
CONTACT INFORMATION	DEI - Dipartimento di Ingegneria dell'Energia Elettrica e dell'Informazione "Guglielmo Marconi" University of Bologna Viale Risorgimento, 2 40136 Bologna, IT	Ph. +39 0512093646 enrico.malaguti@unibo.it Citizenship: Italian
APPOINTMENTS	2023, November - <i>present</i> Professor of Operations Research, DEI, University of Bologna. 2014, September - 2023, October Associate Professor of Operations Research, DEI, University of Bologna. 2010, December - 2014, September Assistant Professor of Operations Research (Ricercatore), DEI (formerly DEIS), University of Bologna. 2012, July Visiting Professor, Universidad de Buenos Aires, Argentina. 2014, January Visiting Professor, Université Paris Dauphine, France.	
EDUCATION	2007, January - 2010, November Post Doctoral Fellow (Assegnista di Ricerca) at DEIS, University of Bologna. 2007, October - December Visiting Scholar at the Graduate School of Business, Columbia University, New York, US. 2007, May Ph.D. in Control System Engineering and Operational Research, University of Bologna, advisor: Prof. Paolo Toth. 2006, August - December Visiting Scholar at the Industrial Engineering and Operations Research Department and the Graduate School of Business, Columbia University, New York, US. 2003, March 19th M.Sc. in Industrial Engineering (laurea quinquennale).	
RESEARCH PROJECTS	2005 - 2007 UE REORIENT: Implementing change in the European railway system. Member of the research team. 2007 - 2008 PRIN 2005: Routing a packing nell'ottimizzazione dei sistemi di trasporto. Member of the research team. 2006 - 2009 UE ARRIVAL: Algorithms for robust and online railway optimization: improving the validity and reliability of large scale systems. Member of the research team. 2012 - 2014 UE EPTA: European model for public transport authority as a key factor leading to transport sustainability. Member of the research team. 2014 - 2017 UE E4-SHARE: Models for ecological, economical, efficient, electric car-sharing. Member of the research team. 2017 - 2018 PRIN 2015: Nonlinear and combinatorial aspects of complex networks. Member of the research team. 2018 - 2021 Marie Sklodowska-Curie Innovative Training Network MINOA: Mixed-integer non-linear optimisation applications. Scientist-in-Charge for the University of Bologna. 2020 - 2023 AFOSR: Network protection, interdiction and design under uncertainty. Principal Investigator. 2026 - 2029 Marie Sklodowska-Curie Innovative Training Network ALMOA: Advances in large scale, multilevel, and hierarchical optimization for challenging applications. Scientist-in-Charge for the University of Bologna.	
EDITORIAL ACTIVITY	2017 - <i>present</i> <i>INFORMS Journal on Computing</i> - Associate Editor. 2018 <i>Electronic Notes in Discrete Mathematics 69, Joint EURO/ALIO International Conference 2018 on Applied Combinatorial Optimization</i> - Editor. 2019 <i>European Journal of Operational Research, Feature Cluster: New trends in Applied Combinatorial Optimization</i> - Guest Editor.	

TEACHING

2010 - 2013 and 2022 - *present* Laboratorio Di Strumenti di Ottimizzazione TA, Bachelor in Engineering Management, University of Bologna, Italy.
 2013 - 2022 Algorithms for Decision Making M (in English), Master in Engineering Management, University of Bologna, Italy.
 2014 - *present* Fondamenti di Ricerca Operativa T-A, Bachelor in Engineering Management, University of Bologna, Italy.
 2022 - 2024 Algorithms for Combinatorial Optimization Problems M (in English), Master in Computer Engineering, University of Bologna, Italy.
 2025 Ottimizzazione su Reti M, Master in Computer Engineering, University of Bologna, Italy.
 2011 - *present* Supervisor of several master and bachelor thesis in Engineering Management and Computer Engineering.

PH.D. STUDENTS

Supervised

Dimitri Thomopoulos 2013 - 2016.
 Paolo Paronuzzi 2016 - 2020.
 Naga Venkata Chaitanya Gudapati 2018 - 2021.
 Cristiano Fabbri 2019 - 2023.
 Andrea Eusebi 2022 - *present*.
 Luca Zattoni 2022 - *present*.

Co-supervised

Henri Lefebvre 2019 - 2022.
 Virginia Verna 2025 - *present*.

