Ducatelle F., Gambardella L.M., BISON: Biology-Inspired techniques for Self-Organization in dynamic Networks, *Kuenstliche Intelligenz*, Special Issue on Swarm Intelligence, Vol 4, November 2005.
- 28 Mondada, F., Gambardella, L.M., Floreano, D., Nolfi, S., Deneubourg, J-L., and Dorigo, M., The Cooperation of Swarm-Bots: Physical Interactions in Collective Robotics. *IEEE Robotics & Automation Magazine.*, Vol. 12, No 2, 21-28, 2005
- 27 Ducatelle, F. and Gambardella, L. M. Survivable Routing in IP-over-WDM Networks: An Efficient and Scalable Local Search Algorithm. *Optical Switching and Networking*, Volume 2, Pages 86-99, 2005.
- 26 Montemanni R and Gambardella L.M.. The robust shortest path problem with interval data via Benders decomposition, *4OR*, 3(4), 315-328, December 2005.
- 25 Ducatelle F., Di Caro G., Gambardella L.M. Using Ant Agents to Combine Reactive and Proactive Strategies for Routing in Mobile Ad Hoc Networks. *International Journal of Computational Intelligence and Applications (IJCIA)*, Special Issue on Nature-Inspired Approaches to Networks and Telecommunications, Volume 5, Number 2, Pages 169-184, June 2005.
- 24 Di Caro G., Ducatelle F., Gambardella L.M., AntHocNet: An Adaptive Nature-Inspired Algorithm for Routing in Mobile Ad Hoc Networks , *European Transactions on Telecommunications*, Special Issue on Self-Organization in Mobile Networking, Volume 16, Number 5, Pages 443-455, September-October 2005
- 23 Gambardella L.M, Martello S., Metaheuristics and worst-case guarantee algorithms: relations, provable properties and applications (ECCO XV), *European Journal of Operational Research*, 166, 1-2, 2005.
- 22 Mastrolilli M. Gambardella L.M, Maximum satisfiability: How good are tabu search and plateau moves in the worst-case?. *European Journal of Operational Research*, 166, 63-76, 2005
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- 20 Montemanni, R., Gambardella L.M. A branch and bound algorithm for the robust spanning tree problem with interval data., *European Journal of Operational Research*, 161(3), 771-779, March 2005.
- 19 Dorigo, M., Trianni, V., Sahin, E., Labella, T., Grossy R., Baldassarre, G., Nolfi, S., Deneubourg J-L., Mondada, F., Floreano D., Gambardella, L.M., Evolving Self-Organizing Behaviors for a Swarm-bot, *Swarm Robotics* special issue of the *Autonomous Robots Journal*, 17(2-3), 223-245, 2004.
- 18 Mondada, F. Pettinaro,G, Guignard A., Kwee, I., Floreano, D., Deneubour, J-L., Nolfi S., Gambardella, L.M.,Dorigo M., Swarm-Bot: a New Distributed Robotic Concept, *Swarm Robotics* special issue of the *Autonomous Robots Journal*, v. 17(2-3), p. 193-221, 2004
- 17 Montemanni, R Gambardella, L.M. and Donati, A.V. A branch and bound algorithm for the robust shortest path problem with interval data. *Operations Research Letters*, 32(3), 225-232, May 2004.
- 16 Montemanni, R., Gambardella L.M. An exact algorithm for the robust shortest path problem with interval data, *Computers and Operations Research*, 31(10), 1667-1680, September 2004.
- 15 Gambardella, L.M., Rizzoli E. Funk P, Agent-based Planning and Simulation of Combined Rail/Road Transport, *Simulation*, Vol. 78, Issue 5, pp. 293-303, May 2002.
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12 Gambardella, L.M, Mastrolilli M., Rizzoli A.E., Zaffalon M., An integrated approach to the optimisation of an intermodal terminal based on efficient resource allocation and scheduling, *Journal of Intelligent Manufacturing*, 12 (5/6):521-534, October 2001.

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3 Taillard É. D., Gambardella L. M., Gendreau M., Potvin J.Y., La Programmation à mémoire adaptative ou l'évolution des algorithmes évolutifs, *Calculateurs Parallèles*, v.10 n°2/1998.

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1 Dorigo M., Gambardella L.M, Ant Colonies for Traveling Salesman Problem, *BioSystem* 43, pp. 73-81, 1997

BOOK CHAPTERS

10 D. Weyland, R. Montemanni and L.M. Gambardella Using Statistical Tests for improving state-of-the-art Heuristics for the Probabilistic Traveling Salesman Problem with Deadlines In Computer Aided Systems Theory, Part I, Lecture Notes in Computer Science 6927, R. Moreno-Diaz et al. eds., Springer, Heidelberg, 448–455, 2011

9 Di Caro G., Ducatelle F. and Gambardella L. M. (2009). Routage dans les réseaux mobiles ad hoc en environnement urbain (in French). In: *Fourmis artificielles, des bases algorithmiques aux concepts et réalisations avancés*, eds. N. Monmarché, F. Guinand and P. Siarry, Edition HERMES-LAVOISIER, To appear in 2009.

8 Di Caro G., Ducatelle F. and Gambardella L. M. (2008). Theory and practice of Ant Colony Optimization for routing in dynamic telecommunications networks. In: *Reflecting Interfaces: The Complex Coevolution of Information Technology Ecosystems*, eds. N. Sala, F. Orsucci, Idea Group Inc., April 2008.

7 Ducatelle F., Gambardella L.M., Kurant M., Nguyen H. X. and Thiran P. Algorithms for failure detection in large IP-over-Fiber and Wireless Ad Hoc Networks. In: *Dependable Systems: Software, Computing, Networks*, eds. J. Kohlas, B. Meyer, A. Schiper, Lecture Notes in Computer Science 4028, Springer, 2006.

6 Montemanni R., Gambardella L.M. and Das A.K.. Mathematical models and exact algorithms for the min-power symmetric connectivity problem: an overview. In *Handbook on Theoretical and Algorithmic Aspects of Sensor, Ad Hoc Wireless, and Peer-to-Peer Networks*, J. Wu ed., Auerbach Publications, 133-146, 2006.

