Paola Pellegrini

Personal information

Name	Paola Pellegrini
Address	Bruxelles, Belgium
E-mail	paolap@pellegrini.it
Nationality	Italian
Date of birth	11-25-1980

Research Interests

Optimization, metaheuristics, parameter tuning, swarm intelligence, integer linear programming, air traffic management, revenue management, logistics, data envelopment analysis.

Work experience

Research

2010–now **Post-doc researcher**, *IRIDIA-CoDE*, Université Libre de Bruxelles, Bruxelles, Belgium.

2009–2010 **Post-doc researcher**, *Dipartimento di Matematica Applicata*, Università Ca' Foscari Venezia, Venice, Italy.

2008–2009 **Post-doc researcher**, *Dipartimento di Elettrotecnica, Elettronica e Informatica*, Università di Trieste, Trieste, Italy..

2005–2006 **Visiting researcher**, *IRIDIA*, Université Libre de Bruxelles, Bruxelles, Belgium.

2004–2005 **Visiting researcher**, *Department of Systems and Industrial Engineering*, University of Arizona, Tucson, USA.

Industry

2010–now **Consultant for the development of a revenue management software tool**, *GP Dati Hotel Service SpA*, Venice, Italy, http://www.gpdati.com.

2007–2008 **Project manager for the development of printing and management software**, *GP Pellegrini SpA*, Venice, Italy, http://www.pellegrini.it.

2003 **Trainee for the development of a logistic software tool**, *Polo S.p.A.*, Padua, Italy, http://www.poloristorazione.it.

Education

2003–2007 **PhD in Economics, in the field of Mathematical Economics**,
Università Ca' Foscari Venezia, Venice, Italy,
Thesis title: *ACO: parameters, exploration and quality of solutions*.

1999–2003 **Master Degree in Business Economics**,
Università Ca' Foscari Venezia, Venice, Italy,
Thesis title: *Behavioral Model of an Ant Colony for a Problem of Distributive Logistics with multiple time windows: the case study* Polo SpA (in Italian).

Project participation

2008–2009 Contract-based Air Transportation System (CATS), TREN/07/FP6AE/S07.75348/036889.

2006 Study on the transportation and economic system in the areas interested by the project "Gronda Sud di Milano".

Teaching experience

2009–2010 Teaching assistant of Mathematics (undergraduate course), Università Ca' Foscari Venezia, Venice, Italy.

2008–2009 Teaching assistant of Mathematics and Logistics (undergraduate courses), Università Ca' Foscari Venezia, Venice, Italy.

2006–2007 Professor of Elements of Informatics for Economics (undergraduate course), teaching assistant of Mathematics (undergraduate course) and Microeconomics II (PhD course), Università Ca' Foscari Venezia, Venice, Italy.

Summer school participation

2010 **Nonlinear programming and graph coloring**, *Bertinoro (FC), Italy*.

2009 **Column generation and related topics for hard combinatorial problems**, *Pisa, Italy*.

2004 **Logistics, transports and telecommunications**, *Santo Stefano di Cadore (BL), Italy*.

Conference organization

2011 Member of the program committee of GECCO 2011 - Genetic and Evolutionary Computation Conference, track on combinatorial optimization and metaheuristics.

2010 Member of the program committee of GECCO 2010 - Genetic and Evolutionary Computation Conference, track on Combinatorial Optimization and Metaheuristics, and of ANTS'2010 - Fifth International Workshop on Ant Colony Optimization and Swarm Intelligence.

2009 Member of the program committee of GECCO 2009 - Genetic and Evolutionary Computation Conference, track on combinatorial optimization and metaheuristics, and of SLS2009 - Engineering Stochastic Local Search Algorithms: Designing, Implementing and Analyzing Effective Heuristics.

2007 Member of the program committee of GECCO 2007 - Genetic and Evolutionary Computation Conference, track on ant colony optimization, swarm intelligence, and artificial immune systems.

2004 Participant to the organization of The Tenth International Conference on Stochastic Programming, at the Department of System and Industrial Engineering of University of Arizona, Tucson, USA.

2003 Participant to the organization of the 34th AIRO conference, at the Department of Applied Mathematics of Università Ca' Foscari Venezia, Venice, Italy.

Referee Activity for International Journals

IEEE Transactions on Evolutionary Computation, *IEEE Transactions on Systems, Man and Cybernetics*, *Constraints Journal*, *Annals of Operations Research*, *Journal of Artificial Intelligence Research*, *Computers and Mathematics with Applications*, *Swarm Intelligence*, *Computers and Mathematics with Applications*, *European Journal of Operations Research*, *Artificial Life journal*, *Computers & Graphics*, *Mathematical Problems in Engineering*.