PUBLICATIONS

International journal papers

1. E. Malaguti, M. Monaci, and P. Toth. A metaheuristic approach for the vertex coloring problem. *INFORMS Journal on Computing*, 20:302–316, 2008.
2. E. Malaguti and P. Toth. An evolutionary approach for bandwidth multicoloring problems. *European Journal of Operational Research*, 189:638–651, 2008.
3. E. Malaguti, M. Monaci, and P. Toth. Models and heuristic algorithms for a weighted vertex coloring problem. *Journal of Heuristics*, 15:503–526, 2009.
4. E. Malaguti. The vertex coloring problem and its generalizations. *4OR*, 7:101–104, 2009.
5. A. E. Fernandes-Muritiba, M. Iori, E. Malaguti, and P. Toth. Algorithms for the bin packing problem with conflicts. *INFORMS Journal on Computing*, 22(3):401–415, 2010.
6. E. Malaguti and P. Toth. A survey on vertex coloring problems. *International Transactions in Operational Research*, 17:1–34, 2010.
7. A. Lodi, E. Malaguti, N.E. Stier-Moses. Efficient and fair routing for mesh networks. *Mathematical Programming*, 124:285–316, 2010.
8. A. Caprara, E. Malaguti, P. Toth. A freight service design problem for a railway corridor. *Transportation Science*, 45:147–162, 2011.
9. E. Malaguti, M. Monaci, and P. Toth. An exact approach for the vertex coloring problem. *Discrete Optimization*, 8:174–190, 2011.
10. F. Furini, E. Malaguti, R. Medina Durán, A. Persiani, P. Toth. A column generation heuristic for the two-dimensional cutting stock problem with multiple stock size. *European Journal of Operational Research*, 218:251–260, 2012.
11. F. Furini and E. Malaguti. Exact weighted vertex coloring via branch-and-price. *Discrete Optimization*, 9:130–136, 2012.
12. F. Furini and E. Malaguti. Models for the two-dimensional two-stage cutting stock problem with multiple stock size. *Computers & Operations Research*, 40:1953–1962, 2013.

13. J. Duives, A. Lodi, E. Malaguti. Test-assignment: A quadratic coloring problem. *Journal of Heuristics*, 19:549–564, 2013.
14. A. Caprara, F. Furini, E. Malaguti. Uncommon Dantzig-Wolfe reformulation for temporal knapsack. *INFORMS Journal on Computing*, 25:560–571, 2013.
15. E. Malaguti, R. Medina Durán, and P. Toth. Approaches to real world two-dimensional cutting problems. *Omega*, 47:99–115, 2014.
16. E. Malaguti, I. Méndez-Díaz, J.J. Miranda-Bront, P. Zabala. A branch-and-price algorithm for the (k, c) - coloring problem. *Networks*, 65:353–366, 2015.
17. M. Bergner, A. Caprara, A. Ceselli, F. Furini, M. Lübbecke, E. Malaguti, E. Traversi. Automatic Dantzig-Wolfe reformulation of mixed integer programs. *Mathematical Programming*, 149:391–424, 2015.
18. A. Lodi, E. Malaguti, N.E. Stier-Moses, T. Bonino. Design and control of public-service contracts and an application to public transportation systems. *Management Science*, 62:1165–1187, 2016.
19. E. Malaguti, R. Medina Durán, P. Toth. A metaheuristic framework for nonlinear capacitated covering problems. *Optimization Letters*, 10:169–180, 2016.
20. A. Caprara, F. Furini, E. Malaguti, E. Traversi. Solving MIPs via multilevel Dantzig-Wolfe reformulation: an application to the temporal knapsack problem. *Information Processing Letters*, 116:379–386, 2016.
21. F. Furini, E. Malaguti, D. Thomopulos. Modeling two-dimensional guillotine cutting problems via integer programming. *INFORMS Journal on Computing*, 28:736–751, 2016.
22. D. Cornaz, F. Furini, E. Malaguti. Solving coloring problems as maximum weight stable set problems. *Discrete Applied Mathematics*, 217:151–162, 2017.
23. A. Bettinelli, V. Cacchiani, E. Malaguti. A branch-and-bound algorithm for the knapsack problem with conflict graph. *INFORMS Journal on Computing*, 29:457–473, 2017.
24. G. Costa, M. Delorme, M. Iori, E. Malaguti, S. Martello. Training software for orthogonal packing problems. *Computers & Industrial Engineering*, 111:139–147, 2017.
25. E. Malaguti, S. Martello, A. Santini. The traveling salesman problem with pickups, deliveries, and draft limits. *Omega*, 74:50–58, 2018.
26. F. Furini, E. Malaguti, A. Santini. An exact algorithm for the partition coloring problem. *Computers & Operations Research*, 92:170–181, 2018.
27. C. Gambella, E. Malaguti, F. Masini, D. Vigo. Optimizing relocation operations in electric car-sharing. *Omega*, 81:234–245, 2018.
28. D. Cornaz, F. Furini, M. Lacroix, E. Malaguti, A.R. Mahjoub, S. Martin. The vertex k -cut problem. *Discrete Optimization*, 31:8–28, 2019.
29. E. Malaguti, M. Monaci, P. Paronuzzi, U. Pferschy. Integer optimization with penalized fractional values: the knapsack case. *European Journal of Operational Research*, 273:874–888, 2019.
30. E. Malaguti, R. Medina Durán. Computing k different solutions to the Assignment Problem. *Computers & Industrial Engineering*, 135:528–536, 2019.
31. D. Cornaz, F. Furini, E. Malaguti, A. Santini. A note on selective line-graphs and partition colorings. *Operations Research Letters*, 47:565–568, 2019.
32. F. Furini, I. Ljubić, E. Malaguti, P. Paronuzzi. On integer and bilevel formulations for the k -vertex cut problem. *Mathematical Programming Computation*, 12:133–164, 2020.
33. S. Callegari, F. Bizzarri, E. Malaguti. Discrete programming entailing circulant quadratic forms: refinement of a heuristic approach based on $\Delta\Sigma$ modulation. *IEEE Transactions on Circuits and Systems II: Express Briefs*, 67:926–930, 2020.

