

# Curriculum vitae of Giandomenico Mastroeni

## General Informations

- Born in Ancona on 4/12/1964
- High school degree (Livorno, 7/26/1982)
- Graduate in Mathematics at the University of Pisa (3/3/1988)
- Military Service at Naval Academy of Leghorn, Italy (from 4/11/1988 to 7/10/1989)
- Assistant professor for the course of Operations Research at the Naval Academy (from 1989 to 1994)
- Professor of Mathematics at high school in Bergamo (from 9/1/1993 to 2/20/1995)
- Assistant Professor of Operations Research at the Department of Mathematics of the University of Pisa (from 2/21/1995)
- PhD in Operation Research and Computational Mathematics at the University of Milan, Italy, (11/7/1995)
- Assistant Professor of Operations Research at the Department of Computer Science of the University of Pisa (from 9/21/2013)
- Degree of Associated Professor of Operations Research (10/25/2014)

# Research Activity

The research activity is concerned with the following main topics:

## 1. Constrained extremum problems

- Optimality conditions for constrained extremum problems.
- Duality theory and regularity conditions for constrained extremum problems.
- Sensitivity analysis.
- Vector optimization problems.
- Generalized convexity and applications to the study of generalized systems.

## 2. Variational inequalities and equilibrium problems

- Duality theory for variational inequalities.
- Vector variational inequalities.
- Algorithms for equilibrium problems.

## 3. Applications to network flow problems

- Applications of the duality theory for variational inequalities to network flow problems.
- Variational models for traffic equilibrium problems.

## Partecipations to international research projects

- Project of scientific cooperation between CNR (Italy) and MTA (Hungary) - from 1995 until 2002.
- Project of scientific cooperation between Pisa University and the National Sun Yat Sen University di Kaohsiung, Taiwan: "An image space approach to maximum and variational principles" - from 2006 until 2008.
- Research Project of the China West Normal University, Nanchong, Sichuan, China: "Image space analysis for nonlinear multiobjective systems and applications to traffic equilibria" - from 2009 until 2010.
- Project of scientific cooperation between Pisa University and Wuhan University, China: "Exploring the interface between nonconvex and continuous combinatorial optimization" - from 2011 until 2012.
- Research Project of the China West Normal University, Nanchong, Sichuan, China: "Constrained optima and equilibria with infinite dimensional image and applications" - from 2013 until 2018.

## Partecipations to national research projects

- Project FIRB/RBNE01WBBBB "Large Scale Nonlinear Optimization", from 2001 until 2005.
- Project PRIN/2005017083 "Innovative Problems and Methods in Nonlinear Optimization", from 2006 until 2007.
- Project PRIN/20079PLLN7 "Nonlinear Optimization, Variational Inequalities, and Equilibrium Problems", from 2008 until 2009.

## Research periods at foreign institutions

- Computer and Automation Institute, Hungarian Academy of Sciences, Budapest, Hungary, from 10/5/1995 until 10/24/1995.
- Computer and Automation Institute, Hungarian Academy of Sciences, Budapest, Hungary, from 7/ 4/2002 until 7/11/2002.
- National Sun Yat Sen University, Kaohsiung, Taiwan, from 5/11/2006 until 5/26/2006.
- National Sun Yat Sen University, Kaohsiung, Taiwan, from 11/27/2008 until 12/10/2008.
- China West Normal University, Nanchong, China, from 7/6/2010 until 7/25/2010.
- Universidad de Concepcion, Concepcion, Chile, from 4/10/2012 until 5/7/2012.
- China West Normal University, Nanchong, China, from 2/16/2014 until 3/8/2014.
- Universidad de Concepcion, Concepcion, Chile, from 11/30/2015 until 12/19/2015.

## Reviewer activity

I have been reviewer for the following journals:

- Applicable Analysis
- Applied Mathematics Letters
- Computational Optimization and Applied Mathematics
- Journal of Optimization Theory and Applications
- Journal of Global Optimization
- Journal of Industrial Management and Optimization
- Mathematics of Operations Research
- Nonlinear Analysis
- Optimization
- Optimization Letters
- Pacific Journal of Optimization
- Positivity
- Siam Journal of Optimization

## Main International Scientific Communications

1. Workshop on Nonsmooth Analysis and its Applications to Optimization, S. Banach International Mathematical Center, Warsaw, May 3–14, 1993:  
Regularity Conditions in Nonsmooth Optimization.
2. 16th International Symposium on Mathematical Programming, Lausanne, August 24-29, 1997:  
Duality Relations for Variational Inequalities with Applications to Network Flows.  
Gap functions and separation methods for vector variational inequalities.
3. Equilibrium problems and Variational Models, E. Majorana Center, Erice, June 23, July 2, 2000:  
On auxiliary principle for variational inequalities.
4. The International Conference dedicated to the 65-th Anniversary of B.N. Pshenichnyi, The Kyiv Polytechnic Institute, Kyiv, June 25–28, 2002:  
A multifunction approach to extremum problems having infinite-dimensional image.
5. Workshop on Optimization in Medicine, Coimbra, July 20-22, 2005:  
Some remarks on separation methods for classification problems.
6. The International Conference on Nonlinear Programming with Applications, Fudan University, Shanghai, China, May 29, June 1, 2006:  
Some Topics in Vector Optimization via Image Space Analysis.
7. Nonconvex Programming, Local and Global Approaches, National Institute of Applied Sciences, Rouen, France, December 17-21, 2007:  
Optimality Conditions in Vector Optimization via Image Space Analysis.

