

Andrea Caliciotti

IT Consultant & Operations Research Scientist

"With great power comes great responsibility (cit. Stan Lee)"

Work Experience

Lecturer in Operations Research

UNIVERSITY OF ROME "LA SAPIENZA"

Rome, Italy

April 2019 - present

IT Consultant

ELIS - CONSULTING & LABS

Rome, Italy

June 2018 - present

- PMon A model for QoE in Wi-Fi networks provided through a fixed broadband connection for VodafoneGlobal
Machine Learning • Unsupervised Learning • Clustering • Python
- An optimal resource allocation model for mobile data for VodafoneGlobal
Operations Research • Clustering • Linux • Python • AMPL

Postdoctoral Researcher in Operations Research

UNIVERSITY OF ROME "LA SAPIENZA"

Rome, Italy

Jan. 2018 - Aug. 2018

- Preconditioning techniques for large scale optimization problems
Operations Research • Large Scale Optimization • Nonlinear Optimization • Preconditioning Techniques • Linux • Fortran

Adjunct Professor

UNIVERSITY OF ROME "LA SAPIENZA"

Rome, Italy

Sept. 2016 - Dec. 2018

- *Programming Language - AMPL (Undergraduate Course).* BSc in Industrial Engineering

Teaching Assistant

UNIVERSITY OF ROME "LA SAPIENZA"

Rome, Italy

Dec. 2015 - Mar. 2017

- *Mathematics (Undergraduate Course).* BSc in Economics

IT Consultant

SIAE

Rome, Italy

May 2015 - Oct. 2015

- *Fraud Detection in music field for SIAE*
Operations Research • Clustering • Linux • C • Fortran

Education

PhD in Automatica, Bioengineering and Operations Research - 30° Course

UNIVERSITY OF ROME "LA SAPIENZA"

Rome, Italy

Nov. 2014 - Feb. 2018

- *Advances in large scale unconstrained optimization: novel preconditioning strategies for Nonlinear Conjugate Gradient methods and new developments in Newton-Krylov methods*
Operations Research • Large Scale Optimization • Nonlinear Optimization • Preconditioning Techniques • Linux • Fortran

MSc in Industrial Engineering

UNIVERSITY OF ROME "LA SAPIENZA"

Rome, Italy

Oct. 2012 - Oct. 2014

- *Modello di Ottimizzazione per Procedure di Forex Trading*, 110/110 with honors, Excellence Program
Data Analysis • Operation Research • Forex Trading • Fortran

BSc in Industrial Engineering

UNIVERSITY OF ROME "LA SAPIENZA"

Rome, Italy

Sept. 2009 - Sept. 2012

- *Un Modello di Simulazione per una Segheria Industriale*, 110/110 with honors
Queueing Theory • Simulations • Arena Simulation Software

Diploma

SCIENTIFIC HIGH SCHOOL "BENEDETTO CROCE"

Rome, Italy

Sept. 2004 - July 2009

- *Curriculum P.N.I. - National Plan of Computer Studies*

Digital Skills

- Programming: Matlab, Python, SQL, Fortran, AMPL, GLPK, C, Java, DOT, Pascal, LaTeX, OpenMP, MPI, OpenACC, CUDA, OpenCL
- Operating Systems: Kali Linux, Ubuntu, Windows
- Software: Arena Simulation Software, Weka, MySQL WorkBench, CUTEst, Gephi, Microsoft Office, Power BI, SAS Studio, SAS Viya, SAS Miner

Honors & Awards

- **Excellence Program - Academic year 2013-2014.** Ranking within the best ten students of my faculty, I had access to a training program for outstanding students. This program consists of additional educational activities taught by teachers from foreign universities and professionals
- **FCA/CNH Industrial's Scholarship, 2015**

Licenses & Certifications

- **ECDL - European Computer Driving Licence, 2007**
- **Licensed Professional Information Engineer, 2015**
- **Prince2 Foundation, 2018**

Patent

Metodo e sistema di rilevazione di strutture anomale in grafi orientati A. Caliciotti, A. Cristofari, S. Sagratella. Patent office: Italy.
Patent number: 102018000002790. Patent pending

Publications

- **Preconditioning strategies for nonlinear conjugate gradient methods, based on quasi-Newton updates**, A. Caliciotti, G. Fasano, M. Roma, *The American Institute of Physics (AIP) Conference Proceedings - NUMTA2016 Conference*, vol. 1776, pp. 0900071-0900074, 2016
- **Novel quasi-Newton updates for preconditioned nonlinear conjugate gradient methods**, A. Caliciotti, G. Fasano, M. Roma, *Optimization Letters*, vol. 11, pp. 835-853, 2017
- **Exploiting damped techniques for nonlinear conjugate gradient methods**, M. Al-Baali, A. Caliciotti, G. Fasano, M. Roma, *Mathematical Methods of Operations Research*, vol.86, pp. 501-522, 2017
- **Preconditioned nonlinear conjugate gradient methods based on a modified secant equation**, A. Caliciotti, G. Fasano, M. Roma, *Applied Mathematics and Computation*, vol. 318, pp. 196-214, 2018
- **An adaptive truncation criterion, for linesearch-based truncated Newton methods in large scale nonconvex optimization**, A. Caliciotti, G. Fasano, S. Nash, M. Roma, *Operations Research Letters*, vol. 46 pp. 7-12, 2018
- **Data and performance profiles applying an adaptive truncation criterion, within linesearch-based truncated Newton methods, in large scale nonconvex optimization**, A. Caliciotti, G. Fasano, S. Nash, M. Roma, *Data in Brief*, vol. 17, pp. 246-255, 2018
- **Quasi-Newton based preconditioning and damped quasi-Newton schemes, for nonlinear conjugate gradient methods**, M. Al-Baali, A. Caliciotti, G. Fasano, M. Roma, *Springer Proceedings (PROMS) - NAOIV2017 Conference*, vol. 235, pp. 1-21, 2018
- **On Optimal Buffer Allocation for Guaranteeing Quality of Service in Multimedia Internet Broadcasting for Mobile Networks**, A. Caliciotti, L. Ricciardi Celsi, submitted to *International Journal of Control, Automation and Systems*, 2019
- **A class of Approximate Inverse Preconditioners based on Krylov-subspace methods, for large scale nonconvex optimization**, M. Al-Baali, A. Caliciotti, G. Fasano, M. Roma, submitted to *SIAM Journal on Optimization*, 2019
- **Issues on the use of SYMMBK algorithm in Newton-Krylov methods, for large scale nonlinear optimization**, A. Caliciotti, G. Fasano, F. Potra, M. Roma, submitted to *Computational Optimization and Applications*, 2019

Conferences

- **45th Conference AIRO.** Pisa, Italy, 7-10 September 2015
- **2nd International Conference NUMTA2016.** Pizzo Calabro, Italy, 19-25 June 2016
- **15th EUROPT Workshop.** Montréal, Canada, 12-14 July 2017
- **47th Conference AIRO.** Sorrento, Italy, 4-7 September 2017
- **23rd International Symposium on Mathematical Programming - ISMP2018.** Bordeaux, France, 1-6 July 2018

Schools

- **MINO/COST Spring School on Mixed Integer Nonlinear Optimization and Applications.** Tilburg, The Netherlands, 10-13 March 2015
- **MINO/COST PhD School on Advanced Optimization Methods.** Rome, Italy, 6-10 June 2016
- **NATCOR Convex Optimization Course.** Edinburgh, Scotland, 13-17 June 2016
- **Summer School on Optimization, Big Data and Applications.** Veroli, Italy, 3-7 July 2017

Courses

- **CINECA: Introduction to Modern Fortran, Introduction to Parallel Computing with MPI and OpenMP, Debugging and Optimization of Scientific Applications, Parallel IO and Management of Large Scientific Data, Introduction to Scientific and Technical Computing in C, Python for Computational Science, Programming Paradigms for GPU Devices**
- **COURSERA: Game Theory, Machine Learning**
- **UDEMY: Python, Kali Linux**
- **SAS: Programming 1, Programming 2, Programming 3, SQL 1, Macro Language 1, Macro Language 2, Applied Analytics using SAS Enterprise Miner, Predictive Modeling using Logistic Regression, Statistics 1, Statistics 2**

Hobbies & Sports

- Computer assembly and repair (hardware and software), listening to music (Heavy and Trash Metal), collecting coins and stamps, financial and crypto trading, motorcycle, car, playing cards, cycling, swimming, sudoku, billiards and bowling
- Swimming and boxing

Michele Garraffa

Senior Research Scientist with a PhD in Operational Research and a Master's degree in Computer Science. Passionate about computer programming, algorithms and any aspect of discrete/continuous optimisation. Interested in job opportunities both in academic and industrial research .