34. D. Delle Donne, F. Furini, E. Malaguti, R. Wolfer Calvo. A branch-and-price algorithm for the minimum sum coloring problem. *Discrete Applied Mathematics*, 303:39-56, 2021.
35. T. Kollsker, E. Malaguti. Models and algorithms for optimising two-dimensional LEGO constructions. *European Journal of Operational Research*, 289:270-284, 2021.
36. V. Bo, M. Bortolini, E. Malaguti, M. Monaci, C. Mora, P. Paronuzzi. Models and algorithms for integrated production and distribution problems. *Computers & Industrial Engineering*, 154:107003, 2021.
37. N.V.C. Gudapati, E. Malaguti, M. Monaci. In search of dense subgraphs: how good is greedy peeling? *Networks*, 77:572-586, 2021.
38. A. Lodi, E. Malaguti, G. Nannicini, D. Thomopulos. Nonlinear chance-constrained problems with applications to hydro scheduling. *Mathematical Programming*, 191:405-444, 2022.
39. F. Furini, I. Ljubić, E. Malaguti, P. Paronuzzi. Casting light on the hidden bilevel combinatorial structure of the k-vertex separator problem. *Operations Research*, 70:2399-2420, 2022.
40. N.V.C. Gudapati, E. Malaguti, M. Monaci. Network design with service requirements: scaling-up the size of solvable problems. *INFORMS Journal on Computing*, 34:2571-2582, 2022.
41. E. Malaguti, M. Monaci, J. Prunte. K-adaptability in stochastic optimization. *Mathematical Programming*, 196:567-595, 2022.
42. G. Campana, E. Malaguti, M. Mele, P. Paronuzzi. Scheduling of semi-automatic carousels with fixed production sequences. *International Journal of Production Research*, 61:1252-1267, 2023.
43. E. Malaguti, V. Pedrotti. Models and algorithms for the weighted safe set problem. *Discrete Applied Mathematics*, 329:23-34, 2023.
44. C. Fabbri, P. Ghedini, M. Leonessi, E. Malaguti, P. Tubertini. A decision support system for scheduling a vaccination campaign during a pandemic emergency: the COVID-19 case. *Computers & Industrial Engineering*, 177:109068, 2023.
45. H. Lefebvre, E. Malaguti, M. Monaci. Adjustable robust optimization with discrete uncertainty. *INFORMS Journal on Computing*, 36:78-96, 2024.
46. A. Lodi, E. Malaguti, M. Monaci, G. Nannicini, P. Paronuzzi. A solution algorithm for chance-constrained problems with integer second-stage recourse decisions. *Mathematical Programming*, 205:269-301, 2024.
47. B. Detienne, H. Lefebvre, E. Malaguti, M. Monaci. Solving adjustable robust convex optimization problems under objective uncertainty. *European Journal of Operational Research*, 312:373-384, 2024.
48. A. Santini, E. Malaguti. The min-knapsack problem with compactness constraints and applications in statistics. *European Journal of Operational Research*, 312:385-397, 2024.
49. C. Fabbri, M. Lombardi, E. Malaguti, M. Monaci. On-line strategy selection for reducing overcrowding in an emergency department. *Omega*, 127:103098, 2024.
50. D. Laganà, E. Malaguti, M. Monaci, R. Musmanno, P. Paronuzzi. An iterated local search matheuristic approach for the multi-vehicle inventory routing problem. *Computers & Operations Research*, 169:106717, 2024.
51. N.V.C. Gudapati, E. Malaguti, M. Monaci, P. Paronuzzi. A computational study on integer programming formulations for hop-constrained survivable network design. *Discrete Applied Mathematics*, 362:71-81, 2025.
52. M. Barkel, M. Delorme, E. Malaguti, M. Monaci. Bounds and heuristic algorithms for the bin packing problem with minimum color fragmentation. *European Journal of Operational Research*, 320:57-68, 2025.

