

Curriculum vitae

Giovanni Righini, born in Crema (Italy), December 19th, 1963.

Affiliation

University of Milan, Department of Computer Science
Via Bramante 65, 26013 Crema (CR), Italy
Phone: (39) 0373 898060
Fax: (39) 0373 898010
E-mail: giovanni.righini@unimi.it

Education and positions

- 1988: Master degree in Electronic Engineering at Polytechnic University of Milan (100/100).
- 1993: Ph.D. in Computer Engineering at Polytechnic University of Milan. (*Human Capital and Mobility Program* of the European Community).
- 1996-2002: Assistant professor of Computer Science, University of Milan.
- 2002-2018: Associate professor of Operations Research, University of Milan.
- Since 2018: Full professor of Operations Research, University of Milan.

Visiting positions

- Visiting position at Technische Universiteit Eindhoven (1993-94): Human Capital and Mobility Programme of the European Community.
- Lecturer in the Ph.D. course in Applied Mathematics at Universidad Complutense Madrid, Spain (March 2010).
- Lecturer in a Ph.D. course in Mathematical Programming at National University of Defense Technology in Changsha, China (July 2011).
- “Profesor Visitante Distinguido” at Universidad Complutense de Madrid (December 2011-February 2012).

Awards

- Advisor of five theses (3 at B.Sc level and 2 at M.Sc. level) awarded the Camerini-Carraresi prize by the Italian O.R. Society (AIRO).
- Recipient of an IBM Faculty Award 2010.
- Selected by the Italian Government in the initiative “L’Italia degli Innovatori” (2011).

Organization and coordination of scientific research activities

- Founder and director of the Operations Research Laboratory “OptLab” at the University of Milan, since 1998.
- Responsible of research projects funded by the Italian Ministry for Education, University and Research:
 - Head of the research unit *Algorithms for combinatorial optimization problems with capacity constraints* in the research program PRIN-COFIN 2005 n.2005099974, *Packing and routing problems in the optimization of transportation systems*.
 - Head of the research unit *Column generation algorithms for routing problems* in the research program PRIN-COFIN 2008 n.20088SBBH9, *Models and algorithms for combinatorial optimization problems in transportation systems management*.
- Responsible of research projects funded by other institutions and companies:
 - Research contracts *Optimization algorithms for planning and scheduling of Earth observing satellites (COSMO-SkyMed program)* with Space Software Italia SpA, Taranto (May 2003 - July 2004 and September 2004 - February 2005).
 - Research contract for the development of vehicle routing algorithms, with @logistics-Reply SpA, Milano (2006).
 - Research project *Decembria* for the development of a decision support system for the operational center of the sanitary emergency management system in Milan, with Azienda Ospedaliera “Ca’ Granda”, Milano (2008-2009).
 - Research contract for the development of optimization algorithms for a consortium of small enterprises in the freight transportation industry, with Pointcar Servizi Telematici Srl (2011).
 - Research contract for the development of mathematical models for the optimization of work shifts of cardiologists, with Azienda Ospedaliera “Santa Maria degli Angeli”, Pordenone (2012).
 - Research contract for the design and implementation of a decision support system for a social transportation system with Comune di Crema (2014).
 - Consulting contract with Lanzi Innovazione (2015).
 - Consulting contract with Pirelli Tyre (2017).
- Member of the Scientific Committee of the Cologne-Twente Workshops (CTW) on Graphs and Combinatorial Optimization and conference chair of the 7th CTW (Gargnano, May 2008) and the 14th CTW (Gargnano, June 2016).
- Member of the Scientific and Organizing Committee of the FIMA International Conference 2008 *Energy and Environment: new challenges to mathematical modelling and applications* (Champoluc, January 2008).
- 2005-11: Member of the board of AIRO - Associazione Italiana di Ricerca Operativa.
- Guest editor for a special issue of the journal Networks devoted to the Cologne-Twente Workshop on Graphs and Combinatorial Optimization 2008.
- Referee for about 40 international journals and several international conferences.
- Project evaluator for: Swiss National Science Foundation (2007, 2008); Superior Council of the National Fund for Scientific and Technological Development (FONDECYT) of Chile (2008, 2009); Research Promotion Foundation (RPF) of Cyprus (2010); Israel Science Foundation (2015).

Other professional activities

- Consulting activity at FIAR (Milano, Italy) on engineering the prototype of a Petri Nets-based simulator of flexible production systems (1988).
- Research contract with ST-Microelectronics on “Advanced techniques for the Branch Prediction Problem” (1997).