Professional Experience

- Senior Research Scientist**
United Technologies Research Center - Ireland

Cork, Ireland
April 2017 – today

I have been coordinating research projects between UTRC-I and the local university (UCC), where different business units have been involved. The scope of these projects is supply chain optimization and technician dispatching/scheduling. Furthermore, I joined several projects in the field of layout optimization and scheduling in embedded systems as an optimization expert. I have been delivering demonstrators using different optimization technologies (such as different Constraint Programming libraries) and delivering high quality code. I contributed to many different patent applications and trade secrets.
- Post doctoral researcher**
Université Paris 13

Villetaneuse, France
June 2016 – February 2017

I am solving path planning problems for drones by means of decomposition-based heuristics, under the supervision of Professor Lucas Létocart. Additionally, I am working with Professor Frédéric Roupin in the domain of SDP relaxations for combinatorial optimisation problems.
- Visiting PhD student**
Université F. Rabelais de Tours

Tours, France
January – February 2015; June – July 2015; September – December 2015

I worked on NP-Hard scheduling problems with respect to their exponential worst case complexity, supervised by Professor Vincent T'Kindt. While the enumeration of all their solutions usually costs $\mathcal{O}(n!)$, this research determined non-trivial exact algorithms with a complexity $\mathcal{O}(c^n)$ and c as low as possible.
- Post graduate researcher**
KU Leuven

Ghent, Belgium
August - December 2012

I was part of the CODES group supervised by Professor Greet Vanden Berghe. I studied a cutting stock problem where material losses were considered, depending on the sequence in which the items are cut. I also developed software for the solution of a task assignment problem, currently used in industry.
- Intern**
ST Microelectronics

Catania, Italy
March – September 2008

I developed a tool for the comparison of profiling data with a tree structure. The tool was designed to be embedded in the Eclipse framework.

Education

- PhD degree Computer and Control Engineering**
Politecnico di Torino

Torino, Italy
March 2013 – March 2016

I spent three years at Politecnico di Torino as a PhD student, supervised by Professor Federico Della Croce. I developed both heuristic and exact algorithms for a string of clustering and scheduling Np-Hard problems. The techniques I used included Mixed-Integer Programming Formulations, Model-based heuristics, Decomposition Methods and Semidefinite Programming relaxations. The title of my thesis was *Exact and Heuristic Hybrid Approaches for Scheduling and Clustering Problems*. During my PhD I had the chance to attend several interesting courses in the Operational Research domain, among which Convex Optimisation, Discrete Mathematics, Stochastic Programming and Exact Exponential Algorithms for Combinatorial Optimisation.

- PhD high qualification program**

◦ *Scuola Interpolitecnica di Dottorato (SIPD)*

I joined Scuola Interpolitecnica di Dottorato in 2014, a project handled by three Italian universities in order to provide a higher level qualification to a group of deserving PhD students. I participated to annual meetings where all the research works were presented by the students.

Torino, Italy

March 2014 – March 2016
- Master's degree in Computer Science Engineering**

◦ *Politecnico di Torino, 110/110 cum laude*

I took several courses in advanced programming, networking, operating systems and mathematics. I specifically opted to study two courses about Operational Research and Combinatorial Optimisation. My master thesis, whose title is *The Selective Fixing Algorithm for the Closest String Problem*, dealt with the design of efficient matheuristics for a well-known combinatorial problem. The heuristics defined are the current best performing heuristic for the problem. Such research was later published in the journal *Computers & Operations Research*.

Torino, Italy

November 2008 – July 2012
- Bachelor's degree in Computer Science Engineering**

◦ *Università di Palermo, 110/110 cum laude*

I successfully completed courses in mathematics, algorithms, artificial intelligence and several engineering fields. The title of my thesis was *Factor Graphs and Bayesian Learning*.

Palermo, Italy

September 2004 – November 2008

PhD Schools.....

- Stochastic Programs with Integer Variables**

◦

I participated to this school before the ISCO2014 conference. It covered theory and applications of stochastic programming.

Lisbon, Portugal

March 5-7, 2014
- School on Column Generation 2014**

◦

I took part at this school in column generation. I had the chance to work for a week with many other PhD students and renowned researchers to this topic.

Paris, France

March 10-12, 2014

Awards

- Quality Award 2014-2015**

◦ *Politecnico di Torino*

I was awarded as one of the bests PhD students at Politecnico di Torino. The award was assigned according to the teaching activity, the scientific production and the industrial collaborations.

Torino, Italy

November 2015
- Best Italian master thesis in Operations Research 2012-2013**

◦ *AIRO*

My master's thesis was awarded as one of the two bests methodological thesis in Operational Research by the Italian Society of Operations Research, Optimisation and Decision Science (AIRO).

Como, Italy

September 2014

Teaching activities

- Operational Research**

◦ *Politecnico di Torino*

Torino, Italy

February – May 2015; February – May 2016

I was a lecturer of the Operational Research course for students in management science engineering. The classes were attended by more than 100 students and I delivered 70 hours of lectures overall. The topics covered by the course are classical linear programming and duality theory, basic graph theory and algorithms, integer programming and multi-objective optimisation.

- **Seminar on Semidefinite Programming**
Université F. Rabelais de Tours
 I run an internal seminar (6 hours) to PhD students and researchers. It covered both theory and applications to combinatorial optimisation.

Tours, France
July 2015

Industry projects

- **Supplier Selection**
UTRC-I and UCC
 I am collaborating with UCC to the development of data analytics/optimization/AI approaches for supplier selection. We are implementing an interactive learning mechanism determining the user preferences on the different objectives included in the problem definition (cost, lead time, lateness, suppliers' reputation).

Cork, Ireland
January – December 2019
- **Mechanic dispatching**
UTRC-I and UCC
 I am coordinating this project about the development of different approaches to assign maintenance operations to technicians, in order to optimize some performance measures in stochastic scenarios. The methods development are based on the hybridization of simulation and optimization techniques.

Cork, Ireland
January – December 2019
- **Layout optimization/scheduling**
Other UTRC-I projects
 I am a technical contributor in different UTRC-I projects, related to layout optimization and scheduling.

Cork, Ireland
June 2017 - December 2019
- **Multi-metering Systems Covering Solutions**
Telecom Italia S.p.a.
 I designed approaches to minimize the number of concentrators to cover the maximal area in some cities of Northern Italy. I developed an exact method and some heuristics (matheuristics, multi-start heuristics), based on a set cover formulation of the problem.

Torino, Italy
January – July 2015
- **Intelligent Appliances Scheduling**
Telecom Italia S.p.a.
 I designed mathematical programming methods for scheduling home appliances in order to reduce the overall cost of their energy consumption.

Torino, Italy
April – December 2014
- **Device and method for optimising the movement of AGVs**
Elettric 80 S.p.a. Italia
 I successfully developed a high level traffic manager for optimising the movement of AGVs. The solution adopted was based on a mathematical formulation of the problem.

Reggio Emilia, Italy
March 2013 – September 2014
- **SMAT F2 – Advanced Territorial Monitoring System**
Alenia Aermacchi S.p.a.
 I contributed to design and implement algorithms for unmanned aerial vehicles path planning. The main objective of the project was designed to guide the vehicles in monitoring the territory.

Torino, Italy
June – July 2014

Research interests

My research interests are related to different aspects of combinatorial optimisation. I enjoy tackling NP-Hard combinatorial optimisation problems (COPs) from both practical and theoretical points of view. An important part of my PhD was devoted to finding efficient practical methods based on LP/ILP formulations of relevant NP-Hard problems, often arising from industrial applications. I have been applying different techniques to solve large scale combinatorial problems, among which: MILP and decompositions (Dantzig-Wolfe), Matheuristics and metaheuristics, Constraint Programming, Semidefinite Programming (as a bounding technique in a branch and bound).

Publications

- "A large-scale, real world supplier selection problem for a multi-national company"
M. Garraffa, L. Yiqing, H. Simonis, F. Toffano, N. Wilson. *accepted at EURO2019*.
- "Simulation Based Optimization Tool for Field Service Planning"
G.G. Castane, H. Simonis, K. Brown, L. Yiqing, C. Ozturk, M. Garraffa, M. Antunes. *accepted at 2019 Winter Simulation Conference*.
- "An exact exponential branch-and-merge algorithm for the single machine total tardiness problem"
M. Garraffa, L. Shang, F. Della Croce, V. Tkindt.
Theoretical Computer Science, vol.745, pp. 133-149, 2018. *A preliminary version of this work was presented at the conferences Mista 2015, Airo2015 and PMS2016*.
- "An Exact Node-Merging Algorithm for the Single Machine Total Tardiness Problem : Experimental Considerations"
L. Shang, M. Garraffa, F. Della Croce, V. Tkindt. *ROADEF2017*.
- "On solving max-mean dispersion to optimality"
M. Garraffa, J. Malick, F. Roupin. *ROADEF2017*.
- "Assessment of Multi-UAVs Tracking for Data Gathering"
M. Bekhti, M. Garraffa, L. Létocart, N. Achir, K. Boussetta. *IWCMC-Wireless Sensor 2017*.
- "Heuristic approaches for a domestic energy management system" F. Della Croce, C. Borean, M. Garraffa, E. Grasso, F. Salassa.
Computers & Industrial Engineering, vol. 109, p.169-178, 2017. *A preliminary version of this work was presented at the conference AIRO2014*
- "An exact Semidefinite Programming approach for the Max-Mean Dispersion Problem" M. Garraffa, F. Salassa and F. Della Croce.
Journal of Combinatorial Optimization, vol.32, pp. 1-23. *A preliminary version of this work was presented at the conference AIRO2014*
- "A hybrid three-phase approach for the Max-Mean Dispersion Problem" F. Della Croce, M. Garraffa, F. Salassa.
Computers&OR, vol. 71, pp. 16-22, 10.1016/j.cor.2016.01.003, 2016. *A preliminary version of this work was presented at the conferences ISCO2014 and AIRO2014*.
- "The one-dimensional cutting stock problem with sequence dependent cut losses" M. Garraffa, F. Salassa, W. Vancroonenburg, G. Vanden Berghe, T. Wauters.
International Transactions in Operational Research, 10.1111/itor.12095, 2014. *A preliminary version of this work was presented at the conference MISTA2013*.
- "The Selective Fixing Algorithm for the closest string problem" F. Della Croce and M. Garraffa.
Computers&OR, vol. 41, pp. 24-30, 10.1016/j.cor.2013.07.017, 2014.
- "A hybrid heuristic for a real world task assignment problem" M. Garraffa, P. Smet, G. Vanden Berghe.
EURO2013, p.338, 2013.