5 Montemanni R. and Gambardella L.M. Minimum power symmetric connectivity problem in wireless networks: a new approach. In *Mobile and wireless communications networks*. Series: IFIP International Federation for Information Processing, 162(8), E.M. Belding-Royer, K. Al Agha, G. Pujolle eds., Springer, 496-508, October 2004.

4 Maniezzo V, Gambardella LM., De Luigi F. Ant Colony Optimization, New Optimization Techniques in Engineering, by Onwubolu, G. C., and B. V. Babu, Springer-Verlag Berlin Heidelberg, 101-117, 2004.

3 Gambardella L.M, Taillard E., Agazzi G., MACS-VRPTW: A Multiple Ant Colony System for Vehicle Routing Problems with Time Windows , In D. Corne, M. Dorigo and F. Glover, editors, *New Ideas in Optimization*, McGraw-Hill, London, UK, pp. 63-76, 1999

2 Versino, C., Gambardella, L.M. Learning Fine Motion in Robotics, Design and Experiments, *Recent Advances in Artificial Neural Networks*, Design and Application, CRC press, pp. 127-153, 2000.

1 Versino, C., Gambardella, L.M. Learning Real Team Solutions, *DAI Meets Machine Learning*, Lecture Notes in Artificial Intelligence, Ed. Weiss, Springer Verlag, pp. 40-61, 1997

INTERNATIONAL CONFERENCES

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123 F. Ducatelle, G. A. Di Caro, L. Gambardella, Spatial awareness in robotic swarms through local wireless communications (Extended abstract), Proceedings of the 11th International Conference on Autonomous Agents and Multiagent Systems (AAMAS), Valencia, Spain, June 4-8, 2012 (to appear)

122 A. Giusti, J. Nagi, L. Gambardella, S. Bonardi, G. A. Di Caro Human-Swarm Interaction through Distributed Cooperative Gesture Recognition 7th ACM/IEEE International Conference on Human-Robot Interaction (Video Session) (HRI), Boston, MA, USA, March 5-8, 2012 (to appear)

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110 R. Montemanni, M. Mojana, G. A. Di Caro and L. M. Gambardella, A Matheuristic Approach for the Sequential Ordering Problem, 42nd Annual Conference of the Italian Operational Research Society (AIRO), Brescia, Italy, September 6-9, 2011

109 Ducatelle F., Di Caro G. A., Pinciroli C., Mondada F. and Gambardella L. M., Communication assisted navigation in robotic swarms: self-organization and cooperation. Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), San Francisco, USA, September 25-30, 2011

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PROJECTS and GRANTS

- 2010-2012 Local Leader of the project: “SWARMIX: Synergistic Interactions in Swarms of Heterogenous Agents”.
A Swiss National Science Foundation sinergia project for mixed swarm of robots.
Emphasis is given to Swarm Intelligence, Robotics.
IDSIA grant: 250.000 SFr. (Total grant 1.100.000 SFr.)
- 2010-2014 Local Leader of the project: “NCCR Robotics”.
A Swiss National Science Foundation project for a National competence center in robotics.
Emphasis is given to Swarm Intelligence, Robotics.
IDSIA grant: 200.000 SFr.
- 2010-2011 Local Leader of the project: “Smart Grid concept with PV energy generation and decentralized consumption optimization using a swarm intelligence approach”.
A Swiss project to design and optimize a smart grid using swarm intelligence.
Emphasis is given to Swarm Intelligence, Machine Learning and Combinatorial Optimization.
IDSIA grant: 380.000 SFr. (Total grant 2.530.000 SFr.)
- 2008-2010 Leader of the project: “IFF Intelligent Fill in Form”.
A CTI project of two years concerning the study of machine learning techniques to analyze hand written text in insurance forms.
Emphasis is given to Machine Learning.
IDSIA grant: 366.000 SFr. (Total grant 730.000 SFr.)
- 2008-2009 Leader of the project: “Train Optimization”.
An industrial project in collaboration with HUPAC, to optimize trains composition and displacement along an European train networks.
Emphasis is given Metaheuristics and Operation Research.
- 2008-2010 Local Leader of the project: “IN3: Intelligent In Vitro Incubator”.
A CTI project of two years concerning the study of robotics and machine learning techniques to automate in vitro fertilization process .
Emphasis is given to Machine Learning.
IDSIA grant: 340.000 SFr. (Total grant 2.230.000 SFr.)
- 2008-2011 Leader of the project: “Approximation Algorithms for Machine Scheduling Through Theory and Experiments III”.
A Swiss National Foundation project of three years concerning the study of metaheuristics and approximation Algorithms applied to scheduling problems.
Emphasis is given to Metaheuristic, Job shop, Combinatorial Optimization.
IDSIA grant: 432.000 SFr. (Total grant 432.000 SFr.)
- 2008-2011 Leader of the project: “New sampling-based metaheuristics for stochastic vehicle routing problems”.
A Swiss National Foundation project of one year concerning the study of new routing algorithms in case of stochastic and dynamic information.
Emphasis is given to Metaheuristic, Vehicle Routing, Combinatorial Optimization.
IDSIA grant: 90.000 SFr. (Total grant 90.000 SFr.)
- 2007-2009 Local leader of the project: “Power Aware Computing in Embedded Systems”.
A Swiss National Foundation project of two years in collaboration with UNI-Geneve concerning the study of policies to reduce the power consumption in mobile devices acting at the software level.
Emphasis is given to Metaheuristic, Job shop, Combinatorial Optimization.
IDSIA grant: 80.000 SFr. (Total grant 160.000 SFr.)