8. World International Congress on Nonlinear Analysis, July 2-6, 2008, Orlando, Florida:  
A Separation Approach to Lagrangian and Courant Methods in Constrained Optimization.
9. International Symposium on Variational Analysis and Optimization, November 28-30, 2008, National Sun Yat Sen University, Kaohsiung, Taiwan:  
A Separation Approach to Lagrangian-type Optimality Conditions.
10. International Conference on Optimization and its Applications, February, 16-18 2010, Banaras Hindu University, Varanasi, India:  
Gap functions and separation methods for vector variational inequalities.
11. XXV Jornada de Matematica de la Zona Sur, April 18-20 2012, Universidad de Concepcion, Chile:  
Variational models for traffic equilibrium problems.
12. EURO 2013, 26th European Conference on Operational Research, July 1-4 2013, Universita' La Sapienza, Rome:  
Saddle point conditions for cone constrained vector optimization problems.
13. AIRO 2015, Pisa, September 7, 2015:  
KKT optimality conditions with applications to variational problems.

## Main Scientific Publications

1. Jointly with: P.H. Dien, M. Pappalardo and P.H. Quang. Regularity conditions for constrained extremum problems via image space: the nonlinear case; *J. Optim. Theory Appl.* 80 (1994), 19–37.
2. Jointly with: M. Pappalardo and N.D. Yen. Image of a parametric optimization problem and continuity of the perturbation function; *J. Optim. Theory Appl.* 81 (1994), 193–202.
3. Jointly with: M. Castellani and M. Pappalardo. Separation of sets, Lagrange multipliers and totally regular extremum problems, *J. Optim. Theory Appl.* 92 (1997), 249–261.
4. Jointly with: T. Rapcsak. On Convex Generalized Systems, *J. Optim. Theory Appl.* 104 (2000) , 605–627.
5. Jointly with: F. Giannessi and L. Pellegrini. On the Theory of Vector Optimization and Variational Inequalities; in “Vector Variational Inequalities and Vector Equilibria. Mathematical Theories”, F. Giannessi (ed.), pp.153-216, Kluwer, Dordrecht, Boston, London, 2000.
6. Application of an Extremization Method to a Linear Integral of a Statistical Decision Problem, *J. Optim. Theory Appl.* 109 (2001), 539–556.
7. A Markov chain model for traffic equilibrium problems, *RAIRO Operations Research*, Vol. 36, N. 3, pp. 209-226, 2002.
8. Gap Functions for Equilibrium Problems, *J. Global Optim.* 27 (2003), N. 4, 411–426.
9. Jointly with: M. Pappalardo. A Variational model for equilibrium problems in a traffic network, *RAIRO Operations Research* 38 (2004), 3–12.
10. Jointly with: L. C. Ceng and J. C. Yao. Existence of solutions and variational principles for generalized vector systems, *J. Optim. Theory Appl.* 137 (2008), no. 3, 485–495.



11. Jointly with: F. Giannessi. Separation of Sets and Wolfe Duality. *J. Global Optim.* 42 (2008), no. 3, 401–412.
12. Some applications of the image space analysis to the duality theory for constrained extremum problems. *J. Global Optim.* 46 (2010), 603–614.
13. Jointly with: Luo H.Z. and Wu H.X., Separation approach for augmented Lagrangians in constrained nonconvex optimization, *J. Optim. Theory Appl.* 144 (2010), no. 2, 275–290.
14. Jointly with: Li J., Vector variational inequalities involving set-valued mappings via scalarization with applications to error bounds for gap functions. *J. Optim. Theory Appl.* 145 (2010), no. 2, 355–372,
15. On the image space analysis for vector quasi-equilibrium problems with a variable ordering relation, *J. Glob. Optim.* 53 (2012), 203-214.
16. Optimality conditions and image space analysis for vector optimization problems. In “Recent developments in vector optimization” Q.H. Ansari and J. C. Yao (Ed.s), Series Vector Optimization, Springer (2012), 169-220.
17. Jointly with: F. Flores-Bazan, Strong duality in cone constrained non-convex optimization, *SIAM J. Optim.* 23 (2013), 153-169.
18. Jointly with: M. Pappalardo and M. Passacantando, Merit functions: a bridge between optimization and equilibria. *4OR* 12 (2014), no. 1, 133.
19. Jointly with F. Flores-Bazán, and A. Jourani, On the convexity of the value function for a class of nonconvex variational problems: existence and optimality conditions. *SIAM J. Control Optim.* 52 (2014), no. 6, 3673-3693.
20. Jointly with F. Flores-Bazán, Characterizing FJ and KKT conditions in nonconvex mathematical programming with applications. *SIAM J. Optim.* 25 (2015), no. 1, 647-676.