Technical and Personal skills

- **Programming Languages:** C, C#, C++, Java, Matlab, Assembly, MiniZinc, TeX.
- **Optimisation solvers:** CPLEX, Gurobi, Xpress, Symphony, Google Or-Tools, Cvx, CSDP, ConicBundle, SeDuMi, COIN-OR.
- **Language skills:** Italian (*native language*), English (*advanced level*), French (*beginner level*).
- **Other skills:** Good presentation skills, works well in a team, ability to find original solution for complicated problems autonomously, driving license category B.

Interests and extra-curricular activities

- I have been interested for years in practicing yoga and meditation. I used to attend yoga/mindfulness courses regularly and I participated to very long meditation sessions with groups of people.
- I am a vegetarian and I love to spend time cooking vegetarian dishes. In particular, I am passionate in cooking local Italian dishes and other types of ethnic food, especially Indian and Middle-Eastern recipes.
- I had played chess for years, since I was a child. As most of the Italians, I love watching and playing football.

Vittorio Latorre

Educazione

- Dottorato di Ricerca in Ricerca Operativa, “Sapienza” Università di Roma , 2013. Tesi: *Neural networks, surrogate models and black box algorithms: theory and applications*, Relatore: Prof. Gianni Di Pillo.
- Laurea Magistrale in Ingegneria Gestionale, voto: 110 *Cum Laude*/110, “Sapienza” Università di Roma, 2008. Tesi: *Global optimization methods for protein surface’s recognition*, Relatore: Prof. S. Lucidi.
- Laurea Triennale in Ingegneria Gestionale, voto 109/110, “Sapienza” Università di Roma, 2006. Tesi: *Cooperation and competition within firms in research and development’s projects*, Relatore: Prof. C. Leporelli.

Interessi di Ricerca

- *Programmazione Non Lineare*: studio e sviluppo di algoritmi per problemi di programmazione non lineare vincolata a larga scala.
- *Apprendimento Automatico e Modelli Surrogati*: ricerca sui modelli dell’apprendimento automatico come le Reti Neurali e le Support Vector Machines con lo sviluppo di metodi di ottimizzazione con applicazioni nel mondo reale.
- *Ottimizzazione Globale*: Applicazione di metodi dell’ottimizzazione globale e della dualità non lineare a problemi continui e discreti per trovare l’ottimo globale.
- *Ottimizzazione Senza Derivate*: sviluppo ed applicazione di strategie senza derivate a problemi reali, con particolare interesse dell’applicazione di suddette metodologie all’apprendimento automatico ed ai processi di simulazione.

Esperienza

Assegni di Ricerca

- Federation University Australia, Faculty of Science and Technology, Research Associate, Aprile 2018-Aprile 2019
- Dipartimento di Matematica DIMA, Università di Genova, Assegnista di ricerca per il progetto Europeo *Flarecast*, Dicembre 2017- Dicembre 2018.
- Dipartimento di Ingegneria Informatica, Automazione e Gestionale, “Sapienza” Università di Roma, Assegnista di ricerca per il progetto Europeo *Manon*, Aprile 2013-Aprile 2014.

Visite Presso Altre università e Aziende Private

- Università tecnica di Monaco, Dipartimento di Electronical Design Automation , Visiting Scholar, August-September 2014
- Università di Ballarat, Australia, Visiting Scholar, Aprile 2012-Ottobre 2012, Luglio 2013-settembre 2013, Ottobre 2015- Gennaio 2016.
- ST-microelectronics, Catania(Italia), Collaboratore di Ricerca nell’ambito del progetto europeo MANON. Maggio 2011-Novembre 2011.

Pubblicazioni

Pubblicazioni su Riviste Internazionali

1. V. Latorre, D. Y. Gao. "Efficient Deterministic Algorithm for Huge-Sized Noisy Sensor Localization Problems via Canonical Duality Theory". IEEE Transactions on Cybernetics 2019. DOI: 10.1109/TCYB.2019.2891112. Disponibile all'indirizzo: <https://ieeexplore.ieee.org/document/8625704>.
2. V. Latorre, H. Habal, H. Graeb, S. Lucidi. "Derivative free methodologies for circuit worst case analysis". Optimization Letters 2019. DOI: <https://doi.org/10.1007/s11590-018-1364-5>. Disponibile all'indirizzo: <https://link.springer.com/article/10.1007/s11590-018-1364-5>.
3. G. Di Pillo, V. Latorre, S. Lucidi, E. Procacci. "An application of Support Vector Machines to sales forecasting under promotions". 4OR, 2016. DOI: 10.1007/s10288-016-0316-0. Disponibile all'indirizzo: <http://link.springer.com/article/10.1007/s10288-016-0316-0/fulltext.html>.
4. V. Latorre, D. Y. Gao. "Global Optimal Trajectory in Chaos and NP-Hardness". Journal on Bifurcation and Chaos, 2016. Disponibile all'indirizzo: <http://www.worldscientific.com/doi/abs/10.1142/S021812741650142X>.
5. A. Ciccazzo, G. Di Pillo V. Latorre. "A SVM Surrogate Model-Based Method for Parametric Yield Optimization". IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, 2015. DOI: 10.1109/TCAD.2015.2501307. Disponibile all'indirizzo: <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7329988>.
6. V. Latorre, D. Y. Gao. "Canonical duality for solving general nonconvex constrained problems". Optimization Letters, 2015. Disponibile all'indirizzo: <http://link.springer.com/article/10.1007/s11590-015-0860-0>.
7. V. Latorre, S. Sagratella "Canonical Duality Theory Application to Affine Quasi-Variational Inequalities". Journal of Global Optimization, 2014. Disponibile all'indirizzo: <http://link.springer.com/article/10.1007/s10898-014-0236-5>.
8. V. Latorre, D. Y. Gao. "Canonical Dual Solutions to Nonconvex Radial Basis Neural Network Optimization Problem". Neurocomputing, 2014. Disponibile all'indirizzo: <http://www.sciencedirect.com/science/article/pii/S0925231214001672>.
9. A. Ciccazzo, G. Di Pillo, V. Latorre. "Support Vector Machines for Surrogate Modeling of Electronic Circuits". Neural Computing and Applications, 2014. Disponibile all'indirizzo: <http://link.springer.com/article/10.1007/s00521-013-1509-5>.
10. A. Ciccazzo, V. Latorre, G. Liuzzi, S. Lucidi, F. Rinaldi. "Derivative-free robust optimization for circuit design". Journal of Optimization Theory and Applications, 2013. Disponibile all'indirizzo: <http://link.springer.com/article/10.1007/s10957-013-0441-2>.

Capitoli in Libri

11. V. Latorre, S. Sagratella, D. Y. Gao. “Canonical Dual Approach for Contact Mechanics Problems with Friction”. To appear in *Advances in Canonical Duality-Triality Theory: Unified Methodology for Multidisciplinary Study*, Springer, 2016.
12. V. Latorre. “Unified Interior Point Methodology for Canonical Duality in Global Optimization”. To appear in *Advances in Canonical Duality-Triality Theory: Unified Methodology for Multidisciplinary Study*, Springer, 2016.
13. D. Y. Gao, N. Ruan, V. Latorre. “Canonical duality triality theory: bridge between nonconvex analysis/mechanics and global optimization in complex systems”. To appear in *Advances in Canonical Duality-Triality Theory: Unified Methodology for Multidisciplinary Study*, Springer, 2016.

Atti di Conferenze

14. V. Latorre, S. Sagratella. “A Canonical Duality Approach for the Solution of Affine Quasi-Variational Inequalities”. *Proceedings of the Third World Congress on Global Optimization (WCGO)*, 2014. Available at http://link.springer.com/chapter/10.1007/978-3-319-08377-3_31.
15. V. Latorre, D. Y. Gao. “Canonical Duality for Radial Basis Neural Networks”. *Proceedings of The Eighth International Conference on Bio-Inspired Computing: Theories and Applications (BIC-TA)*, 2013. Available at http://link.springer.com/chapter/10.1007/978-3-642-37502-6_139.
16. A. Ciccazzo, G. Di Pillo, V. Latorre. “Support Vector Machines for Real Consumer Circuits”. *Proceedings of The Eighth International Conference on Bio-Inspired Computing: Theories and Applications (BIC-TA)*, 2013. Available at http://link.springer.com/chapter/10.1007/978-3-642-37502-6_140.