- Consulting activity for Studio Zeta (Monza, Italy) on optimal definition of labor contracts of call centers personnel (2007 and 2010).
- Consulting activity for Business Reply (Milano, Italy) on multi-objective optimization in financial applications (2008).
- Consulting activity for Crema Ricerche and ALOT (Brescia, Italy) on the estimation of the maximum capacity of the waterway system in Northern Italy (2011).
- Consulting activity for Crema Ricerche and Studio Zeta (Monza, Italy) on mathematical models for forecasting (2012).
- Consulting activity for Crema Ricerche and RSE (Milano, Italy) on models and algorithms for the unit commitment problem (2012-13).
- Consulting activity for CEMISS (Italy) on the development of operations research capabilities for the Italian military (2013).
- Consulting activity for Albodoor (2014).
- Consulting activity for Ancorotti Cosmetics (2016, 2017).

Teaching and tutoring

- Course for Ph.D. students on *Heuristic and meta-heuristic algorithms*, University of Milan, 2007.
- Course for Ph.D. students on *Optimization on graphs*, University of Milan, 2013.
- Advisor of 7 Ph.D. students.
- Advisor of 7 post-doc fellowships.
- Advisor of 11 post-degree fellowships.
- Advisor for 7 internships of foreign students.
- Curricular courses at the University of Milan:
 - Since 1998-99: *Operations Research* (one semester).
 - Since 1999-00: *Combinatorial Optimization* (one semester).
 - Since 2002-03: *Logistics* (one semester).
 - Since 2003-04: *Complements of Operations Research* (one semester).
 - Since 2005-06: *Heuristic Algorithms* (one semester).
 - 1996-99: *The art of programming - Preparation to the ACM programming contests*.
- Activities for O.R. education in high schools
 - Organizer and teacher in a course for high schools teachers on *O.R. teaching in high schools*, University of Milan (2007).
 - Teacher in the course *Models and Algorithms* for prospective high school teachers in mathematics (TFA), University of Milan (2012-13).
 - Project *Production of multimedia interactive software in O.R.*, Initiatives for the Diffusion of Scientific Education, annual projects of the Italian Ministry for Education, University and Research (2008).
 - Selected as a member of a working group for the *Programma Qualità Merito* of the Italian Ministry for Education, University and Research (2010).
 - 2005-2011: Organizer of the annual national competition in O.R. for Italian high school students.
 - Organizer of “*Ottimiziamo!*”, a series of stages for high school students in the university labs and other activities in the framework of *Programma Lauree Scientifiche* of the Italian Ministry for Education, University and Research (since 2009).
- Since 2014-15: member of the scientific board of the IFTS course *Smart logistics specialist* funded by Regione Lombardia and European Union.

Publications

International journals

1. G. Righini, "*FIRST*": A Petri net-based system for simulation of complex distributed manufacturing systems, *Computer Integrated Manufacturing Systems* 3 (1990) 252-263.
2. G. Righini, *Modular Petri nets for simulation of flexible production systems*, *International Journal of Production Research* 31 (1993) 2463-2477.
3. F. Maffioli, G. Righini, *An annealing approach to multiresource allocation problems in Euclidean spaces*, *Location Science*, 2 (1994) 205-222.
4. G. Righini, M. Trubian, *A worst-case analysis of two approximate algorithms for the asymmetric traveling salesman problem*, *European Journal of Operational Research* 81 (1995) 553-556.
5. G. Righini, *A double-annealing algorithm for discrete location/allocation problems*, *European Journal of Operational Research* 86 (1995) 452-468.
6. A. Colorni, M. Dorigo, F. Maffioli, V. Maniezzo, G. Righini, M. Trubian, *Heuristics from nature for hard combinatorial optimization problems*, *International Transactions in Operational Research* 3, 1 (1996) 1-21.
7. G. Righini, *Annealing algorithms for multisource absolute location problems on graph*, *Computational Optimization and Applications* 7 (1997) 325-337.
8. G. Righini, M. Trubian, *Data-dependent bounds for the general and the asymmetric stacker-crane problems*, *Discrete Applied Mathematics* 91 (1999) 235-242.
9. A. Colorni, G. Righini, *Modeling and optimizing dynamic dial-a-ride problems*, *International Transactions in Operational Research* 8 (2001) 155-166.
10. G. Righini, M. Trubian, *A note on the approximation of the Asymmetric Traveling Salesman Problem*, *European Journal of Operational Research* 153 (2004) 255-265.
11. A. Ceselli, G. Righini, *A branch-and-price algorithm for the capacitated p-median problem*, *Networks* 45 (2005) 125-142.
12. M. Dell'Amico, G. Righini, M. Salani, *A branch-and-price approach to the vehicle routing problem with simultaneous distribution and collection*, *Transportation Science* 40 (2006) 235-247.
13. A. Ceselli, G. Righini, *An optimization algorithm for a penalized knapsack problem*, *Operations Research Letters* 34 (2006) 394-404
14. G. Righini, M. Salani, *Symmetry helps: bounded bi-directional dynamic programming for the elementary shortest path problem with resource constraints*, *Discrete Optimization* 3 (2006) 255-273.
15. A. Ceselli, G. Righini, *A branch-and-price algorithm for the multilevel generalized assignment problem*, *Operations Research* 54 (2006) 1172-1184.
16. N. Bianchessi, G. Righini, *Heuristic algorithms for the vehicle routing problem with simultaneous pick-up and delivery*, *Computers and Operations Research* 34 (2007) 578-594.
17. S. Bosio, G. Righini, *Computational approaches to a combinatorial optimization problem arising from text classification*, *Computers and Operations Research* 34, 7 (2007) 1910-1928.
18. G. Righini, L. Zaniboni, *A branch-and-price algorithm for the multi-source Weber problem*, *International Journal of Operational Research* 2 (2007) 188-207.
19. R. Cordone, F. Gandellini, G. Righini, *Solving the swath segment selection problem through Lagrangean relaxation*, *Computers and Operations Research* 35 (2008) 854-862.
20. A. Ceselli, G. Righini, *An optimization algorithm for the ordered open-end bin packing problem*, *Operations Research* 56 (2008) 425-436.