53. M. Barkel, M. Delorme, E. Malaguti, M. Monaci. Pseudo-polynomial formulations for the bin packing problem with minimum color fragmentation. *INFORMS Journal on Computing*, 2025. <https://doi.org/10.1287/ijoc.2024.0972>
54. E. Malaguti, P. Paronuzzi, A. Santini. Algorithms and complexity results for the 0-1 knapsack problem with group fairness. *Optimization Letters*, 2025. <https://doi.org/10.1007/s11590-025-02252-y>
55. H. Lefebvre, E. Malaguti, M. Monaci. Exact approaches for convex adjustable robust optimization. *Mathematical Programming*, 2025. <https://doi.org/10.1007/s10107-025-02311-3>

Book chapter

56. G. Brandstätter, C. Gambella, M. Leitner, E. Malaguti, F. Masini, J. Puchinger, M. Ruthmair, D. Vigo. Overview of optimization problems in electric car-sharing system design and management. H. Dawid, K.F. Doerner, G. Feichtinger, P.M. Kort, A. Seidl (eds.). *Dynamic Perspectives on Managerial Decision Making*, pages 441–471, Springer, 2016.

Proceedings of refereed conferences

57. A. Caprara, E. Malaguti, P. Toth, A service design problem for a railway network. *Proceedings of the 4th International Network Optimization Conference (INOC2009)*, 2009.
58. M. Bergner, A. Caprara, F. Furini, M. Lübbecke, E. Malaguti, E. Traversi. Partial convexification of general MIPs by Dantzig-Wolfe reformulation. *Proceedings of the 15th International Conference on Integer Programming and Combinatorial Optimization (IPCO 2011)*. LNCS 6655, pages 39–51, Springer-Verlag, 2011.
59. E. Malaguti, I. Méndez-Díaz, J.J.Miranda-Bront, P.Zabala. (k, c) - coloring via column generation. *Proceedings of the 6th International Network Optimization Conference (INOC20013)*, ENDM 41, pages 447–454, 2013.
60. D. Cornaz, F. Furini, M. Lacroix, E. Malaguti, A. R. Mahjoub, S. Martin. Mathematical formulations for the balanced vertex k-separator problem. *Proceedings of the 2nd International Conference on Control, Decision and Information Technologies (CODIT14)*, IEEE, pages 176–181, 2014.
61. F. Furini and E. Malaguti. A pseudo-polynomial size formulation for 2-stage 2-dimensional knapsack problems. *Proceedings of the 45th International Conference on Computers & Industrial Engineering (CIE 45)*, pages 833–840, Curran Associates, Inc., 2016.
62. E. Malaguti, G. Nannicini, D. Thomopulos. Optimizing allocation in a warehouse network. *Proceedings of the 8th International Network Optimization Conference (INOC20017)*, ENDM 64, pages 195–204, 2018.
63. F. Furini, E. Malaguti, S. Martin, I.C. Ternier. ILP models and column generation for the minimum sum coloring problem. *Proceedings of the 8th International Network Optimization Conference (INOC20017)*, ENDM 64, pages 215–224, 2018.
64. E. Malaguti, V. Pedrotti. A new formulation for the weighted safe set problem. *Proceedings of the 11th Latin and American Algorithms, Graphs, and Optimization (LAGOS2021)*, *Procedia Computer Science* 195, pages 508-515, 2021.
65. P. Folco, E. Malaguti, A. Sahli, S. Belmokhtar-Berraf, L. Bouillaut. A flow formulation for the rolling stock maintenance scheduling problem. *Proceedings of the 18th IFAC Symposium on Information Control Problems in Manufacturing (INCOM 2024)*, *IFAC-PapersOnLine* 58(19), pages 516-521, 2024.