Technical Reports

17. V. Latorre. “A Potential Reduction Method for Canonical Duality, with an Application to the Sensor Network Localization Problem”. 2014, Available at <http://arxiv.org/abs/1403.5991>.
18. G. Di Pillo, V. Latorre, S. Lucidi, E. Procacci. “An application of learning machines to sales forecasting under promotions”. 2013, Available at http://www.dis.uniroma1.it/~bibdis/index2.php?option=com_docman&task=doc_view&gid=25&Itemid=34.

Premi

- Third World Congress in Global Optimization (WCGO 2013):
Best paper prize for young scientists.

*Presentazioni a Conferenze e Seminari**Conferenze Internazionali*

1. Numerical Computations: Theory and Algorithms 2016 (NUMTA2016), Pizzo Calabro Italy
“Global Optimal Trajectory in Chaos and NP-Hardness ”.
2. Italian Association of Operation Research 2015 (AIRO 2015), Pisa Italy
“Derivative Free Methodologies for Circuit Worst Case Analysis”.
3. 18th European Conference on Mathematics for Industry, Taormina Italy
“Yield Optimization in Electronic Circuits Design”.

4. 8th International Conference on Bio-Inspired Computing: Theories and Applications (BIC-TA 2013), Tunxi China
“Canonical Duality for Convex Radial Basis Neural Networks”.
5. Third World Congress in Global Optimization (WCGO 2013), Tunxi China **(Invited Speaker)**
“A Canonical Duality Approach to the Solution of Affine Quasi-Variational Inequalities”.
6. 11th EUROPT Workshop on Advances in Continuous Optimization, Firenze Italy
“A Legendre Reformulation for the Solution of Affine Quasi-Variational Inequalities”.
7. International School of Mathematics “G. Stampacchia” 59th Workshop on Nonlinear Optimization: a Bridge from Theory to Applications (2013), Erice Italy
 - (a) “Canonical Duality Approach for Supervised and Unsupervised Learning Problems”.
 - (b) “Yield Optimization in Electronic Circuits Design”.
8. 19th International Conference on Neural Processing (ICONIP 2012), Doha Katar
 - (a) “Support Vector Machines for Real Consumer Circuits”.
 - (b) “Canonical Duality for Radial Basis Neural Networks”.
9. Australian Mathematical Society 56th annual meeting, Ballarat Australia
“Canonical Duality for Error Type Functions”.
10. Italian Association of Operation Research 2012 (AIRO 2012), Vietri Sul Mare Italy
“Derivative-free Approaches for Robust Optimization”.
11. 13th Conference on Communications and Multimedia Security (CMS 2012), London UK
“Derivative-Free Robust Optimization for Circuit Design”.
12. Italian Association of Operation Research 2011 (AIRO 2011), Bergamo Italy
“Learning Machines for Circuit Design”.
13. Italian Association of Operation Research 2010 (AIRO 2010), Villa San Giovanni Italy
“Prediction of Ozone Pollutant Using Neural Networks and Support Vector Machines”.
14. International School of Mathematics “G. Stampacchia” 59th Workshop on Nonlinear Optimization: Variational Inequalities and Equilibrium Problems (2010), Erice Italy
“Black Box Method in Cross-Validation for Support Vector Machines”.
15. Italian Association of Operation Research 2009 (AIRO 2009), Siena Italy
“Sales Forecasting for Retail, a Comparison between Learning Machines and Traditional Methods”.

Seminari

16. University of Genova, Department of Mathematics (2016), Genova Italy
“Edge Preserving Functions Dual Reformulation in Machine Learning”.
17. KU Leuven, Departement Elektrotechniek - ESAT (2015), Leuven Belgium
“Canonical Duality: Theory, Methods and Applications”.
18. MunEDA (Munich Electronic Design Automation) (2014), Munich Germany
“Derivative Free Optimization for Statistical Yield”.
19. Zuse Institut Berlin (2014), Berlin Germany
“A Potential Reduction Method for Canonical Duality, with an Application to the Sensor Network Localization Problem”.

20. Technical University of Munich, Department of Electronical Design Automation (2014), Munich Germany
“On the Use of Surrogate Models for Montecarlo Analysis and Derivative Free Optimization Methods for Circuit Yield Optimization”.
21. Argonne National Laboratory (2013), Argonne Illinois
“On the Use of Surrogate Models for Derivative Free Optimization on Real Consumer Circuits”.
22. University of Rome “Sapienza”, Department of Computer, Control and Management Engineering (2013), Rome Italy
“Canonical Duality Theory Seminar”.
23. University of Ballarat, School of Science, Information Technology and Engineering (2012), Ballarat Australia
“Canonical Duality Workshop”. Video available at <http://video.ballarat.edu.au/videos/1198/canonical-duality-workshop>

Attività Professionali

- Revisore per:
 - Journal of Global Optimization.
 - Optimization Letters.
 - Applied Mathematics and Computation.
 - Neurocomputing.
 - Mathematics and Mechanics of Solids.
 - Springer Proceedings in Mathematics and Statistics.
 - International Journal of Electrical Power and Energy Systems.
- Membro dell’Associazione Italiana per la Ricerca Operativa.
- Membro dell’International Society of Global Optimization.

Insegnamento

1. Ricerca Operativa (Laura Triennale, 6 CFU). “Sapienza” Università di Roma, sede distaccata di Latina, Facoltà di Ingegneria dell’Informazione, 2014-2015.
2. Corso di Ottimizzazione dei Sistemi Complessi (Laurea Magistrale) Tenuto dal Prof. G. Di Pillo. Responsabile della parte di “AMPL”. “Sapienza” Università di Roma, Facoltà di Ingegneria dell’Informazione, 2014.
3. “Ultimi progressi nella ottimizzazione senza derivate” (Corso di Dottorato di Ricerca). “Sapienza” Università di Roma, Dipartimento di Ingegneria informatica, automatica e gestionale. 2014.
4. Corso di Ottimizzazione Globale (Laurea Magistrale) tenuto dal Prof. S. Lucidi. Responsabile per la parte di “Canonical Duality”. “Sapienza” Università di Roma, Facoltà di Ingegneria dell’Informazione, 2013.
5. Corso di Ricerca Operativa (Laurea Triennale) tenuto dal S. Lucidi. tenuto dal Prof. S. Lucidi. Responsabile per la parte di “Condizioni di Ottimalità”. “Sapienza” Università di Roma, Facoltà di Ingegneria dell’Informazione, 2013.
6. Corso di Ricerca Operativa (Laurea Triennale) tenuto dal S. Lucidi. tenuto dal Prof. S. Lucidi. Assistenza al Corso. “Sapienza” Università di Roma, Facoltà di Ingegneria dell’Informazione, 2011.

Capacità Personali

- Lingue Conosciute:
 1. Italiano: Lingua Madre
 2. Inglese: eccellenti capacità di lettura e scrittura, buone capacità verbali
 3. Giapponese: Buone capacità di lettura, fondamentali capacità di scrittura e verbali
Certificazione: Japanese Language Proficiency Test level N2
- Linguaggi di Programmazione Conosciuti
 1. Fortran: buona conoscenza ed esperienza di scrittura di vari codici;
 2. C and C++: buona conoscenza ed esperienza di scrittura di vari codici;
 3. Java: buona conoscenza ed esperienza di scrittura di vari codici;
 4. Matlab: buona conoscenza ed esperienza di scrittura di vari codici.

Ultimo Aggiornamento: May 30, 2019

References

- Professor Gianni Di Pillo (Ph.D. Advisor)
Department of Computer, Control and Management Engineering
University of Rome “Sapienza”
Via Ariosto 25, 00125, Rome, Italy.
Email: dipillo@dis.uniroma1.it
- Professor Stefano Lucidi
Department of Computer, Control and Management Engineering
University of Rome “Sapienza”
Via Ariosto 25, 00125, Rome, Italy.
Email: lucidi@dis.uniroma1.it
- Professor Michele Piana
Dipartimento di Matematica
Università di Genova
Via Dodecaneso 35, 16146 Genova, Italia
Email: piana@dima.unige.it
- Professor Fabio D’Andreagiovanni
Department of Computer Science
Sorbonne University
57 Avenue de Landshut, 60200 Compiègne, France
Email: d.andreagiovanni@hds.utc.fr

CURRICULUM VITAE

EDUCATION

11/2015 - 01/2019 **Ph.D. in Operational Research** at University of Trento, Italy.

Thesis: The algebraic representation of OWA functions in the binomial decomposition framework and its applications in large-scale problems.

As a doctoral student in the Department of Industrial Engineering at the University of Trento, I have been expanding my master's work to study mathematical algorithms for solving constrained optimization problems in operational research and decision making. In particular, my main research interests include the study of ordered weighted averaging (OWA) functions, and the usage of this aggregation function in extracting important features for guiding decision process.

Major learning activities: Mathematical Programming, Linear and Non-linear Optimization, Applied International Economics, Fuzzy Logic in Control Systems, Project Management, Research Methodology, English Proficiency.