Personal skills

Languages

Italian	native language
English	excellent
French	fluent

Computer skills

Programming languages	ASP, SQL, Visual Basic, R, Bash, Mosel, C and C++
Software	Microsoft office, xlPrint Paris, xlPrint Miami, Kofax Ascent
Operating system	Windows, Linux

Publications

Journals

[1] M. Birattari, P. Pellegrini, and M. Dorigo. On the invariance of ant colony optimization. *IEEE Transactions on Evolutionary Computation*, 11(6):732–742, 2007.

[2] L. Castelli and P. Pellegrini. An AHP analysis of air traffic management with target windows. *Journal of Air Transport Management*, 2011. To appear.

[3] L. Castelli, P. Pellegrini, and R. Pesenti. Airport slot allocation in Europe: economic efficiency and fairness. *International Journal of Revenue Management*, 2011. To appear.

[4] D. Favaretto, E. Moretti, and P. Pellegrini. An ant colony system approach for variants of the traveling salesman problem with time windows. *Journal of Information and Optimization Sciences*, 27(1):35–54, 2006.

[5] D. Favaretto, E. Moretti, and P. Pellegrini. Ant colony system for a VRP with multiple time windows. *Journal of Interdisciplinary Mathematics*, 10(2):263–284, 2007.

[6] P. Pellegrini and E. Moretti. A computational analysis on a hybrid approach: quick-and-dirty ant colony optimization. *Applied Mathematical Sciences*, 3(23):1127–1140, 2009.

Conference proceedings

[7] M. Birattari, P. Pellegrini, and M. Dorigo. On the invariance of ant system. In M. Dorigo et al., editor, *ANTS 2006*, volume 4150 of *LNCS*, pages 215–223. Springer, Heidelberg, Germany, 2006.

[8] L. Castelli, E. Padoano, P. Pellegrini, and A. Ranieri. Analysis of a collaborative decision making concept in air traffic management: and airline perspective. In *EWGT 2009*, 2009.

[9] D. Favaretto, E. Moretti, and P. Pellegrini. On the explorative behavior of MAX-MIN ant system. In T. Stützle et al., editor, *SLS 2009*, volume 5752 of *LNCS*, pages 115–119. Springer, Heidelberg, Germany.

[10] G. Francesca, P. Pellegrini, T. Stützle, and M. Birattari. Off-line and on-line tuning: A study on operator selection for a memetic algorithm applied to the qap. In *11th European Conference on Evolutionary Computation in Combinatorial Optimization (EvoCOP)*, LNCS. Springer, Heidelberg, Germany, 2011. To appear.

[11] A. Libardo, P. Pellegrini, and G. Salerno. Capacity in railway junctions and optimal route management. In *RAILROAD 2011*, 2011. To appear.

[12] P. Pellegrini and M. Birattari. Implementation effort and performance. In T. Stützle et al., editor, *SLS 2007*, volume 4638 of *LNCS*, pages 31–45. Springer, Heidelberg, Germany, 2007.

[13] P. Pellegrini and A. Ellero. The small world of pheromone trails. In M. Dorigo et al., editor, *ANTS 2008*, volume 5217 of *LNCS*, pages 387–394. Springer, Heidelberg, Germany, 2008.

[14] P. Pellegrini, D. Favaretto, and E. Moretti. On MAX-MIN ant system's parameters. In M. Dorigo et al., editor, *ANTS 2006*, volume 4150 of *LNCS*, pages 203–214. Springer, Heidelberg, Germany, 2006.

[15] P. Pellegrini, D. Favaretto, and E. Moretti. Multiple ant colony optimization for a rich vehicle routing problem: A case study. In B. Apolloni et al, editor, *KES 2007*, volume 4693 of *LNCS*, pages 627–634. Springer, Heidelberg, Germany, 2007.

[16] P. Pellegrini, D. Favaretto, and E. Moretti. Exploration in stochastic algorithms: An application on MAX-MIN ant system. In *Nature Inspired Cooperative Strategies for Optimization (NICSO 2008)*, volume 236 of *Studies in Computational Intelligence*, pages 1–13, Berlin, Germany, 2009. Springer Verlag.

[17] P. Pellegrini and E. Moretti. Quick-and-dirty ant colony optimization. In H. Lipson, editor, *GECCO 2007*, page 178. ACM, New York, NY, USA, 2007.

[18] P. Pellegrini, T. Stützle, and M. Birattari. Off-line and on-line tuning: a study on MAX-MIN ant system for TSP. In M. Dorigo et al., editor, *ANTS 2010*, volume 6234 of *LNCS*, pages 239–250. Springer, Heidelberg, Germany, 2010.

Book chapters

[19] P. Pellegrini and M. Birattari. *Out-of-the-box and custom implementation of metaheuristics. A case study: the vehicle routing problem with stochastic demand*. Springer, Berlin, Germany, 2011. To appear.

[20] T. Stützle, M. López-Ibánez, P. Pellegrini, M. Maur, M.A. Montes de Oca, M. Birattari, and M. Dorigo. *Parameter Adaptation in Ant Colony Optimization*. Springer, Berlin, Germany, 2011. To appear.

