Francisco Facchinei
Professor of Operations Research
University of Rome La Sapienza
Curriculum Vitae

Personal Data

Affilitation: University of Rome "La Sapienza"
Department of Computer, Control, and Management
Engineering Antonio Ruberti

Academic Positions

Since 2020	Senior Research Fellow of the Scuola Superiore di Studi Avanzati of the University of Rome
Since 2004	Professore Ordinario (Tenured Full Professor), University of Rome La Sapienza
2001-2004	Professore Straordinario (Full Professor), University of Rome La Sapienza
1995-2001	Professore Associato confermato (Tenured Associate Professor), University of Rome La Sapienza
1993-1995	Professore Associato (Associate Professor), University of Rome La Sapienza
1992-1993	Professore Associato, Università of Parma
1990-1992	Ricercatore (Researcher), University of Rome La Sapienza

All positions are in "Ricerca Operativa - SSD MAT/09" according to the Italian classification system.

Education

1990	PhD in Systems Engineering
1986	"Habilitation" to the engineering profession
1986	"Laurea" in Electronic Engineering

Research Topics

- Nonlinear Optimization
- Nondifferentiable Optimization
- Parallel and Distributed Optimization
- Variational Inequalities and Complementarity Problems

- Game Engineering
- Applications in telecommunications and machine learning
- Software Development

Main Publications

Books: 3 ([1]-[3])
Edited Books or Journal Volumes: 2 ([4] e [5])
Papers published or accepted for publication in international journals: 68 ([6]-[74])
Papers published in books or in conference proceedings: 34 ([75]-[109])

The two-volumes monogrph [2] and [3] is widely considered the reference book on finite-dimensional variational inequalities and is used worlwide as the advanced teaching source on this subject

Co-author of the 2015 IEEE Signal Processing Society Young Author Best Paper Award for [20]

Bibliometric Indices (July 2021)

Scholar Google:	Citations 12812,	h-index 45	
Scopus:	Citations 4503,	h-index 35	(Citations of books not included)
Web of Science:	Citations 3903,	h-index 33	(Citations of books not included)

Selected Invitations for Plenary Talks (last 4 years before Covid pandemic)

- VINEPA 2016: Variational Inequalities, Nash Equilibrium Problems and Applications, 6-7 October 2016, Catania, Italy
- 15th EUROPT Workshop on Advances in Continuous Optimization, July 12-14, 2017, Montréal, Canada
- GDO 2018: Games, Dynamics and Optimization, March 13-15, 2018, Vienna, Austria
- Variational Analysis and Applications, August 28 - September 5, 2018, Erice, Italy
- Variational Analysis, PDE's and Mathematical Economics, September 19-20, 2019, Messina, Italy
- GDO 2019: Games, Dynamics and Optimization 2019, April 9-11, 2019, Cluj-Napoca, Romania
- International Conference on Optimization and Equilibrium Problems, July 31 – August 2, 2019, Dresden, Germany

Collaborations

Francisco Facchinei has/had stable scientific collaborations with several prominent international researchers, among these the following are singled out

- Prof. Jong-Shi Pang, University of Southern California, USA (John von Neumann Theory Prize in 2019, George B. Dantzig Prize 2003, Frederick W. Lanchester Prize 1994)
- Prof. Gesualdo Scutari, Purdue University, USA
- Prof. Christian Kanzow, Wuerzburg University, Germany
- Prof. Andreas Fischer, Dresden Technical University, Germany
- Prof. Vladimir Fedorovich Demyanov, Saint Petersburg State University, Russia

Teaching Activities

Francisco Facchinei regularly teaches courses, in Italy and abroad, in Operations Research, Nonlinear Optimization, Discrete Optimization, Nondifferentiable Optimization, Game Theory, Variational Inequalities, Basic Mathematics both at the undergraduate, graduate and PhD level. Among the most interesting international teaching activities it is worth mentioning

- The course "Modern Optimization Modelling Techniques" held for the "Advanced Courses in Mathematics" at CRM Barcelona, Spain, taught with Roberto Cominetti and Jean B. Lasserre, that give rise to the volume [1]
- The organization of the CIME Summer School in Applied Mathematics "Centralized and Distributed Multi-agent Optimization: Models and Algorithms", held at Cetraro, Italy, from June 23 to June 28, 2014; the lectures delivered at this course were published in [4]

Books

[1] Roberto Cominetti, Facchinei Francisco, and Jean B. Lasserre. *Modern Optimization Modelling Techniques*. Birkhauser, 2012, p. 269. ISBN: 9783034802901. DOI: 10.1007/978-3-0348-0291-8.

[2] F. Facchinei and Jong-Shi Pang. *Finite-Dimensional Variational Inequalities and Complementarity Problems Volume I*. New York - USA: Springer-Verlag New York, Inc., 2003, ISBN: 9780387955803.