21. G. Righini, *A branch-and-bound algorithm for the linear ordering problem with cumulative costs*, European Journal of Operational Research 186 (2008) 965-971.
22. G. Righini, M. Salani, *New dynamic programming algorithms for the resource-constrained elementary shortest path problem*, Networks 51 (2008) 155-170.
23. A. Bettinelli, A. Ceselli, G. Righini, *A branch-and-price algorithm for the two-dimensional level strip packing problem*, 4OR 6 (2008) 361-374.
24. N. Bianchessi, G. Righini, *Planning and scheduling algorithms for the COSMO-SkyMed constellation*, Aerospace Science and Technology 12 (2008) 535-544.
25. A. Ceselli, F. Liberatore, G. Righini, *A computational evaluation of a general branch-and-price framework for capacitated network location problems*, Annals of Operations Research 167 (2008) 209-252.
26. G. Righini, M. Salani, *Decremental state space relaxation strategies and initialization heuristics for solving the orienteering problem with time windows with dynamic programming*, Computers and Operations Research 36 (2009) 1191-1203.
27. A. Bosio, G. Righini, *A dynamic programming algorithm for the single-machine scheduling problem with release dates and deteriorating processing times*, Mathematical Methods of Operations Research 69, 2 (2009), 271-280.
28. A. Ceselli, G. Righini, M. Salani, *A column generation algorithm for a rich vehicle routing problem*, Transportation Science 43 (2009) 56-69.
29. G. Righini, E. Tresoldi, *A mathematical programming solution to the Mars Express memory dumping problem*, IEEE Transactions on Systems, Man and Cybernetics - C 40 (2010) 268-277.
30. A. Bettinelli, A. Ceselli, G. Righini, *A branch-and-price algorithm for the Variable Size Bin Packing Problem with Minimum Filling Constraint*, Annals of Operations Research 179 (2010) 221-241.
31. R. Cordone, A. Piselli, P. Ravizza, G. Righini, *Optimization of multi-skill call centers contracts and work-shifts*, Service Science 3 (2011) 67-81.
32. F. Liberatore, G. Righini, M. Salani, *A column generation algorithm for the vehicle routing problem with soft time windows*, 4OR 9 (2011) 49-82.
33. A. Bettinelli, A. Ceselli, G. Righini, *A branch-and-cut-and-price algorithm for the multi-depot heterogeneous vehicle routing problem with time windows*, Transportation Research C 19 (2011) 723-740.
34. G. Righini, E. Tresoldi, A. Donati, N. Policella, E. Rabenau, *An automatic planning and scheduling system for the Mars Express uplink scheduling problem*, IEEE Transactions on Systems, Man and Cybernetics C 41 (2011) 942-954.
35. A. Ceselli, G. Righini, E. Tresoldi, *Optimal routing of planetary surface exploration vehicles*, Acta Futura 5 (2012) 17-27.
36. A. Ceselli, S.L. Fornili, G. Righini, *Algorithms for the design of maximum hydrophobic complementarity molecules*, Journal of Computational Biology 19 (2012) 261-270.
37. A. Ceselli, G. Righini, E. Tresoldi, *Modeling and solving profitable location and distribution problems*, Optimization Letters 7 (2013) 1471-1480.
38. R. Cordone, P. Hosteins, G. Righini, P. Ravizza, A. Piselli, *Optimal selection of contracts and work shifts in multi-skill call centers* European Journal on Computational Optimization 2, 4 (2014) 247-277.
39. A. Bettinelli A. Ceselli, G. Righini *A branch-and-price algorithm for the multi-depot heterogeneous-fleet pickup and delivery problem with soft time windows*, Mathematical Programming Computation 6, 2 (2014) 171-197.