- 2006-2010 Local leader of the project: “Swarmanoid: Towards Humanoid Robotic Swarms”, a FET (Future and Emerging Technologies Program), IST project funded by the European Commission.
The main scientific objective of the Swarmanoid project is the design, implementation and control of a novel distributed robotic system comprising heterogeneous, dynamically connected small autonomous robots so as to form what we call a swarmanoid. The swarmanoid that we intend to build will be comprised of numerous (about 60) autonomous robots of three types: eye-bots, hand-bots, and foot-bots.
The project is planned for 42 months with the following partners: Universite Libre de Bruxelles (Belgium), EPFL Lausanne (Switzerland), University of Rome (Italy).
Emphasis given to Swarm Intelligence, robotics, learning, adaptation.
IDSIA grant: 750.000 SFr. (Total grant 3’900.000 SFr.)
- 2005-2008 Leader of the project: “Approximation Algorithms for Machine Scheduling Through Theory and Experiments II”.
A Swiss National Foundation project of three years concerning the study of meta-heuristics and approximation Algorithms applied to scheduling problems.
Emphasis is given to Metaheuristic, Job shop, Combinatorial Optimization.
IDSIA grant: 412.000 SFr. (Total grant 412.000 SFr.)
- 2005-2006 Leader of the project: “Routing Problems with Objective Function of Increasing Complexity”.
A Swiss National Foundation project of one year concerning the study of new routing algorithms in case of stochastic and dynamic information.
Emphasis is given to Metaheuristic, Vehicle Routing, Combinatorial Optimization.
IDSIA grant: 90.000 SFr. (Total grant 90.000 SFr.)
- 2004-2004 Co-leader of the project: “Intelligent Player for Geomag Magnetic Challenge”.
Geomag is introducing on the market a new game “Magnetic Challenge” based on the famous Geomag magnetic bars and balls. IDSIA is implementing an automatic player able to play against humans and to learn from experience.
Emphasis is given to Artificial Intelligence, learning, game.
- 2004-2006 Local leader of the project: “Power Aware Computing”.
A Swiss National Foundation project of two years in collaboration with UNI-Geneve concerning the study of policies to reduce the power consumption in mobile devices acting at the software level.
Emphasis is given to Metaheuristic, Job shop, Combinatorial Optimization.
IDSIA grant: 80.000 SFr. (Total grant 250.000 SFr.)
- 2003-2005 Leader of the project: “Approximation Algorithms for Machine Scheduling Through Theory and Experiments”.
A Swiss National Foundation project of two years concerning the study of meta-heuristics and approximation Algorithms applied to scheduling problems.
Emphasis is given to Metaheuristic, Job shop, Combinatorial Optimization.
IDSIA grant: 180.000 SFr. (Total grant 180.000 SFr.)
- 2003-2005 Local leader of the project: “BISON: Biology-Inspired Techniques for Self Organization in Dynamic Networks” a FET (Future and Emerging Technologies Program), IST project funded by the European Commission.
The main scientific objective of BISON is to explore the use Ant Colony Optimization and Immune Networks for routing and optimization in Ad-Hoc networks and Grid computing systems. These ideas derived from complex adaptive systems (CAS) will enable the construction of robust and self-organizing information systems for deployment in highly dynamic network environments. BISON will cast solutions to important problems arising in Ad-Hoc and Virtual networks, P2P and Grid computing systems as desirable global properties that systems should exhibit

The project is planned for three years with the following partners: University of Bologna (Italy), Telenor Communication (Norway), Technische Universitaet Dresden (Germany), Santa Fe Institute (USA) and IDSIA.

Emphasis given to Ant Colony Optimization, Dynamic Routing, Self-Adaptation.
IDSIA grant: 650'000 SFr. (Total grant 1'700.000 SFr.)

2003-2004 Leader of the project: "Optimization and Simulation course".
A Swiss OPES Virtual Campus project in collaboration with EPFL and IPLNet to design and implement an on-line course in Optimization and simulation
Emphasis given to Simulation and Optimization.
IDSIA grant: 40'000 SFr. (Total grant 80'000 SFr.)

2002-2005 Local leader of project "Failure location, restoration and resilience in optical and ad-hoc networks" a Swiss Hasler Foundation DICS project.
The goal of this project is to (i) to develop efficient algorithms to locate failures in large scale optical and ad-hoc networks (ii) to analyze and develop protection and restoration strategies after a failure, mainly in ad-hoc networks, and (iii) to evaluate the benefit of introducing two classes of service at the IP logical layer when the physical layer is either optical (IP/WDM backbone networks) or wireless (ad-hoc networks). An interesting output of this project is the comparison of failure management techniques that can be successfully used in optical backbone networks with those applicable to ad-hoc networks.
The project is planned for three years with the following partners: EPFL (Lausanne, LCA-ISC-I&C, Project leader) DIE, Lugano and IDSIA.
Emphasis given to Ant Colony Optimization, Self-Adaptation.
IDSIA grant: 100'000 SFr. (Total grant 400.000 SFr.)

2001-2004 Local leader of the project: "SWARM-BOTS, swarm of self assembly artifacts", a FET (Future and Emerging Technologies Program), IST project funded by the European Commission.
The main scientific objective of the SWARM-BOTS project is to study a novel approach to design, hardware implement, test and use self-assembling, self-organizing, metamorphic systems. This novel approach finds its theoretical roots in (i) recent studies in swarm intelligence, that is, in studies of the self-organizing and self-assembling capabilities shown by social insects and other animal societies, and in (ii) the idea that co-evolution of hardware and control is essential to create systems of great complexity and flexibility without, or with limited, human design and engineering. The main tangible objective of the project is the demonstration of the methodology by means of the physical construction of swarm-bots.
The project is planned for three years with the following partners: Universite Libre de Bruxelles (Belgium), EPFL Lausanne (Switzerland), University of Rome (Italy).
Emphasis given to Swarm Intelligence, robotics, learning, adaptation.
IDSIA grant: 736.950 SFr. (Total grant 1'500.000 SFr.)