[3] Francisco Facchinei and Jong-Shi Pang. *Finite-Dimensional Variational Inequalities and Complementarity Problems Volume II*. NEW YORK - USA: Springer -Verlag New York, Inc., 2003, ISBN: 9780387955810.

[4] Facchinei Francisco and Pang Jong-Shi, eds. *Multi-agent optimization.* Springer Nature, 2018. ISBN: 978-3-319-97141-4. DOI: 10.1007/978-3-319-97142-1.

[5] Francisco Facchinei et al., eds. *Complementarity Problems and Applications (Mathematical Programming, Vol. 157(2).* Springer Nature, 2016. DOI: 10.1007/978-3-319-97142-1.

Articles in Journals

[6] Francisco Facchinei et al. "Ghost penalties in nonconvex constrained optimization: Diminishing stepsizes and iteration complexity". In: *Mathematics of Operations Research (online version, in print)* (2021).

[7] Francisco Facchinei et al. "Convergence rate for diminishing stepsize methods in nonconvex constrained optimization via ghost penalties". In: *Atti della Accademia Peloritana dei Pericolanti-Classe di Scienze Fisiche, Matematiche e Naturali* 98.S2 (2020), p. 8.

[8] Loris Cannelli et al. "Asynchronous optimization over graphs: Linear convergence under error bound conditions". In: *IEEE Transactions on Automatic Control (online version, in print)* (2020).

[9] Francisco Facchinei et al. "Diminishing stepsize methods for nonconvex composite problems via ghost penalties: from the general to the convex regular constrained case". In: *Optimization Methods and Software* (2020), pp. 1–27.

[10] Cannelli L. et al. "Asynchronous parallel algorithms for nonconvex optimization". In: *MATHEMATICAL PROGRAMMING* (2019), p. 34. ISSN: 0025-5610. DOI: 10.1007/s10107-019-01408-w.

[11] Amir Daneshmand et al. "Decentralized Dictionary Learning Over Time-Varying Digraphs". In: *JOURNAL OF MACHINE LEARNING RESEARCH* 20 (2019), pp. 1–62. ISSN: 1532-4435.

[12] Scutari Gesualdo, FACCHINEI Francisco, and Lampariello Lorenzo. "Parallel and Distributed Methods for Constrained Nonconvex Optimization—Part I: Theory". In: *IEEE TRANSACTIONS ON SIGNAL PROCESSING* 65 (2017), pp. 1929–1944. ISSN: 1053-587X. DOI: 10.1109/TSP.2016.2637317. URL: http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=7776948.

[13] Scutari Gesualdo et al. "Parallel and Distributed Methods for Constrained Nonconvex Optimization-Part II: Applications in Communications and Machine Learning". In: *IEEE TRANSACTIONS ON SIGNAL PROCESSING* 65 (2017), pp. 1945–1960. ISSN: 1053-587X. DOI: 10.1109/TSP.2016.2637314.

[14] FACCHINEI Francisco, Lampariello Lorenzo, and Scutari Gesualdo. "Feasible methods for nonconvex nonsmooth problems with applications in green communications". In: *MATHEMATICAL PROGRAMMING* 164 (2017), pp. 55–90. ISSN: 0025-5610. DOI: 10.1007/s10107-016-1072-9. URL: https://link.springer.com/content/pdf/10.1007%2Fs10107-016-1072-9.pdf.

[15] FACCHINEI Francisco et al. "Preface". In: *MATHEMATICAL PROGRAMMING* 157 (2016), pp. 343–347. ISSN: 0025-5610. DOI: 10.1007/s10107-016-1024-4.

[16] Valeria Cardellini et al. "A game-theoretic approach to computation offloading in mobile cloud computing". In: *MATHEMATICAL PROGRAMMING* 157 (2016), pp. 421–449. ISSN: 0025-5610. DOI: 10.1007/s10107-015-0881-6. URL: https://link.springer.com/article/10.1007/s10107-015-0881-6.

[17] Daneshmand Amir et al. "Hybrid random/deterministic parallel algorithms for convex and nonconvex Big Data optimization". In: *IEEE TRANSACTIONS ON SIGNAL PROCESSING* 63 (2015), pp. 3914–3929. ISSN: 1053-587X. DOI: 10.1109/TSP.2015.2436357. URL: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7113892.

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[19] Francisco Facchinei et al. "The semismooth Newton method for the solution of quasi-variational inequalities". In: *COMPUTATIONAL OPTIMIZATION AND APPLICATIONS* (2014). ISSN: 0926-6003. DOI: 10.1007/s10589-014-9686-4.