Ph.D. Thesis

66. E. Malaguti. The vertex coloring problem and its generalizations. *University of Bologna*, 2007.

Technical reports

67. V.C. Arcot, A. Caprara, C. D'Ambrosio, J. Dong, A. Kozuki, A. Kuo, C.C. Lu, H.S. Mahmasani, E. Malaguti, S. Martello, E. Miller-Hooks, R. Nair, P. Toth, K. Zhang. Modelling corridor freight transport for demonstration of seamless international rail freight services. *Technical Report, University of Maryland*, 2007.

SELECTED TALKS

- E. Malaguti, M. Monaci, P. Toth. Models and heuristic approaches for a weighted vertex coloring problem. XI Workshop on Combinatorial Optimization, 7-12 January 2007, Aussois, France.
- A.E. Fernandes-Muritiba, M. Iori, E. Malaguti, P. Toth. Algorithms for the bin packing problem with conflicts. XIII Workshop on Combinatorial Optimization, 11-16 January 2009, Aussois, France.
- A. Caprara, E. Malaguti, P. Toth, A service design problem for a railway network. INOC2009, 26-29 April 2009, Pisa, Italy.
- A. Lodi, E. Malaguti, N.E. Stier-Moses. Efficient and fair routing for mesh networks. ISMP2009, 23-28 August 2009, Chicago, US.
- A. Caprara, F. Furini, E. Malaguti. Column generation for models with a pseudo-compact reformulation. XIV Workshop on Combinatorial Optimization, 3-8 January 2010, Aussois, France.
- M. Bergner, A. Caprara, F. Furini, M. Lübbecke, E. Malaguti, E. Traversi. Dantzig-Wolfe reformulations of general mixed integer programs. SIAM Conference on Optimization, 16-19 May, 2011, Darmstadt, Germany.
- A. Lodi, E. Malaguti, N.E. Stier-Moses, T. Bonino. Control of the contract of a public transport service. XVI Workshop on Combinatorial Optimization, 9-13 January 2012, Aussois, France.
- F. Furini, E. Malaguti. Algorithms for 2-dimensional 2-staged guillotine cutting stock problems. ISMP2012, 19-24 August 2012, Berlin, Germany.
- E. Malaguti, I. Méndez-Díaz, J.J. Miranda-Bront, P. Zabala. (k, c) - coloring via column generation. INOC2013, 20-22 May 2013, Tenerife, Spain.
- A. Lodi, E. Malaguti, G. Nannicini, D. Thomopulos. Nonlinear chance-constrained problems with applications to hydro scheduling. XVIII Workshop on Combinatorial Optimization, 4-9 January 2015, Aussois, France.
- D. Cornaz, F. Furini, E. Malaguti. Solving vertex coloring problems as maximum weighted stable set problems. ISMP2015, 12-17 July 2015, Pittsburgh, US.
- E. Malaguti, G. Nannicini, D. Thomopulos. Optimizing allocation in a warehouse network. INOC2017, 26-28 February 2017, Lisbon, Portugal.
- A. Lodi, E. Malaguti, G. Nannicini, D. Thomopulos. Chance-constrained formulation and solution of hydro scheduling. CMS17, 30 May - 1 June 2017, Bergamo, Italy.
- E. Malaguti, M. Monaci, P. Paronuzzi, U. Pferschy. Integer optimization with penalized fractional values: the knapsack case. MIP2018, 18 - 21 June 2018, Greenville, US.
- E. Malaguti, M. Monaci, P. Paronuzzi, U. Pferschy. The fractional knapsack problem with penalties. ISMP2018, 1 - 6 July 2018, Bordeaux, France.
- A. Lodi, E. Malaguti, N.E. Stier-Moses, T. Bonino. Design and control of a public contract with an approach combining game theory and optimization. SPOC18 "Machine Learning, Networks and Combinatorial Optimization", 13th December 2018, Université Paris Dauphine, Paris, France.
- E. Malaguti, V. Pedrotti. A new formulation and a branch-and-cut algorithm for the (weighted connected) safe set problem. EURO2022, 3 - 6 July 2022, Espoo, Finland.

C. Buchheim, E. Malaguti, M. Monaci, P. Paronuzzi. Bulk optimization approaches to graph problems. ISMP2024, 21 - 26 July 2024, Montréal, Canada.

LANGUAGES

Italian: mother tongue.

French: fluent.

English: fluent.