2001-2003 Local leader of the project: " MOSCA, Decision Support System For Integrated Door-To-Door Delivery: Planning and Control in Logistic Chains", an IST project funded by the European Commission.
Key project objective is to provide a set of tools for improving efficiency of door-to-door transport of goods in urban areas by collaboratively providing demand and supply side information in one single environment/system. Criteria are logistics service degrees on demand side and sustainability on supply side. Input of traffic related events and the corresponding inclusion in dynamic road network models for calculation of estimated arrival times are objectives of the supply-oriented system components. The demand-side inputs data on scheduled transports and on short-term modifications into the information system.
The project is planned for two years with the following partners: Fit Consulting (Italy), PTV (Germany), University of Karlsruhe (Germany), University of Cambridge (United Kingdom), ENEA (Italy) Interporto di Padova (Italy), Commissione Regionale dei Trasporti del Luganese (Switzerland).

Emphasis is given to ant system, combinatorial optimization, routing.
IDSIA grant: 521.353 SFr. (Total grant 1'145.000 SFr.)

- 2001-2003 Leader of the project "CADIS-ANT-Fleet" a two years project funded by MIGROS, Switzerland.
CADIS-ANT-Fleet is a system that automatically optimizes the routes of the trucks leaving MIGROS hub distribution centers. The fleet of trucks is composed of non-homogeneous vehicles, i.e. vehicles with different features in term of length, number of axles, and weight; these features constrain the range of road types and shop locations which can be visited by a given truck. Visits to Migros' shops are also constrained in time, since deliveries to the shops' stores must be made within a specified time window, agreed with the store management. CADIS-ANT-Fleet is a breakthrough product in the field of vehicle routing applications. It is based on the Ant Colony Optimization metaheuristic which can solve in a few minutes the problem of the proper sequencing of hundreds of freight deliveries.
The project is planned for one year in collaboration between Antoptima sa, Cataluppi & Hug AG, a Zürich with Migros-Genossenschafts-Bund and IDSIA.
Emphasis is given to ant system, combinatorial optimization, vehicle routing.
- 2001-2004 Local leader of the project: "SIRTAKI: Safety Improvement in Road&Rail Tunnels using Advanced ICT and Knowledge Intensive Decision Support System". European IST project of three years that develops an integrated prototype of tunnel management and decision support system (DSS) to increase tunnel safety. The consortium involves many European countries.
Emphasis is given to learning, planning, simulation.
IDSIA grant: 70.000 SFr. (Total grant 2'200.000 SFr.)
- 2001-2003 Leader of the project: "Resource Allocation and Scheduling in Flexible Manufacturing Systems II". A Swiss National Foundation project of two years (with UNI Geneve, Computer Science) where different job scheduling techniques and resources allocation techniques have been investigated.
Emphasis is given to Metaheuristic, Job shop, Combinatorial Optimization.
IDSIA grant: 90.000 SFr. (Total grant 150.000 SFr.)
- 2001-2004 IDSIA local administrator and director of the "Metaheuristics Network". A Research and Training Network project funded by the European Commission within the Improving Human Potential Program.
The main scientific goal of the Metaheuristics Network is to deepen our understanding of the working principles of metaheuristics through theoretical and experimental research so that they can be applied more effectively to the solution of important practical combinatorial optimization problem.
The project is planned for four years with the following partners: Universite Libre de Bruxelles, IRIDIA, Bruxelles (Belgium), Coordinator, Napier University, Edinburgh (Great Britain), Technische Universitat Darmstadt, Darmstadt (Germany), Istituto Dalle Molle di Studi sull'Intelligenza Artificiale, Lugano (Switzerland), EuroBios, Paris (France), Eindhoven University of Technology, Eindhoven (The Netherland).
Emphasis is given to Metaheuristics, Ant Systems, Tabu search, Combinatorial Optimization.
IDSIA grant: 300.000 SFr. (Total grant 1.200.000 SFr.)
- 2001-2003 Leader of the project: "DYVO: Dynamic Vehicle Routing and Dispatching by using Optimization, Forecasting and Simulation". A Swiss Commission for Technology and Innovation (CTI) project of two years (with DIE-SUPSI, Simultan sa, Pina Petroli sa) concerning software tools implementation to manage non-homogeneous fleet of vehicles in dynamic environments.
Emphasis is given to On-line Vehicles Routing, Ant Systems, Combinatorial Optimization.
IDSIA grant: 290.000 SFr. (Total grant 360.000 SFr.)

- 1999-2001 Leader of the project: “On-line Fleet Management”.
A Swiss National Foundation project of two years (with EPFL – Mathematics) concerning the application of meta-heuristics and local search to manage fleets of vehicles in dynamic environments.
Emphasis is given to On-line Planning, Ant Systems, Combinatorial Optimization.
IDSIA grant: 120.000 SFr. (Total grant 120.000 SFr.)
- 1999-2002 Leader of the project: “Resource Allocation and Scheduling in Flexible Manufacturing Systems”.
A Swiss National Foundation project of two years (with UNI Geneve, Computer Science) where different job scheduling techniques and resources allocation techniques have been investigated.
Emphasis is given to Metaheuristic, Job shop, Combinatorial Optimization.
IDSIA grant: 90.000 SFr. (Total grant 150.000 SFr.)
- 1998-2001 Leader of the project: “Dynamic Memory for Combinatorial Optimization”.
A Swiss National Foundation project of three years, consisting in analyzing a new approach to combinatorial optimization based on dynamic memory learning.
Emphasis is given to Cooperation, Learning, Combinatorial Optimization.
IDSIA grant: 100.000 SFr. (Total grant 100.000 SFr.)
- 1998-2000 IDSIA local administrator and director of the project “PLATFORM: Computer-controlled freight platforms for a time-tabled rail transport system” an European DGVII transport project of 18th months in collaboration with IT Ingegneria dei Trasporti srl (Italy), Finance Investment Transport Consulting srl (Italy), Cemat spa (Italy), Novatrans (France), Contship (Italy), Deut. Forsh. für Künstliche Intelligenz GmbH (Germany), Electronic Trafic I+D (Spain), Asociación para el desarrollo de la logística (Spain), Data System and Planning (Swiss). The goal of the project is to study intermodality transport between train and road. Focus is given to dynamic scheduling between trains and trucks and to terminal yard management.
Emphasis is given to Simulation and Optimization
IDSIA grant: 400.000 SFr. (Total Cost in kECU:1.127, Total EU contribution in kECU: 534, IDSIA grant in kECU: 250)
- 1997-1998 Leader of the project: “Optimization of fuel distribution using a non homogeneous fleet of vehicles”. An industrial project in collaboration with Pina Petroli s.a. in Grancia. The goal is to provide optimization tools and algorithms to support fuel distribution in Canton Ticino.
Emphasis is given to Combinatorial Optimization, vehicles routing.
IDSIA grant: 100.000 SFr.
- 1997-1999 IDSIA local administrator and director of the project “A Methodology for Collective Robot Design (2). A Swiss National Foundation project of two years (that follows the previous project on the same subject), with the Swiss Federal Institute of Technology of Lausanne consisting in the study of how learning, planning and adaptation can be used to obtain complex behaviors from a colony of simple robots.
Emphasis is given to Robotics, Cooperation, Neural Networks, Planning.
IDSIA grant: 170.000 SFr. (Total grant 256.256 SFr.)
- 1996-1998 Leader of the project: “Cooperation and Learning for Combinatorial Optimization”.
A Swiss National Foundation project of two years, consisting in analyzing and extend ACS (ant colony system) a novel approach to combinatorial optimization based on the cooperation of a colony of agents. ACS takes its inspiration by the behavior of real colony of ants and combines cooperative aspects with learning methods.
Emphasis is given to Cooperation, Learning, Combinatorial Optimization.
IDSIA grant: 180.000 SFr. (Total grant 180.000 SFr.)