09/2012–03/2014 **M.A. in International Management** at University of Trento, Italy.

Thesis: On the construction of consistent inequality indices and empirical results.

The aim of this thesis is to focus on social economic, including the study of social welfare and inequality with respect to household and individual income. The research was empirically carried out for measuring the inequality among Italian households in the period of 1989-2010.

Major learning activities: International Accounting, Financial Market and Corporate, Decision Making, Quantitative methods, Inequality and Social Welfare.

09/2003–07/2007 **B.Sc. in Physics (Honor Program)** at University of Sciences, Vietnam

Thesis: Image Compressing using Discrete Cosine Transform and Vector Quantization.

In this thesis, we review the state-of-the-art methods using in image compression, in particular lossy compression. We then proposed a new method combining two techniques, namely discrete cosine transform and vector quantization for improving the quality of lossy compressed images. Our proposed method is implemented in C and Matlab.

ADDITIONAL COURSES

- 01/2017 - 03/2017 Machine Learning (online), Stanford University, Andrew Ng.
- 09/2016 - 12/2016 Learning from data (online), Yaser Abu-Mostafa, Caltech through edX.
- 01/2016 - 03/2016 Convex Optimization (online), Stanford University, Stephen Boyd and Lieven Vandenberghe.
- 01/2009-06/2009 Java Web-Based Training Course, SKT Telecom and Soongsil University.
Six-month full-time training programme on Java web-based development, including Java, JavaScript, CSS, html, SQL database, MySQL, and professional English for marketing and business.

WORK EXPERIENCE

- 10/2014–04/2015 **International Relations Specialist** at Dong Nai Technology University, Vietnam.
Initiating and building research collaboration between Dong Nai Technology University and oversea educational institutions.
- 03/2010–08/2012 **Business Analyst** at FPT Software Company, Vietnam.
Interviewing stakeholders, analyzing and documenting users' business requirements into specifications (business process flows, system diagrams, use cases, and database diagrams).
Acting as the bridge between clients and offshore team to clarify requirements in both business and system analysis views.
Assuring the quality of released products in accordance with users' requirements.
Assisting Project Manager on project scope, change request and planning.
Projects: **Security Investment Management** (Schroders, Singapore); Developing **Electronic Tolling System** for various states in U.S. (ETCC, U.S.); Migrating and maintaining entire business work-flow of the current sales and customer system management from Lotus Notes to **MS Sharepoint** (Unilever, Thailand)
- 08/2007–09/2008 **Design Engineer** at Altera FPGAs, Vietnam
Researching and developing various digital signal processing cores.

COMPUTER SKILLS

Strong applied **statistics** skills (in particular distributions, statistical testing, regression, forecasting) and algebra.

Good knowledge of technologies and algorithms: Machine Learning, Deep Learning, **Feature Selection, Regression, Classification, Clustering, Neural Networks**, Cross Validation, Ensembles, **Decision Tree, Random Forest, Gradient Boosting**, Time Series Analysis, Forecasting.

Experiences with **Python** (matplotlib, numpy, **pandas, scikit-learn, scikit-image, Keras/ TensorFlow**), **Jupyter Notebook, R(ggplot)**, Matlab, CPLEX, C/C++, Java, Javascript, **MySQL, Tableau**, MS office and Excel VBA.

Basic knowledge of distributed programming models: **Spark**.

Experiences with Linux and **Shell scripting** (Perl, Tcl).

Experiences with Web service: **Google Colab**, **Kaggle Kernels**.

Experiences with file version control: **git**, GitHub, GitLab, SVN and defect tracking tool: JIRA.

JOB-RELATED SKILLS

Being curious and passionate in learning new technologies and business domains.

Good analytical skills with constant focus on solutions and project goals.

Always assigning priorities and planning to achieve the goals timely.

Being flexible in adapting to a new working environment, either in a team or independently.

LANGUAGE KNOWLEDGE

Vietnamese mother tongue

Proficient **English** (both oral and written)

Intermediate **Italian** (B1)

Basic French (A1)

HONOURS AND AWARDS

2016 Merit Award for my master study by University of Trento, Italy.

2004 and 2007 Merit Award by University of Sciences, Vietnam.

PUBLICATIONS

Solving constrained OWA aggregation problems with the binomial decomposition framework, International Journal of Approximate Reasoning [under review]

Simplifying the minimax disparity model for determining OWA weights in large scale problems, International Conference on Optimization and Decision Science, 2018

The binomial decomposition of OWA functions, the 2-additive and 3-additive cases in n dimensions, International Journal of Intelligent systems, 2018

The binomial decomposition of generalized Gini welfare functions, the S-Gini and Lorenzen cases, Information Sciences, 2018.

The soft consensus model in the multidistance framework, Springer, 2018.

PARTICIPATION TO CONGRESSES, SCHOOLS AND WORKSHOPS

International Conference on Optimization and Decision Science - ODS 2018, September 10–13, 2018, Taormina, Italy.

Research period November 7–17, 2017, Department of Applied Economics, University of Valladolid, Valladolid, Spain.

Summer School on Spatial Multicriteria Analysis for Environmental Decision-making, September 6–8, 2017, Department of Civil, Environmental and Mechanical Engineering, University of Trento, Trento, Italy.

Workshop on Advances in Sampling Methods, February 15, 2017, Department of Sociology and Social Research, University of Trento, Trento, Italy.

POSIZIONE ATTUALE

- 01/01/2017 - in corso** Titolare di assegno di ricerca dal titolo "Modelli e algoritmi per l'ottimizzazione real-time del trasporto pubblico" (MAT/09) presso il Dipartimento di Ingegneria dell'Università degli Studi di Roma Tre
- A.A. 2018-2019** Contratto di Docenza per il corso di Elementi di Informatica ed Algebra Lineare (sdoppiamento) (ING-INF/05), contratto di supporto alla didattica per il corso di Ricerca Operativa I (MAT/09), esercitatrice per il corso di Ottimizzazione del Trasporto Pubblico (MAT/09) presso l'Università degli Studi di Roma Tre.
- 24/09/2018-24/09/2024** Abilitazione Scientifica Nazionale 2018 Bando D.D. 1532/2016 Settore concorsuale 01/A6 Ricerca Operativa Fascia II.

FORMAZIONE E TITOLI

2013 **–2016**
PhD in Ingegneria Informatica e dell'Automazione, XVIII ciclo presso l'Università degli Studi di Roma Tre.
Tesi: "Models and algorithms for the real-time railway and air traffic flow management problems" (SSD: MAT/09). Vincitrice dell'Anna Valicek Medal 2016 per ricerca innovativa nel campo della Ricerca Operativa applicata al trasporto Aereo, indetto da AGIFORS.
Vincitrice del premio Lorenzo Brunetta 2018 per tesi di dottorato nell'ambito della Ricerca Operativa indetto dall'Istituto Veneto di Scienze, Lettere ed Arti.
Settembre 2013 – Marzo 2014 *Studente in visita presso Delft University of Technology, Delft, Olanda (parzialmente finanziata da EU COST scheme (TU1004)).*
Ottobre 2014 – Marzo 2015 *Studente in visita presso l'istituto di ricerca IFSTTAR, Lille, Francia (borsa di mobilità per dottorandi dell'Ambassade de France en Italie per i mesi Gennaio-Marzo).*
Ottobre 2015 – Novembre 2015 *Studente in visita presso Universitaet der Bundeswehr, Muenchen, Germania (finanziata dal DAAD con il programma Forschungsstipendien - Kurzstipendien, 2015 Funding Number 57130097).*

2009 – 2011

Laurea Magistrale in Ingegneria Gestionale e dell'Automazione presso l'Università degli Studi di Roma Tre, voto di laurea 110 cum Laude.
Tesi: "Sviluppo di tecniche avanzate statiche e dinamiche di Ottimizzazione per il Traffico Aereo".
Vittoria della Borsa di Studio Accenture riservata ai due migliori studenti del corso di laurea per l'A.A. 2010-2011.

2006 – 2009

Laurea Triennale in Ingegneria Informatica presso l'Università degli Studi di Roma Tre, voto di laurea 108/110.
Tesi: "Benchmark di Filtri Bayesiani"

2001 – 2006

Diploma di maturità scientifica presso il Liceo Scientifico Statale "G.B. Morgagni" di Roma, voto di maturità 100/100.

ATTIVITA' DIDATTICA

- A.A. 2017-2018** Supporto alla didattica per il corso di Ricerca Operativa I (MAT/09) e per i corsi di Geometria e Combinatoria I e II modulo (MAT/03 e MAT/09), esercitatrice per il corso di Ottimizzazione del Trasporto Pubblico (MAT/09) presso l'Università degli Studi di Roma Tre.

A.A. 2016-2017	Supporto alla didattica per il corso di Ricerca Operativa I (MAT/09), esercitatrice per il corso di Ottimizzazione del Trasporto Pubblico (MAT/09) presso l'Università degli Studi di Roma Tre.
A.A. 2012-2013	Supporto alla didattica per il corso di Ricerca Operativa I (MAT/09) presso l'Università degli Studi di Roma Tre.