40. A. Bettinelli, R. Cordone, F. Ficarelli, G. Righini, *Simulation and optimization models for emergency medical systems planning*, Journal of Emergency Management 12, 4 (2014) 287-301.
41. A. Ceselli, G. Righini, E. Tresoldi, *Combined location and routing problems for drug distribution*, Discrete Applied Mathematics 165 (2014) 130-145.
42. Á. Felipe Ortega, M.T. Ortuño Sánchez, G. Righini, G. Tirado Domínguez, *A heuristic approach for the green vehicle routing problem with multiple technologies and partial recharges*, Transportation Research Part E 71 (2014) 111-128.
43. A. Ceselli, G. Righini, E. Tresoldi, *Vehicle routing problems with different service constraints: a branch-and-cut-and-price algorithm*, Networks 64 (2014) 282-291.
44. F. Lazzaroni, G. Righini, *Optimal re-organization of a hemodynamics units system: a case study*, Operations Research for Health Care 5 (2015) 10-20.
45. G. Righini, *A network flow model of the Northern Italy waterway system*, EURO Journal on Transportation and Logistics 5 (2016) 99-122.
46. R. Cordone, P. Hosteins, G. Righini, *A branch-and-bound algorithm for the prize-collecting single-machine scheduling problem with deadlines and total tardiness minimization*, INFORMS Journal on Computing, accepted for publication.
47. A. Ceselli, M.L. Damiani, G. Righini, D. Valorsì, *Mathematical programming algorithms for spatial cloaking* INFORMS Journal on Computing, accepted for publication.

National journals

1. G. Righini, *Modelli di reti neurali per ottimizzazione combinatoria*, Ricerca Operativa 62 (1992) 29-67.

Book chapters

1. R. Aringhieri, R. Berchi, G. Carello, V. Fragnelli, D. Morale, A. Pagliosa, A. Pinciroli, G. Righini, G. Sesana, *Il ruolo della ricerca operativa nell'organizzazione di un sistema di pronto intervento di soccorso sanitario*, in G. Felici, A. Sciomachen eds., *Scienza delle Decisioni in Italia: Applicazioni della Ricerca Operativa a Problemi Aziendali*, ECIG (2008) 35-48. ISBN/ISSN: 9788875441500.
2. A. Ceselli, A. Colombo, G. Righini, M. Salani, *Ottimizzazione nella distribuzione di merci*, in G. Felici, A. Sciomachen eds., *Scienza delle Decisioni in Italia: Applicazioni della Ricerca Operativa a Problemi Aziendali*, ECIG (2008) 309-319. ISBN/ISSN: 9788875441500.
3. G. Righini, *Il modello come strumento razionale di conoscenza e di decisione: dall'uso scientifico all'uso giuridico*, in G. Bombelli, B. Montanari eds., *Ragionare per decidere*, Giappichelli, Torino (2015) 181-222. ISBN: 9788892100527.

Conference proceedings

1. E. Damiani, G. Righini, S. Vigna, *The BP-Lab project: first results and future work*, Proceedings of the 1998 International Symposium on Nonlinear Theory and its Applications - NOLTA'98, Crans-Montana, 1998, Presses polytechniques et universitaire romandes (1998) 59-62.
2. S. Bosio, G. Righini, *A combinatorial optimization problem arising from text classification*, Second Cologne-Twente Workshop on Graphs and Combinatorial Optimization, Enschede, 2003, Electronic Notes in Discrete Mathematics 13 (2003) 1-4.
3. N. Bianchessi, V. Piuri, G. Righini, M. Roveri, G. Laneve, A. Zigrino, *An optimization approach to the planning of Earth observing satellites*, Fourth International Workshop on Planning and Scheduling for Space, Darmstadt, 2004.