- 1995-1996 Leader of the project: “A Methodology for Containers Flow Forecasting and Positioning in Intermodal Terminal”.
A Swiss Commission for Technology and Innovation (CTI) project of two years in collaboration with DSP (Data System & Planning) Lugano.
A project is concerning the study of containers data flow and positioning for intermodal terminals.
Emphasis is given to terminal simulation and resource and terminal yard optimization
The goals are:
(1) to predict in advance the number of containers that will arrive and depart from an intermodal container terminal.
(2) to plan the containers positions and displacement inside the terminal area.
IDSIA grant: 350.000 SFr. (Total grant 700.000 SFr.)
- 1995-1997 IDSIA local administrator and director of the “A Methodology for Collective Robot Design” project.
A Swiss National Foundation project of two years with the Swiss Federal Institute of Technology of Lausanne, consisting in the study of how learning, planning and adaptation can be used to obtain complex behaviors from a colony of simple robots.
Emphasis is given to Robotics, Cooperation, Neural Networks, Planning.
IDSIA grant: 145.000 SFr. (Total grant 215.000 SFr.)
- 1994-1995 Leader of the project: “Automatic Containers Flow Forecasting”.
A project concerning the study of containers data flow for naval companies. The porpoise was to predict in advance the number of containers that will arrive and depart from an intermodal container terminal using statistical and artificial intelligence techniques.
IDSIA grant: 20.000 SFr.
- 1993-1994 IDSIA local administrator and director of the project: “Integrating Planning and Learning in Robotics”.
A Swiss National Foundation project of one year with the Swiss Federal Institute of Technology of Lausanne, consisting in the integration of learning and planning methods in robot motion and grasping.
Emphasis is given to Robotics, Neural Networks, Reactive Planning, Reinforcement Learning.
IDSIA grant: 106.000 SFr.
- 1990-1993 IDSIA local administrator and director of the “Automatic Assembly based on Artificial Intelligence” project.
A Swiss National Foundation project of three years with the Swiss Federal Institute of Technology of Lausanne and the University of Neuchatel, consisting of the experimentation with a general-purpose robot for assembly.
Emphasis is given to Robotics, Potential Fields, Planning and Analogical Reasoning.
IDSIA grant: 250.000 SFr. (Total grant: 768.000 SFr.)

INVITED TALKS

- Ant Colony Optimization for industrial vehicle routing problems, Ant 2008, Sixth Ant Colony Optimization Conference, Bruxelles, 26-28 September 2008
- Ant Colony Optimization, KES2006, 10th International Conference on Knowledge-Based & Intelligent Information & Engineering Systems, Plenary section invited talk, Bournemouth, UK, 9-11 October 2006.
- Ant Colony Optimization: from research to the market: new challenge in production & logistic, Tutorial Ant 2006, September 2006, Bruxelles.
- Ant Colony Optimization, University of Lugano, October 6th, 2005
- Ant Colony Optimization, OR2005, International Scientific Annual Conference Operations Research 2005, SemiPlenary section invited talk, Bremen, 7-9 September, Germany, 2005
- Ant Colony Optimization for rich VRP problems, Molde University College, 16 June 2005

- Ant Colony Optimization, EUNITE 2004, European Symposium on Intelligent Technologies, Hybrid Systems and their implementation on Smart Adaptive Systems, Plenary section invited talk, Aachen, Germany, 10 - 12 June 2004
- Ant Colony Optimization for vehicle routing problems, University of Bremen, 24 September, 2004
- Ant Colony Optimization, University of Vienna, 29 October 2002.
- Ant Colony Optimization, ETHZ, Zurich, 10 December 2001.
- Ant Colony Optimization, Federal University of Rio de Janeiro, 10 October 2001.

TEACHING ACTIVITIES (semester courses)

- 2008-now Master module in *Heuristics* in the third semester of the Intelligent Systems Master, Informatics Faculty, University of Lugano
- 2006-now Bachelor module in *Artificial Intelligence* in the Knowledge Management, semester course at Informatics Faculty, University of Lugano
- Master and PHD semester course in *Applications of Discrete Optimization*. Milan Polytechnic, 2006
- 1998-now Professor of *Algorithms*, annual course, DTI, Department of Technology and Innovation, SUPSI, University of Applied Science of Southern Switzerland, Galleria 2, Manno, Switzerland.
- 1998-now Semester and Diploma thesis supervision, DTI, Department of Technology and Innovation, SUPSI, University of Applied Science of Southern Switzerland, Galleria 2, Manno, Switzerland.