POSIZIONI PASSATE E ATTIVITA' SCIENTIFICA IN BREVE

01/01/2016 – 31/12/2016 Titolare di assegno di ricerca dal titolo “Modelli e algoritmi per la pianificazione automatica del trasporto pubblico” (MAT/09) presso il Dipartimento di Ingegneria dell'Università degli Studi di Roma Tre

La mia attività di ricerca è incentrata sull'investigare modelli e algoritmi che aiutino a risolvere problemi di gestione e controllo di sistemi di trasporto pubblico, in particolare di trasporto aereo e ferroviario a livello operativo. Attualmente in entrambi i casi la gestione in tempo reale è largamente un'operazione manuale. In caso di ritardi che disturbino il normale corso delle operazioni, i controllori del traffico sono chiamati a prendere decisioni tempestive per risolvere richieste conflittuali da parte di più veicoli che necessitano di utilizzare le stesse risorse. La complessità di questa operazione è causa di frequenti riduzioni della qualità del servizio offerto che potrebbero essere evitate o ridotte drasticamente attraverso modelli e tecniche di ottimizzazione. Esplorando tale tematica, la mia attività di ricerca si concentra su quattro principali aree:

1. Sviluppo e integrazione di modelli: piuttosto che creare modelli esageratamente complessi e impossibili da risolvere in un tempo computazionale ragionevole, nella pratica si preferisce dividere un problema generale ma non trattabile in sotto problemi più specifici e semplici da risolvere. Nella gestione del traffico ferroviario si è perciò studiato come integrare il problema di scheduling dei treni in tempo reale, risolto dal punto di vista del gestore dell'infrastruttura, con quello della massimizzazione della qualità del servizio percepito dai passeggeri, di importanza per le compagnie ferroviarie. Si stanno inoltre integrando vincoli di coupling/decoupling dei treni, e includendo variabili di decisione sui profili di velocità a partire da un insieme di opzioni discrete predeterminate. Nella gestione del traffico aereo, invece, si è studiato come integrare il problema di scheduling degli aerei all'interno di un'area aeroportuale con quello dell'ottimizzazione delle traiettorie di atterraggio di ogni singolo velivolo, oltre a come coordinare il problema di gestione delle connessioni aeree in caso di ritardi con il problema di scheduling stesso (A9, A12, A17, A18, B1, B2, B3, B4, C1, C2, C4, C5, C6, C12, C14, C15, C17, C19, C21, C23, C24, C26);
2. Studio di tecniche di search space restriction: nel traffico ferroviario, il numero di alternative di routing disponibili per ogni treno influenza significativamente le dimensioni del problema e il tempo computazionale necessario per risolverlo. Si è perciò studiato se convenisse, come fare e quando svolgere una limitazione dello spazio di ricerca attraverso una pre-selezione di un sottoinsieme di alternative di routing. Nel traffico aereo invece si è analizzata l'influenza di tecniche di tipo rolling horizon sul processo risolutivo (A1, A2, A3, A4, A5, A10, A11, A16, C11, C18, C22, C25);
3. Sviluppo di algoritmi risolutivi: all'interno di AGLibrary, una suite di algoritmi risolutivi per problemi di Flexible Job Shop Scheduling modellati attraverso l'uso del grafo delle alternative, si è andati a potenziare gli algoritmi di scheduling una volta fissati i routing, attraverso l'introduzione di nuove tecniche di implicazione delle decisioni grazie, per esempio, allo sfruttamento di vincoli di tipo deadline per evitare di cadere in aree di non ammissibilità o sfruttare le informazioni ottenute in processi di recupero della flessibilità attraverso scelte di rerouting, oltre all'investigazione di algoritmi per il modulo di rerouting e di tecniche per il calcolo del lower bound del problema complessivo (A6, A13, A15, C7, C9, C10, C13, C20);
4. Analisi dei trade-off tra funzioni obiettivo: al momento per i problemi studiati non esiste una funzione obiettivo generalmente riconosciuta. Tipicamente, si vuole trovare un buon sequenziamento cercando di minimizzare gli effetti negativi a lungo termine dovuti alle decisioni di scheduling. Questo principio è stato tradotto nella letteratura in una serie di funzioni obiettivo differenti. I trade-off tra i valori di una soluzione ottimizzata e la stessa valutata con indicatori differenti sono stati analizzati, insieme a possibili idee su come trovare soluzioni che ottimizzano più di un obiettivo simultaneamente (A7, A8, A14, C3, C8, C16).

PUBBLICAZIONI SCIENTIFICHE

Articoli su riviste scientifiche indicizzate su SCOPUS/ISI [A]:

- [A18] Samà, M., D'Ariano, A., Corman, F., Pacciarelli, D., (2018) Coordination of scheduling decisions in the management of airport airspace and taxiway operations, **Transportation Research, Part A**, 114 (B) 398–411.
- [A17] Samà, M., D'Ariano, A., Corman, F., Pacciarelli, D., (2017) Coordination of scheduling decisions in the management of airport airspace and taxiway operations, **Transportation Research Procedia**, 23 (1) 246–262.
- [A16] Samà, M., Pellegrini, P., D'Ariano, A., Rodriguez, J., Pacciarelli, D., (2017). On the tactical and operational train routing selection problem. **Transportation Research Part C**, 76 (1) 1-15.
- [A15] Samà, M., D'Ariano, A., Corman, F., Pacciarelli, D., (2017). A variable neighbourhood search for fast train scheduling and routing during disturbed railway traffic situations. **Computer & Operations Research**, 78 (1) 480-499.
- [A14] Samà, M., D'Ariano, A., D'Ariano, P., Pacciarelli, D., (2017). Scheduling models for optimal aircraft traffic control at busy airports: Tardiness, priorities, equity and violations considerations. **OMEGA**, 67 (1) 81-98.
- [A13] Samà, M., D'Ariano, A., Corman, F., Pacciarelli, D., (2017). Metaheuristics for efficient aircraft scheduling and re-routing at busy terminal control areas, **Transportation Research Part C**, 80 (1) 485-511.
- [A12] Corman, F., D'Ariano, A., Marra, A.D., Pacciarelli, D., Samà, M., (2016). Integrating Train Scheduling and Delay Management in Real-time Railway Traffic Control. **Transportation Research Part E**, 105 (1) 213-239.
- [A11] Samà, M., Pellegrini, P., D'Ariano, A., Rodriguez, J., Pacciarelli, D., (2016). Ant colony optimization for the real-time train routing selection problem. **Transportation Research Part B**, 85 (1) 89-108
- [A10] Samà, M., Pellegrini, P., D'Ariano, A., Rodriguez, J., Pacciarelli, D., (2015). A Routing Filter for the Real-Time Railway Traffic Management problem based on Ant Colony Optimization. **Transportation Research Procedia**, 10, 534-543
- [A9] Corman, F., Xin, J., Negenborn, R.R., D'Ariano, A., Samà, M., Toli, A., Lodewijks, G., (2016). Optimal scheduling and routing of free-range AGVs at large scale automated container terminals, **Periodica Polytechnica Transportation Engineering**, 44(3) 145– 154.
- [A8] Samà, M., Meloni, C., D'Ariano, A., Corman, F., (2015). A multi-criteria decision support methodology for real-time train scheduling. **Journal of Rail Transport Planning & Management**, 5(3) 146–162
- [A7] Samà, M., D'Ariano, A., D'Ariano, P., Pacciarelli, D., (2015). Air Traffic Optimization Models for Aircraft Delay and Travel Time Minimization in Terminal Control Areas, **Public Transport: Planning and Operations**, 7 (3), 321-337
- [A6] D'Ariano, A., Samà, M., D'Ariano, P., Pacciarelli, D., (2014). Evaluating the applicability of advanced techniques for practical real-time train scheduling, **Transportation Research Procedia**, 3 279–288.
- [A5] Samà, M., D'Ariano, A., D'Ariano, P., Pacciarelli, D., (2014). Optimal aircraft scheduling and routing at a terminal control area during disturbances, **Transportation Research, Part C**, 47(1) 61-85.
- [A4] Samà, M., D'Ariano, A., D'Ariano, P., Pacciarelli, D., (2014). Comparing Centralized and Rolling Horizon Approaches for Optimal Aircraft Traffic Control in Terminal Areas, **Transportation Research Record, Journal of the Transportation Research Board**, 2449 45–52.
- [A3] Samà, M., D'Ariano, A., Pacciarelli, D., (2013). Rolling Horizon Approach for Aircraft Scheduling in the Terminal Control Area of Busy Airports, **Transportation Research, Part E**, 60(1) 140–155.
- [A2] Samà, M., D'Ariano, A., Pacciarelli, D., (2013). Rolling Horizon Approach for Aircraft Scheduling in the Terminal Control Area of Busy Airports, **Procedia Social and Behavioral Sciences**, 80 531–552, Elsevier Ltd.
- [A1] Samà, M., D'Ariano, A., Pacciarelli, D., (2012). Optimal aircraft traffic flow management at a terminal control area during disturbances, **Procedia Social and Behavioral Sciences**, 54 460–469, Elsevier Ltd.