[20] Gesualdo Scutari et al. "Decomposition by Partial Linearization: Parallel Optimization of Multi-Agent Systems". In: *IEEE TRANSACTIONS ON SIGNAL PROCESSING* 62 (2014), pp. 641–656. ISSN: 1053-587X. DOI: 10.1109/tsp.2013.2293126. URL: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6675875&tag=1.

[21] Gesualdo Scutari et al. "Real and Complex Monotone Communication Games". In: *IEEE TRANSACTIONS ON INFORMATION THEORY* 60 (2014), pp. 4197–4231. ISSN: 0018-9448. DOI: 10.1109/tit.2014.2317791.

[22] FACCHINEI Francisco et al. "VI-constrained hemivariational inequalities: distributed algorithms and power control in ad-hoc networks". In: *MATHEMATICAL PROGRAMMING* 145 (2014), pp. 59–96. ISSN: 0025-5610. DOI: 10.1007/s10107-013-0640-5.

[23] Francisco Facchinei, Christian Kanzow, and Simone Sagratella. "Solving quasi-variational inequalities via their KKT conditions". In: *MATHEMATICAL PROGRAMMING* 144 (2014), pp. 369–412. ISSN: 0025-5610. DOI: 10.1007/s10107-013-0637-0.

[24] Francisco Facchinei, Andreas Fischer, and Markus Herrich. "An LP-Newton method: nonsmooth equations, KKT systems, and nonisolated solutions". In: *MATHEMATICAL PROGRAMMING* 146 (2014), pp. 1–36. ISSN: 0025-5610. DOI: 10.1007/s10107-013-0676-6.

[25] Francisco Facchinei, Jong-Shi Pang, and Gesualdo Scutari. "Non-cooperative games with minmax objectives". In: *COMPUTATIONAL OPTIMIZATION AND APPLICATIONS* 59 (2014), pp. 85–112. ISSN: 0926-6003. DOI: 10.1007/s10589-014-9642-3.

[26] Francisco Facchinei, Fischer Andreas, and Herrich Markus. "A family of Newton methods for nonsmooth constrained systems with nonisolated solutions". In: *MATHEMATICAL METHODS OF OPERATIONS RESEARCH* 77 (2013), pp. 433–443. ISSN: 1432-2994. DOI: 10.1007/s00186-012-0419-0.

[27] Dreves Axel et al. "A new error bound result for Generalized Nash Equilibrium Problems and its algorithmic application". In: *COMPUTATIONAL OPTIMIZATION AND APPLICATIONS* 59 (2013), pp. 1–22. ISSN: 0926-6003. DOI: 10.1007/s10589-013-9586-z.

[28] Francisco Facchinei, Christian Kanzow, and Simone Sagratella. "QVILIB: A LIBRARY OF QUASI-VARIATIONAL INEQUALITY TEST PROBLEMS". In: *PACIFIC JOURNAL OF OPTIMIZATION* 9 (2013), pp. 225–250. ISSN: 1348-9151.

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[31] Francisco Facchinei and Lorenzo Lampariello. "Partial penalization for the solution of generalized Nash equilibrium problems". In: *JOURNAL OF GLOBAL OPTIMIZATION* 50 (2011), pp. 39–57. ISSN: 0925-5001. DOI: 10.1007/s10898-010-9579-8.

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[39] Gesualdo Scutari et al. "Flexible Design of Cognitive Radio Wireless Systems". In: *IEEE SIGNAL PROCESSING MAGAZINE* 26 (2009), pp. 107–123. ISSN: 1053-5888. DOI: 10.1109/msp.2009.933446.

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[42] FACCHINEI Francisco, Andreas Fischer, and PICCIALLI Veronica. "On generalized Nash games and variational inequalities". In: *OPERATIONS RESEARCH LETTERS* 35 (2007), pp. 159–164. ISSN: 0167-6377. DOI: 10.1016/j.orl.2006.03.004.

[43] Francisco Facchinei and C. Lazzari. "Local feasible QP-free algorithms for the constrained minimization of SC1 functions". In: *JOURNAL OF OPTIMIZATION THEORY AND APPLICATIONS* 119 (2003), pp. 281–316. ISSN: 0022-3239. DOI: 10.1023/b:jota.0000005447.36961.29.

[44] Francisco Facchinei, Giampaolo Liuzzi, and Stefano Lucidi. "A truncated Newton method for the solution of large-scale inequality constrained minimization problems". In: *COMPUTATIONAL OPTIMIZATION AND APPLICATIONS* 25 (2003), pp. 85–122. ISSN: 0926-6003. DOI: 10.1023/a:1022901020289.

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[48] FACCHINEI Francisco and KANZOW C. "On the identification of zero variables in an interior-point framework". In: *SIAM JOURNAL ON OPTIMIZATION* 10 (2000), pp. 1058–1078. ISSN: 1052-6234. DOI: 10.1137/S1052623498339739.

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Articles in Volumes

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