TEACHING ACTIVITIES (short courses)

- *2008-now Mathematica method for industrial application*, LIUC, Castellanza.(12 hours)
- *Goods distribution optimization: a new challenge from research to the market.*, University of Castellanza, One day course, May 2nd, 2006
- *Ant Colony Optimization and Swarm Intelligence*, with Gianni di Caro, Summer School on Complex Systems, Bertinoro, Italy, Two days course, July 2005
- *Goods distribution optimization: a new challenge from research to the market.*, University of Castellanza, One day course, June 8nd, 2005
- *Optimize logistic flows*, December 12 2004, Piacenza, Master Trasporti e Logistica, One day course, Politecnico di Milano
- *Industrial Routing Applications*, Meta-heuristic Summer School, Tenerife, One day course, March 2003.
- *Ant Colony Optimization*, Federal University of Rio de Janeiro, Three days course, October 2001
- *Vehicle Routing Problems*, Eindhoven, One day course, 28-29 November, 2000
- *Algoritmi Genetici*, Textbook & Course, One day course, Advanced course for Swiss Teachers, 1994.
- *Object Oriented Technique* with Lepori, C. Textbook & Course, Three days course Advanced course for Swiss Teachers, 1990-1991.
- *Introduction to Expert Systems*, Three days course, Textbook and Courses at IDSIA, March 1989.

COLLABORATIONS at IDSIA with the following people:

POSTDOCS

- Marc Haex (1990-1993)
- Roberto Schirru (1995, now Professor at Universidade Federal de Rio de Janeiro)
- Giuseppe Borghi (1997)
- Eric Taillard (1996-1999, now professor at HEP-SO)
- Marco Dorigo (1997, now full professor and FNRS Associate Researcher at Université Libre de Bruxelles)
- Marco Zaffalon, (1997 -)
- Andrea Rizzoli, (1996 -)
- Klaus Jansen (1998-1999, now full professor for Theoretical Computer Science at University of Kiel)
- Giovanni Pettinaro, (2001-2006)
- Ivo Kwee (2001 -)
- Roberto Montemanni, (2001 -)
- Monaldo Mastrolilli (2002-)

- Gianni Di Caro (2003-)
- Frederick Ducatelle (2007-)
- Alexander Forster (2008-)
- Giorgio Corani (2008-)
- Dan Ciresan (2010-)
- Ueli Maier (2010-)
- Matteo Salani (2010-)
- Alessandro Giusti (2009-)
- Fabrizio Grandoni (2012-)

SCIENTISTS

- Cristina Versino, (1995-1996)
- Giovanni Agazzi (1997-1998)
- Alberto Donati, (2001-2003)

Ph.D. STUDENTS

- Frederick Ducatelle (2002-2007)
- Leonora Bianchi, (1999-2006)
- Gianluca Bontempi (1995-1996, now professor at Université Libre de Bruxelles)
- Nicoletta Fornara, (1998-2003)
- Monaldo Mastrolilli (1998-2002)
- Ola Svenson (2006-2010)
- Mutsanas, Nikolaus (2006-2010)
- Giovanni Luca Ciampaglia (2006-2011)
- Hoang.Nguyen (2007-)
- Esmaeili Maryam (2007-)
- Weyland, Dennis (2008-)
- Anderson Meneses (COPPE / UFRJ (Federal University of Rio de Janeiro, 2008-2009)
- Stamoulis, Georgios (2009-)
- Toklu, Engin Nihat (2010-)
- Nagi, Jawad (2011-)
- Feo, Eduardo (2011-)

SOFTWARE ENGINEERS

- Norman Casagrande (2001-2003)
- Fabrizio Oliverio (2001-2006)
- Simone Riva (2001-2002)
- David Huber (2002, 2008)
- Federico Senaldi (2006-2007)
- Marco Tacconi (2007-)
- Alberto Bosio (2007-)
- Lorenzo Ruinelli (2007-)

MASTER THESIS SUPERVISION

- From year 2000: 2 thesis per year at SUPSI, University of Applied Science in Southern Switzerland.
- Monaldo Mastrolilli, 1996/97, Il problema del flexible job shop: un'euristica efficiente basata sulla ricerca locale, Politecnico di Milano, Facoltà di Ingegneria, Laurea in Ingegneria Informatica.
- Mazzone, Romanelli, 1996/1997, Il problema dell'assegnamento quadratico con colonie di formiche, Politecnico di Milano, Facoltà di Ingegneria
- Andrea Miotto, 1996/1997, Sistema di previsione dei flussi di container in un terminal intermodale, Politecnico di Milano, Facoltà di Ingegneria
- Cottarelli Maurizio, 1996/97, Estensioni dell'Algoritmo a Formiche per il problema del commesso viaggiatore, Politecnico di Milano, Facoltà di Ingegneria
- Paolo Bano, 1995/96, Apprendimento di strategie in ambiente competitivo attraverso tecniche di reinforcement learning, Università degli studi di Milano, Corso di Laurea In Scienze dell'Informazione.
- Vladimiro Borsi, 1994/95, Colonie di formiche artificiali e ottimizzazione combinatoria, Università degli studi di Milano, Corso di Laurea In Scienze dell'Informazione.