Capitoli o Articoli su altri giornali scientifici [B]:

[B4] A. Dreves, M. Gerdts, M. Samà, A. D'Ariano, Free Flight Trajectory Optimization and Aircraft Scheduling, **Lecture Notes in Mobility**, Springer Verlag, Heidelberg, Germany, TO APPEAR 2019.

[B3] M. Samà, K. Palagachev, A. D'Ariano, M. Gerdts, D. Pacciarelli, Terminal Control Area Aircraft Scheduling and Trajectory Optimization Approaches, **ITM Web of Conferences**, 14, 1-7 DOI: 10.1051/itmconf/20171400008.

[B2] Tripathy, M., Samà, M., Corman, F., Lodewijks, G. Impact of collaborative decision making in optimized air traffic control: a game theoretical approach. In: A. Paías, M. Ruthmair, S. Voss (Eds.), Computational Logistics, **Lecture Notes in Computer Science** 9855 397–410, Springer - Verlag Berlin Heidelberg, 2016.

[B1] Corman, F., Pacciarelli, D., D'Ariano, A., Samà, M. Railway Traffic Rescheduling Taking into Account Minimization of Passengers Discomfort, In: F. Corman, S. Voss and R.R. Negenborn (Eds.), Computational Logistics, **Lecture Notes in Computer Science** 9335 602–616, Springer - Verlag Berlin Heidelberg, 2015.

Proceedings di Conferenze con processo di Peer Review [C]:

[C26] Chang, Y., Niu, Y., Wang, Y., Luan, X., D'Ariano, A., Samà, M. Train Rescheduling for an Urban Rail Transit Line under Disruptions, Proceedings of the 8th International Conference on Railway Operations Modelling & Analysis (**RailNorrköping 2019**), 17-20 June 2019, Norrköping, Sweden.

[C25] Samà, M., D'Ariano, A., Pacciarelli, D., Pellegrini, P., Rodriguez, J. Applications of train routing selection methods for real-time railway traffic management, Proceedings of the 21st IEEE International Conference on Intelligent Transportation Systems, (**IEEE-ITSC 2018**) 3-7 November 2018, Maui, Hawaii, USA.

[C24] Samà, M., D'Ariano, Pacciarelli, D., Palagachev, K., Gerdts, M. Optimal Aircraft Scheduling and Flight Trajectory in Terminal Control, Proceedings of the 5th International Conference on Models and Technologies for Intelligent Transportation Systems, **MT-ITS 2017**, (pp. 1–6), 26–28 June 2017, Naples, Italy.

[C23] D'Ariano, A., Pacciarelli, D., Samà, M., Corman, F. Microscopic Delay Management: Minimizing Train Delays and Passenger Travel Times during Real-Time Railway Traffic Management, Proceedings of the 5th International Conference on Models and Technologies for Intelligent Transportation Systems, **MT-ITS 2017**, (pp. 1–6), 26–28 June 2017, Naples, Italy.

[C22] Samà, M., Pellegrini, P., D'Ariano, A., Rodriguez, J., Pacciarelli, D. Ant Colony Optimization for train routing selection: operational vs tactical application, Proceedings of the 5th International Conference on Models and Technologies for Intelligent Transportation Systems, **MT-ITS 2017**, (pp. 1–6), 26–28 June 2017, Naples, Italy.

[C21] Corman, F., D'Ariano, A. Samà, M., Pacciarelli, D. Strategic interactions in passenger oriented railway traffic control, 17th Swiss Transport Research Conference (**STRC**) 2017, 17–19 May 2017, Monte Verità, Switzerland.

[C20] Samà, M., D'Ariano, A., Pacciarelli, D., Corman, F. Real-time near-optimal train scheduling and routing in complex railway networks, **First Triennial Conference of INFORMS Transportation and Logistics Society**, (pp. 1–6), 26–29 July 2017, Chicago, Illinois, USA.

[C19] Samà, M., D'Ariano, A., Corman, F., Pacciarelli, D. Coordination of scheduling decisions in the management of airport airspace and taxiway operations, Proceedings (Lectern Presentation) of the 22nd International Symposium on Transportation & Traffic Theory (**ISTTT**), (pp. 1–19), 24–26 July 2017, Chicago, Illinois, USA.

[C18] Samà, M., Pellegrini, P., D'Ariano, A., Rodriguez, J., Pacciarelli, D. The potential of the routing selection problem in real-time railway traffic management, Proceedings of the 7th International Conference on Railway Operations Modelling and Analysis (**ICROMA**), (pp. 1–18), 4–7 April 2017, Lille, France.

[C17] Samà, M., Palagachev, K., D'Ariano, A., Gerdts, M., Pacciarelli, D. Terminal Control Area Aircraft Scheduling and Trajectory Optimization Approaches, Proceedings of the 12th International Conference on APplied mathematical programming and MODelling (**APMOD 2016**), (pp. 1–8), 8–10 Giugno 2016, Brno, Czech Republic.

- [C16] Samà, M., D'Ariano, A., D'Ariano, P., Pacciarelli, D. Scheduling models for optimal aircraft traffic control at busy airports: tardiness, priorities, equity and violations considerations, Proceedings of the 20th Air Transport Research Society (ATRS) World Conference, June 23-26, 2016, Rhodes, Greece.
- [C15] Samà, M., D'Ariano, A., Corman, F., Pacciarelli, D. Lower and upper bound algorithms for the real-time train scheduling and routing problem in a railway network, Proceedings of the 14th IFAC Symposium on Control in Transportation Systems, (CTS2016), 18-20 Maggio, 2016, Istanbul, Turkey.
- [C14] Corman, F., Pacciarelli, D., D'Ariano, A., Samà, M. Railway Traffic Rescheduling with Minimization of Passengers Discomfort, Proceedings of the 6th International Conference on Computational Logistics (ICCL2015), (pp. 1–15), 23-25 Settembre 2015, Delft, Olanda.
- [C13] Samà, M., D'Ariano, A., Toli, A., Pacciarelli, D., Corman, F. Metaheuristics for real-time near-optimal train scheduling and routing, Proceedings of the 16th International IEEE Conference on Intelligent Transportation Systems (IEEE-ITSC2015), (pp. 1–6), 15-18 Settembre 2015, Las Palmas de Gran Canaria, Canary Islands, Spagna.
- [C12] Corman, F., D'Ariano, A., Pacciarelli, D., Sabene, F., Samà, M. Train Delay and Passenger Travel Time Minimization in Real-Time Railway Traffic Management, 13th International Conference on Advanced Systems for Public Transport, (CASPT2015), 19–23 Luglio 2015, Rotterdam, Olanda.
- [C11] Samà, M., Pellegrini, P., D'Ariano, A., Rodriguez, J., Pacciarelli, D. A Routing Filter for the Real-Time Railway Traffic Management problem based on Ant Colony Optimization, Proceedings of the 18th meeting of the Euro Working Group on Transportation (EWGT2015), 14–16 Luglio 2015, Delft, Olanda.
- [C10] Samà, M., D'Ariano, A., Toli, A., Pacciarelli, D., Corman, F. A variable neighborhood search for optimal scheduling and routing of take-off and landing aircraft, 4th International Conference on Models and Technology for Intelligent Transportation Systems, (MT-ITS2015), 3–5 Giugno 2015, Budapest, Ungheria.
- [C9] Corman, F., Xin, J., Toli, A., Negenborn, R.R., D'Ariano, A., Samà, M., Lodweijks, G. Optimizing hybrid operations at large-scale automated container terminals, 4th International Conference on Models and Technology for Intelligent Transportation Systems (MT-ITS2015), 3–5 Giugno 2015, Budapest, Ungheria.
- [C8] Samà, M., Meloni, C., D'Ariano, A., Corman, F. A multi-criteria decision support system for real-time train rescheduling, Proceedings of the 6th International Conference on Railway Operations Modelling and Analysis (RailTokyo2015), (pp. 1–20), 23–26 Marzo 2015, Chiba Institute of Technology, Tokyo, Giappone. *Selected among the best papers on a total of 116 accepted.*
- [C7] D'Ariano, A., Samà, M., D'Ariano, P., Pacciarelli, D. Evaluating the applicability of advanced techniques for practical real-time train scheduling, 17th meeting of the Euro Working Group on Transportation (EWGT2014), (pp. 1–9), 2–4 Luglio 2014, Siviglia, Spagna.
- [C6] Samà, M., D'Ariano, A., D'Ariano, P., Pacciarelli, D. Detailed scheduling models for optimal aircraft traffic control at busy airports, Accepted for presentation at the 1st International Conference on Engineering and Applied Sciences Optimization (OPTI2014), (pp.1–14), 4–6 Giugno 2014, Kos, Grecia.
- [C5] Samà, M., D'Ariano, P., D'Ariano, A., Pacciarelli, D. Comparing Centralized and Rolling Horizon Approaches for Optimal Aircraft Traffic Control in Terminal Areas, Proceedings of the 93th Transportation Research Board Annual Meeting (TRB2014), (pp. 1–15), Washington DC, USA.
- [C4] Corman, F., Sabene, F., Pacciarelli, D., Samà, M., D'Ariano, A. Railway Traffic Control with minimization of passengers' discomfort, Proceedings of the 3rd International Conference on Models and Technology for Intelligent Transportation Systems, (MT-ITS2013), (pp. 1–10), 2–4 Dicembre 2013, Dresden, Germania.
- [C3] Samà, M., D'Ariano, P., D'Ariano, A., Pacciarelli, D. Air Traffic Optimization Models for Aircraft Delay and Travel Time Minimization in Terminal Control Areas, Proceedings of the 3rd International Conference on Models and Technology for Intelligent Transportation Systems, (MT-ITS2013), (pp. 1–10), 2–4 Dicembre 2013, Dresden, Germania.