4. G. Righini, M. Salani, *Dynamic programming algorithms for the elementary shortest path problem with resource constraints*, Third Cologne-Twente Workshop on Graphs and Combinatorial Optimization, Menaggio, 2004, Electronic Notes in Discrete Mathematics 17 (2004) 247-249.
5. A. Bosio, G. Righini, *A dynamic programming algorithm for the single-machine scheduling problem with deteriorating processing times*, Fifth Cologne-Twente Workshop on Graphs and Combinatorial Optimization, Lambrecht, 2006, Electronic Notes in Discrete Mathematics 25 (2006) 139-142.
6. N. Bianchessi, G. Righini, *A mathematical programming algorithm for planning and scheduling an Earth observing SAR constellation*, Fifth International Workshop on Planning and Scheduling for Space, Baltimore, 2006.
7. F. Liberatore, G. Righini, M. Salani, *A pricing algorithm for the vehicle routing problem with soft time windows*, in L. Bertazzi, M.G. Speranza, J.A.E.E. van Nunen (eds.) "Innovation in Distribution Logistics", Lecture Notes in Economics and Mathematical Systems 619, 251-266 (2009).
8. D. Gilberti, G. Righini, *Optimization of Duties Assignment in Emergency Services*, Proceedings of IEEE/INFORMS International Conference on Service Operations and Logistics, and Informatics 2007, Philadelphia, (2007) 383-388.
9. A. Pincioli, G. Righini, M. Trubian, *An Interactive Simulator of Emergency Management Systems*, Proceedings of the IEEE Workshop on Health Care Management (WHCM) 2010, Venezia, 2010.
10. G. Righini, D.V. Gozzini, G. Zorzi, *Forecasting ambulance missions in Milan*, Proceedings of ORAHS 2011 "OR Informing National Health Policy", Cardiff, 2011.
11. E. Cervesato, G. Righini, G.L. Rellini, M. Cassin, R. Piazza, G.L. Nicolosi, *Nuove procedure informatiche di assegnazione dei turni di guardia e reperibilit dei cardiologi operanti in pool settoriali di una struttura ospedaliera complessa in carenza acuta di personale*, Atti del 45 Congresso Nazionale di Cardiologia ANMCO, Giornale Italiano di Cardiologia (Ed. Il Pensiero Scientifico), vol.15, suppl.2 al n.4 (2014) 63-64.
12. E. Cervesato, G. Righini, G.L. Rellini, M. Cassin, R. Piazza, G.L. Nicolosi, *Optimization of shifts and on-call coverage of cardiologists working in a hospital complex structure by using free software*, Computing in Cardiology 41 (2014) 477-480.
13. A. Ceselli, A. Gelmini, G. Righini, A. Taverna, *Mathematical Programming bounds for Large-Scale Unit Commitment Problems in Medium-Term Energy System Simulations*, Proc. of the 4th Student Conference on Operational Research (SCOR 2014), Nottingham, UK, eds: P. Crespo Del Granado, M. Joyce-Moniz, S. Ravizza, Open Access Series in Informatics 37, Dagstuhl Publishing, Germany (2014) 63-75.

Conference talks (recent)

1. G. Righini, *Optimal rotation of duties of hemodynamics units: a case study*, INFORMS Meeting 2014, San Francisco
2. Á. Felipe Ortega, M.T. Ortuño Sánchez, G. Tirado Domínguez, G. Righini, *Heurísticas para el Green VRP con múltiples tecnologías y recargas parciales*, II Workshop On Real-Life Optimization, Burgos, 2014
3. A. Ceselli, M.L. Damiani, G. Righini, D. Valorsì, *Mathematical programming algorithms for spatial cloaking*, Cologne-Twente Workshop on Graphs and Combinatorial Optimization, Istanbul, 2015
4. A. Ceselli, Á. Felipe Ortega, M.T. Ortuño Sánchez, G. Tirado Domínguez, G. Righini, *A branch-and-cut-and-price algorithm for the green vehicle routing problem with partial recharges and multiple technologies*, Odysseus, Ajaccio, 2015
5. R. Cordone, P. Hosteins, G. Righini, *The prize-collecting single machine problem with deadlines*, ROADEF 2016 and Cologne-Twente Workshop on Graphs and Combinatorial Optimization, Gargnano, 2016.

6. R. Cordone, G. Righini, A. Taverna, *Upper and lower bounds for the Swath Segment Selection Problem*, Cologne-Twente Workshop on Graphs and Combinatorial Optimization, Cologne, 2017.

April 10th, 2018.