PH.D. THESIS SUPERVISION

- Toklu, Engin Nihat (2010-), Faculty of Informatics, University of Lugano, Swiss National Science Foundation Project.
- Nagi, Jawad (2011-), Faculty of Informatics, University of Lugano, Swiss National Science Foundation Project.
- Feo, Eduardo (2011-), Faculty of Informatics, University of Lugano, Swiss National Science Foundation Project.
- Stamoulis, Georgios (2009-) Faculty of Informatics, University of Lugano, Swiss National Science Foundation Project.
- Weyland, Dennis (2008-), Faculty of Informatics, University of Lugano, Swiss National Science Foundation Project.
- Esmaeili Maryam (2007-), Faculty of Informatics, University of Lugano, Swiss National Science Foundation Project.
- Hoang.Nguyen (2007-), Faculty of Informatics, University of Lugano, European Project.
- Giovanni Luca Ciampaglia (2006-2011), Faculty of Informatics, University of Lugano, Swiss National Science Foundation Project, User Participation and Community Formation in Peer Production Systems.
- Nikolaus Mutsanas (2006-2010), Faculty of Informatics, University of Lugano, Swiss National Science Foundation Project, Approximability of Precedence Constrained and Robust Scheduling Problems.
- Ola Svenson (2006, 2009), Faculty of Informatics, University of Lugano, Swiss National Science Foundation Project, Approximability of some classical graph and scheduling problems.
- Davide di Gennaro, (2004-), Swiss National Science Foundation Project.
- Frederick Ducatelle, (2002,2007), Hasler Foundation Project, Adaptive Routing in Ad Hoc Wireless Multi-hop Networks.
- Leonora Bianchi,(2000,2006) Université Libre de Bruxelles, Bruxelles, (with Prof. Marco Dorigo), Ant Colony Optimization and Local Search for the Probabilistic Traveling Salesman Problem: A case Study in Stochastic Combinatorial Optimization.
- Nicoletta Fornara,(1998, 2003) Facoltà di Scienze della Comunicazione, Lugano, (with Prof. Marco Colombetti), Interaction and Communication among Autonomous Agents in Multiagent Systems.

EXTERNAL REVIEWER FOR the following Ph.D. and Habilitation Thesis

- Timothy Stirling, 2011, Energy-Efficient Indoor Search by Swarms of Flying Robots without Global Information., École Polytechnique Fédérale de Lausanne,
- Stéphane Magnenat, 2010, Integration in mobile robotics, a science to scale up machine intelligence, École Polytechnique Fédérale de Lausanne,
- Paola Pellegrini, 2007, PhD., Using and Assessing Ant Colony Optimization, Graduate School of Economics of the University of Venice, Italy.
- Damien Olivier, 2006, Habilitation, Maître de conférences d'informatique à l'université du Havre, Université du Havre, France
- Antoine Dutot, 2005, PhD., Distribution Dynamic Adaptative à l'aide de Mécanismes d'Intelligence Collective, Université du Havre, France
- Frédéric Guinand, 2004, Habilitation, Université du Havre, France
- Gianni di Caro, 2004, Ph.D., Ant Colony Optimization and its application to routing in telecommunication networks, ULB, Bruxelles.
- Alcherio Martinoli, 1999, Ph.D., Swarm Intelligence in autonomous collective robotics: from tools to the analysis and synthesis of distributed control strategies, École Polytechnique Fédérale de Lausanne, Département d'Informatique
- Michel Mittaz, 1999, Ph.D., Problèmes de cheminements optimaux dans les réseaux avec contraintes associées aux arcs, Ecole Polytechnique Fédérale de Lausanne, Département de Mathématiques.
- Pierguido Caironi, 1998, Ph.D., Gradient-Based reinforcement learning of monolithic and modular control policies for physical autonomous agents, Politecnico di Milano, Facoltà di Ingegneria, Dipartimento di Elettronica e Informazione.

REFeree Activities

Journals

- Swarm Intelligence Journal, Editorial Board
- IEEE Transactions on Systems, Man, and Cybernetics
- IEEE Transactions on Evolutionary Computation
- IEEE Transactions on Knowledge and Data Engineering,
- IEEE Transactions on Evolutionary Computation.
- Environmental Modelling and Software
- ACM Transactions on Software Engineering and Methodology
- INFORM Journal On Computing
- International Journal of Production Economics
- Computers & Industrial Engineering
- EJOR European Journal of Operational Research
- Management Science
- OR Spektrum, the Journal of the German Operations Research
- Journal of Heuristics
- International Journal of Applied Mathematics and Computer Science
- Discrete Mathematics
- International Transactions in Operational Research.
- Transportation Science.
- Transaction of Software Engineering and Methodology
- Environmental Modelling & Software
- Theoretical Computer Science
- Swarm Intelligence
- Evolutionary Computation Journal
- AIEDAM: Artificial Intelligence for Engineering Design, Analysis and Manufacturing

Conferences (Program Committee)

- International Conference of Operational Research, OR2011, September 1st 2011, Zurich.
- Gecco-2011, Genetic and Evolution Computation Conference, July 12-16, 2011, Dublin, Ireland..
- ECAL 2011, European Conference in Artificial Life, Paris, 8th-11th August, 2011.
- 9th edition of the Metaheuristics International Conference (MIC 2011) , Udine, Italy, 25th - 28th of July, 2011
- DARS2010, 10th International Symposium on Distributed Autonomous Robotic Systems, Lausanne, 1st -3rd November, 2010.
- Ant-2010, Ant 2010, 7th International Conference Swarm Intelligence, September 8-10 2010, Bruxelles
- Sab-2010, The 12th International Conference on the Simulation of Adaptive Behavior, August 24-28 2010, Paris.
- Gecco-2010, Genetic and Evolution Computation Conference, June 7-11, 2010, Portland, Oregon.
- Gecco-2009, Genetic and Evolution Computation Conference, June 8-12, 2009, Montreal, Canada.
- Sab-2008, The tenth International Conference on the Simulation of Adaptive Behavior, July 8-12 2008, Osaka
- BICC 2008, the 2nd IFIP Conference on Biologically Inspired Cooperative Computing, September 7-10, 2008, Milan
- Gecco-2008, Genetic and Evolution Computation Conference, July 12-16, 2008, Atlanta
- Ant-2008, Ant 2008, Six International Conference on Ant Colony Optimization and Swarm Intelligence, September 22-24 2008, Bruxelles
- MIC-2007, The Seventh Metaheuristics International Conference Montreal, June 25-29, 2007
- SASO-2007 First IEEE International Conference on Self-Adaptive and Self-Organizing Systems Boston, Mass., USA, July 9-11, 2007
- GECCO-2007, The Genetic and Evolutionary Computation Conference, July 7-11, 2007, London
- EVO* 2007, Europe's premier co-located events on evolutionary computation, 11-13 April 2007, Valencia, Spain
- From Animal to Animat 9, The Ninth International Conference on the Simulation of Adaptive Behaviour (SAB'06), 25 - 29 September 2006, CNR, Roma, Italy