[C2] Samà, M., D'Ariano, A., Pacciarelli, D. Rolling Horizon Approach for Aircraft Scheduling in the Terminal Control Area of Busy Airports, Accepted for publication and plenary presentation at the 20th International Symposium on Transportation and Traffic Theory (**ISTTT2013**), 17-19 Luglio, 2013, Noordwijk, Olanda.

[C1] Samà, M., D'Ariano, A., Pacciarelli, D. Optimal aircraft traffic flow management at a terminal control area during disturbances, Proceedings of the 15th meeting of the Euro Working Group on Transportation (**EWGT2012**), 10-12 Settembre, 2012, Parigi, Francia.

Altri talks a conferenze e seminari [D]:

[D19] Samà, M., D'Ariano, A., Pacciarelli, D., Pranzo, M. Models and algorithms for the real-time train scheduling and routing problem, International Conference on Optimization and Decision Science (**ODS2018**), organized by AIRO, 10-13 September 2018, Taormina, Italy.

[D18] D'Ariano, A., Corman, F., Pacciarelli, D., Samà, M. Coordination of scheduling decisions in the management of airport airspace and taxiway operations, International Conference on Optimization and Decision Science (**ODS2018**), organized by AIRO, 10-13 September 2018, Taormina, Italy

[D17] Samà, M., D'Ariano, A., Pacciarelli, D. New alternative graph models and methods for the real-time railway traffic management problem, 14th International Conference on Advanced Systems in Public Transport (**CASPT2018**), 23-25 July 2018, Brisbane, Australia.

[D16] Samà, M., D'Ariano, A., Palagachev, K., Gerdts, M. Integration methods for aircraft scheduling and trajectory optimization at a busy terminal manoeuvring area, 29th European Conference On Operational Research (**EURO2018**), 8-11 July 2018, Valencia, Spain.

[D15] Samà, M., D'Ariano, A., Pacciarelli, D., Pranzo, M. Models and algorithms for the real-time train scheduling and routing problem, The 9th Joint **EURO/ALIO** International Conference 2018 on Applied Combinatorial Optimization, 25-27 June 2018, Bologna, Italy

[D14] Samà, M., D'Ariano, A., Pranzo, M., Pacciarelli, D. Exact and heuristic algorithms for the real-time train scheduling and routing problem, International Conference on Optimization and Decision Science (**ODS2017**), 47th Annual Conference of the Italian Operational Research Society (**AIRO 2017**), 4-7 September, Sorrento, Italy.

[D13] Pacciarelli, D., Samà, M., D'Ariano, A., Corman, F. Fast computation of lower and upper bounds for the real-time train scheduling and routing problem, Network Optimization Workshop (**NOW2017**), organized by Prof. Roberto Tadei, June 2017, Viterbo, Italia.

[D12] Samà, M., D'Ariano, A., Corman, F., Pacciarelli, D. Metaheuristics for efficient aircraft scheduling and re-routing at busy terminal control areas, **INFORMS** Annual Meeting 2016, 13-16 November 2016, Nashville, USA.

[D11] Samà, M., D'Ariano, A., Corman, F., Pacciarelli, D. Metaheuristics for efficient aircraft scheduling and re-routing at busy terminal control areas, 56th Airline Group of the International Federation of Operational Research Societies Annual Symposium, **AGIFORS** 2016, 10-14 October 2016, Santiago, Chile.

[D10] Samà, M., Palagachev, K., D'Ariano, A., Gerdts, M., Pacciarelli, D. Terminal Control Area Aircraft Scheduling and Trajectory Optimization Approaches, **KoMSO Challenge Workshop: Mathematical Modeling, Simulation and Optimization for Air Traffic Management**, 14-15 July 2016, Frankfurt, Germany.

[D9] Samà, M., Pellegrini, P., D'Ariano, A., Rodriguez, J., Pacciarelli, D. Train routing selection for the real-time railway traffic management problem, **Dagstuhl Seminar** 16171, 24-29 April 2016, Dagstuhl, Germany.

[D8] Samà, M., D'Ariano, A., Corman, F., Pacciarelli, D. Metaheuristics for efficient aircraft scheduling and re-routing at busy terminal control areas, 46th Annual Conference of the Italian Operational Research Society (**AIRO 2016**), 6-9 September, Trieste, Italia.

[D7] Samà, M., Pellegrini, P., D'Ariano, A., Rodriguez, J., Pacciarelli, D. Ant colony optimization for the real-time train routing selection problem, 28th European Conference on Operational Research (**EURO2016**), 3-6 Luglio 2016, Poznan, Poland.

[D6] Samà, M., D'Ariano, A., Pacciarelli, D., Corman, F. Real-time near-optimal train scheduling and routing in complex railway networks, 45th Annual Conference of the Italian Operational Research Society (**AIRO2015**), 7-10 Settembre, Pisa, Italia.

[D5] Samà, M., Zaninotto, G., D'Ariano, A., Pacciarelli, D., Corman, F. A hybrid metaheuristic for re-scheduling and re-routing in public transport, 44th Annual Conference of the Italian Operational Research Society (**AIRO2014**), 2-5 Settembre, Como, Italia.

[D4] D'Ariano, A., Corman, F., Pacciarelli, D., Sabene, F., Samà, M. Minimization of passengers' travel time in railway traffic control, 44th Annual Conference of the Italian Operational Research Society (**AIRO2014**), 2-5 Settembre, Como, Italia.

[D3] Pacciarelli, D., D'Ariano, A., Corman, F., Sabene, F., Samà, M. Minimization of passengers' travel time in railway traffic control, International Federation of Operational Research Societies Conference 2014 (**IFORS2014**), 13-18 Luglio 2014, Barcellona, Spagna.

[D2] D'Ariano, A., D'Ariano, P., Samà, M., Pacciarelli, D. Development and evaluation of an industrial prototype for supporting real-time train dispatching decisions, Fourth International Conference on Industrial Engineering and Operations Management (**IEOM2014**), Bali, Indonesia, 7-9 Gennaio, 2014.

[D1] Samà, M., D'Ariano, A., Pacciarelli, D. Rolling Horizon Approach for Aircraft Scheduling in the Terminal Control Area of Busy Airports, (**AIRO2012**), 4-7 September 2012, Vietri sul Mare, Italy.

CONSULENZE E PASSATE ESPERIENZE

20/05/2019-24/05/2019	Consulenza presso le Ferrovie Federali Svizzere (SBB/FFS/CFF). Design di un algoritmo di Recover Feasibility data l'introduzione di vincoli di deadline durante la creazione di un timetable.
15/07/2018-20/07/2018	Consulenza presso le Ferrovie Federali Svizzere (SBB/FFS/CFF). Design di speed-up algoritmici per la risoluzione di problemi di timetable.
12/03/2018-16/03/2018	Consulenza presso le Ferrovie Federali Svizzere (SBB/FFS/CFF). Definizione di un modello specifico per le esigenze della rete svizzera.
21/11/2017-27/11/2017	Consulenza presso le Ferrovie Federali Svizzere (SBB/FFS/CFF). Valutazione di sistemi automatici di ottimizzazione per la gestione del traffico ferroviario.
Luglio-Dicembre 2012	Contratto di collaborazione presso l'Università degli Studi di Roma Tre
2012	Stage Alitalia – Revenue Management & E-business

PARTECIPAZIONE A PROGETTI DI RICERCA

“Optimal closed-loop control of railway traffic in conventional Projects and high speed networks” (contratto numero RCS2017K010), finanziato dallo State Key Laboratory of Rail Traffic Control and Safety, Beijing Jiaotong University.

COMITATI DI CONFERENZE

Parte del comitato organizzativo locale per la European Conference on Stochastic Optimization (**ECSO 2017**), che ha avuto luogo a Roma, dal 20 al 22 Settembre 2017. ECSO 2017 è stata la seconda edizione di uno stream di conferenze triennali organizzate dall'EURO Working Group on Stochastic Optimization (EWGSO) - precedentemente chiamato EURO Working Group on Stochastic Programming.

VARIE

Reviewer presso diversi giornali internazionali, tra cui si annoverano: Omega, Transportation Research Part B; Transportation Research Part C; Transportation Research Part E; IEEE Transactions on Intelligent Transportation Systems; IEEE Transactions on Automation Science and Engineering, Flexible Services and Manufacturing Journal, Journal of Air Transportation Management; Journal of Advanced Transportation, Simulation Modelling Practice and Theory, etc.

CONOSCENZE LINGUISTICHE

Italiano: Madrelingua

Inglese: Eccellente conoscenza della lingua sia scritta che parlata (C1)

Francese: Buona conoscenza della lingua sia scritta (B1) che parlata (B2)