Conference abstracts

[21] L. Castelli, P. Pellegrini, and R. Pesenti. Market mechanisms for airport slot allocation in europe, 2010. AIRO 2010, Villa San Giovanni (RC), Italy.

[22] L. Castelli, P. Pellegrini, and R. Pesenti. Strategic time window assignment in the air traffic management system, 2010. ATRS 2010, Porto, Portugal.

[23] D. Favaretto, E. Moretti, and P. Pellegrini. An ant colony system approach for variants of the traveling salesman with time windows: a case study, 2004. AIRO 2004, Lecce, Italy.

[24] A. Libardo, G. Pasini, and P. Pellegrini. Analysis of a case study for a capacitated plant location problem, 2006. AIRO 2006, Cesena, Italy.

[25] P. Pellegrini. Ant colony system for a vehicle routing problem with multiple time windows: a case study, 2003. AIRO 2003, Venice, Italy.

[26] P. Pellegrini. A measure of the difficulty of instances for a rich vehicle routing problem, 2005. INFORMS 2006, San Francisco, CA, USA.

[27] P. Pellegrini. Ant colony optimization: analysis of the exploration, 2006. AIRO 2006, Cesena, Italy.

[28] P. Pellegrini. Parameters' impact on the exploration of an evolutionary algorithm, 2009. AIRO 2009, Siena, Italy.

[29] P. Pellegrini. ACO: parameters, exploration and quality of solutions, 2010. GOR 2010, Munich, Germany.

[30] P. Pellegrini, D. Favaretto, and E. Moretti. Parameters' values in max-min ant system: empirical analysis, 2006. EURO 2006, Reykjavik, Iceland.

[31] P. Pellegrini, D. Favaretto, and E. Moretti. On exploration in stochastic algorithms. An application to ant colony optimization, 2008. AIRO 2008, Ischia (NA), Italy.

[32] P. Pellegrini, D. Favaretto, and E. Moretti. On the behavior of an ACO algorithm, 2009. EURO 2009, Bonn, Germany.

[33] P. Pellegrini, T. Stützle, and M. Birattari. On the importance of the initial setting when tuning on-line the parameters of metaheuristics, 2010. EURO 2010, Lisbon, Portugal.

Technical reports

[34] L. Castelli, P. Pellegrini, and R. Pesenti. Airport slot allocation in Europe: economic efficiency and fairness. Technical Report 197, Department of Applied Mathematics, Università Ca' Foscari Venezia, Venice, Italy, 2010.

[35] P. Pellegrini. Modello di comportamento di una colonia di formiche per un problema di logistica distributiva con finestre temporali multiple: un caso aziendale. Technical Report 115, Department of Applied Mathematics, Università Ca' Foscari Venezia, Venice, Italy, 2003.

[36] P. Pellegrini. Application of two nearest neighbor approaches to a rich vehicle routing problem. Technical Report 015, Department of Applied Mathematics, Università Ca' Foscari Venezia, Venice, Italy, 2005.

[37] P. Pellegrini and M. Birattari. Instances generator for the vehicle routing problem with stochastic demand. Technical Report 010, IRIDIA, Université Libre de Bruxelles, Brussels, Belgium, 2005.

[38] P. Pellegrini and M. Birattari. Some combinatorial optimization problems on which ant colony optimization is invariant. Technical Report 026, IRIDIA, Université Libre de Bruxelles, Brussels, Belgium, 2006.

[39] P. Pellegrini and D. Favaretto. Preliminary studies on a variant of TSP for servicing printers and copiers. Technical Report 205, Department of Applied Mathematics, Università Ca' Foscari Venezia, Venice, Italy, 2010.

[40] P. Pellegrini, D. Favaretto, and E. Moretti. Exploration in stochastic algorithms: an application on MAX-MIN ant system. Technical Report 169, Department of Applied Mathematics, Università Ca' Foscari Venezia, Venice, Italy, 2008.

[41] P. Pellegrini, T. Stützle, and M. Birattari. Off-line vs. on-line tuning: a study on MAX-MIN ant system for the TSP. Technical Report 009, IRIDIA-CoDE, Université Libre de Bruxelles, Brussels, Belgium, 2010.

[42] P. Pellegrini, T. Stützle, and M. Birattari. Tuning MAX-MIN ant system with off-line and on-line methods. Technical Report 024, IRIDIA-CoDE, Université Libre de Bruxelles, Brussels, Belgium, 2010.

[43] T. Stützle, M. López-Ibánez, P. Pellegrini, M. Maur, M.A. Montes de Oca, M. Birattari, and M. Dorigo. Parameter adaptation in ant colony optimization. Technical Report 002, IRIDIA-CoDE, Université Libre de Bruxelles, Brussels, Belgium, 2010.