- PPSN2006, 9th International Conference, Parallel Problem Solving from Nature, Reykjavik, 9-13 September 2006
- Ant 2006, Ant Colony Optimization and Swarm Intelligence – September 2006, Bruxelles.
- SIS 2005, IEEE Swarm Intelligence Symposium 2005, Pasadena, California, June 8-10, 2005.
- WONS 2005, The Second Annual Conference on Wireless On demand Network Systems and Services, St. Moritz, Switzerland, 19-21 January, 2005.
- PPSN 2004, The 8th International Conference on Parallel Problem Solving from Nature (PPSN VIII) will be held in Birmingham, UK, on 18-22 September 2004.
- ANTS 2004, Fourth International Workshop on Ant Colony Optimization and Swarm Intelligence, Brussels, Belgium, Set 5-8, 2004.
- GECCO 2004. Genetic and Evolutionary Computational Conference, June 24-26, 2004 Seattle, Washington, USA
- IJCAI 2003, Eighteenth International Joint Conference on Artificial Intelligence, Acapulco, Mexico, August 9-15, 2003
- HMS2003, Harbour, Maritime & Multimodal Logistics Modelling and Simulation, Riga, September 18-20, 2003.
- IPDPS 2002, International Parallel and Distributed Processing Symposium Marriott Marina, Fort Lauderdale, Florida April 15-19, 2002
- AAMAS-02, First International Joint Conference on Autonomous Agents and MultiAgent Systems, July 15-19, 2002, Bologna, Italy
- HMS2002, Harbour, Maritime & Multimodal Logistics Modelling and Simulation, Italian Riviera, Riviera delle Palme - October 3 - 5, 2002.
- EWRL5, Fifth European Workshop on Reinforcement Learning (EWRL'5) will take place in Utrecht. The proposed date is 5-6 october, 2001
- IJCAI2001, International Joint Conference on Artificial Intelligence, August 4th-10th, 2001, Seattle, Washington, USA
- GECCO-2001, Genetic and Evolutionary Computation Conference, 2001, San Francisco, California, July 7-11, 2001
- ANT2000, From Ant Colonies to Artificial Ants: Second International Workshop on Ant Colony Optimization, Brussels, Belgium, Set 7-9, 2000
- HMS2000, Maritime & Industrial Logistics Modelling and Simulation, Portofino, Italy, 5-7th October, 2000.
- HMS99, Maritime & Industrial Logistics Modelling and Simulation, Genoa, Italy, 16-18th September, 1999.
- EWLR-8 Eighth European Workshop on Learning Robots 1999, EPFL, Lausanne, Switzerland, September 18th 1999
- EWRL4, Fourth European Workshop on Reinforcement Learning, Lugano, Switzerland, Oct 29-30, 1999
- ANT 1998, From Ant Colonies to Artificial Ants: First International Workshop on Ant Colony Optimization, Brussels, Belgium, October 15-16, 1998
- International Workshop Modeling and Simulation within a Maritime Environment, 6-8 September, 1998, Riga, Latvia.
- Computer-Aided Scheduling of Public Transport, CASPT-Proceedings

CONFERENCE ORGANIZATION

- International Conference of Operational Research, OR2011, September 1st 2011, Zurich.
- ANTS 2010, Seventh International Conference on Swarm Intelligence, Technical Chair, Bruxelles, September 2010.
- Seventh Joint Operations Research Days, September 3-4, 2009, Lugano
- Graph and Optimization, August 19-23, 2007, Lugano.
- GO VI, Graph and Optimization, August 19-23, 2007, Cademario.
- General Chair, Ant 2006, Ant Colony Optimization and Swarm Intelligence – September 2006, Bruxelles
- Technical Chair, IEEE Swarm Intelligence Symposium 2005, Pasadena, California, June 8-10, 2005.
- Program Chair, Ant 2004, Ant Colony Optimization and Swarm Intelligence – September 2004, Bruxelles

- Chair, ECCO 2002 XV Conference of the European Chapter on Combinatorial Optimisation, 30 May - 1 June 2002, Lugano, Switzerland
- Program Chair, HMS2000, Maritime & Industrial Logistics Modelling and Simulation, Portofino, Italy, 5-7th October, 2000.
- Local Organizer, EWRL4, Fourth European Workshop on Reinforcement Learning, Lugano, Switzerland, Oct 29-30, 1999

GUEST EDITOR

- Engelbrecht, A., Li, X., Gambardella, L. and Middendorf, M. (2009), "Special Issue: Swarm Intelligence", IEEE Transactions on Evolutionary Computation, Vol. 13, No.4. August, 2009.
- L.M. Gambardella, A. Hertz, F. Maffray, M. Widmer, 2009, Sixth International Conference on Graphs and Optimization 2007: Special Issue, Discrete Applied Mathematics 157(17).
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- M. Dorigo, L.M. Gambardella, M. Middendorf and T. Stützle, special issue on "Ant Colony Optimization", Vol. 6, No. 4, IEEE Transactions on Evolutionary Computation, July 2002
- Special Issue of EJOR for the EURO Winter Institute, 2002

PROJECT EVALUATOR FOR

- European Commission Expert for "Future Trends in Artificial Cognitive Systems"
- European Commission Projects Evaluator
- Swiss National Science Foundation
- Research Grants Council, Hong Kong

COMMITTEE

- *President* of the Swiss Operations Research Society (SVOR/ASRO)
- *Member of the directive* of Associazione Ticinese Elaborazione Dati (ATED).

COMPUTER BACKGROUND

- Unix Operative System, DOS, X11 window systems, Windows 95/NT.
- Languages C, C++, Common LISP with CLOS, SmallTalk, Visual Basic, Pascal, Java.
- Computer Experience with Sun, Symbolics, Macintosh, Honeywell, Pc MS-DOS, Windows.

LANGUAGES

- Native language Italian.
- spoken and written English.
- spoken and written French.
- basic comprehension of German.

HOBBIES

- Fly fishing
- Skiing
- Tennis