Lavinia Amorosi

Curriculum Vitae

Personal information

Nationality Italian

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Position RTDA in Operational Research

Affiliation Department of Statistical Sciences, University of Rome, Sapienza, P.le Aldo Moro, 5 00185 - Rome, Italy

Education

2018 **PhD (Doctor Europaeus) in Operational Research**, *University of Rome, Sapienza*.
Grade: Ottimo cum laude.
Thesis title: "Bi-criteria Network Optimization: Problems and Algorithms".

2014 **MSc in Statistical and Decisional Sciences**, *University of Rome, Sapienza*, Grade: 110/110 cum laude.

2012 **BSc in Mathematics**, *University of Rome, Sapienza*, Grade: 110/110.

2009 **Clarinet Diploma**, *Istituto Superiore di Studi Musicali, "G.Braga", Teramo*, Grade: 9/10.

2007 **Scientific Diploma**, *Liceo Scientifico , "A.Meucci", Ronciglione*, Grade: 100/100.

Research Interests

Combinatorial Optimization, Multi-objective Programming, Network Optimization

Professional experience

November 2017-March 2018 Researcher for the H2020 project "Superfluidity" at CNIT (Consorzio nazionale interuniversitario delle telecomunicazioni), University of Rome Tor Vergata

November 2017-April 2018 Teaching assistant for the postgraduate master in "Data intelligence and decision making strategies", Department of Statistical Sciences, University of Rome, Sapienza.

Conferences, Seminars and Tutorials

1. Session organizer and talk at "ODS2022", 51st AIRO International Conference in Optimization and Decision Sciences, Florence, 30 August- 2 September, 2022.
2. Session chair and talk at "EURO2022", 32nd European Conference on Operational Research, Espoo, 3-6 July, 2022.
3. Talk at "MCDM2022", 26th International Conference on Multiple Criteria Decision Making, Portsmouth, 26 June -1 July, 2022.
4. Invited talk at "Machine Learning NeEDS Mathematical Optimization", November 15, 2021.
5. Invited talk at "RAMOO 2021", September 23, 2021.
6. Talk at "IFORS2021", 22nd Conference of the International Federation of Operational Research Societies (online), 22-27 August, 2021.
7. Session chair and 2 talks (1 in the YoungWomen4OR stream) at "EURO2021", 31st European Conference on Operational Research, Athens, 11-14 July, 2021.
8. Invited seminar at IMUS, Seville, October 30, 2020.
9. Invited seminar at IMUS, Seville, February 18, 2020.
10. Talk at "IWOLOCA2020", IMUS, Seville, 23-24 January, 2020.
11. Invited talk at NASA Ames Research Center, Mountain View (Silicon Valley, CA), October 29, 2019.
12. Talk at "INFORMS2019", Seattle 20-23 October 2019.
13. Session chair and talk at "EURO2019", 30th European Conference on Operational Research, Dublin, 23-26 June, 2019.
14. Invited lecture at the "Training Course on Railway Optimization", Roma Tre University, Rome, May 27, 2019.
15. Tutorial at the "1st EUROYoung workshop", Seville, 2-3 May, 2019.
16. Tutorial at the "1st AIROYoung PhD school", on the theme "Advanced Methods in Optimization and Data Science", Rome, 26-29 March, 2019.
17. Talk at "ODS2018", International Conference on Optimization and Decision Science, Taormina, 10-13 September, 2018.
18. Talk at "IEEE EE2018", International Conference on Environmental Engineering, Milan, 12-14 March, 2018.
19. Talk at the "2nd AIRO Young workshop", on the theme "Logistics Optimization and Applied Operational Research", Cosenza, 1-2 March, 2018.
20. Talk at the "1st AIRO Young Workshop", on the theme "Emerging Optimization Problems on Complex Networks", Rome, 16-17 February, 2017.
21. Poster session at "ODS2016", International Conference on Optimization and Decision Science, Trieste, 6-9 September, 2016

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Academic teaching, Ph.D level

February 2022 — Lecturer, 10 hours course "Multi-Objective Optimization", PhD Program in Math, University of Salerno, Italy.

November 2020 — Lecturer, 10 hours course "Multi-Objective Optimization", PhD Program in Math, IMUS, University of Seville, Spain.

July 2020 — Lecturer, 10 hours course "Operations Research Meets Statistics", PhD Program in Statistics, Department of Statistical Sciences, University of Rome, Sapienza, Italy.

Academic teaching, Bachelor's level

2021-today — Lecturer, courses "Operational Research" (9 CFU) and "Operational Research Lab" (3 CFU), Department of Statistical Sciences, University of Rome, Sapienza.

2020-2021 — Lecturer, course "Methods and Models for Logistic" (6 CFU), Department of Statistical Sciences, University of Rome, Sapienza.

2019-2021 — Lecturer, courses "Logistic Lab" (3 CFU) and "Operational Research Lab" (3 CFU), Department of Statistical Sciences, University of Rome, Sapienza.

2019-2020 — Lecturer, course "Operational Research" (9 CFU), Department of Computer, Control, and Management Engineering, University of Rome, Sapienza.

2018-2019 — Teaching assistant, course "Logistic Lab", Department of Statistical Sciences, University of Rome, Sapienza.

2017-2018 — Lecturer, course "Operational Research" (6 CFU), Department of Computer, Control, and Management Engineering, University of Rome, Sapienza.

2015-2018 — Teaching assistant, courses "Logistic Lab" and "Optimization Lab", Department of Statistical Sciences, University of Rome, Sapienza.

Academic teaching, Master's level

2021-2022 — Lecturer, course of "Data Driven and Decision Making", Department of Statistical Sciences, University of Rome, Sapienza.

2019-2021 — Lecturer of module "Integration in Decision Modeling", course of "Case Studies and Statistical Consulting", Department of Statistical Sciences, University of Rome, Sapienza.

2015-2018 — Teaching assistant, "Decision Support Models", Department of Statistical Sciences, University of Rome, Sapienza.

Reviewer activity

Referee for international journals like:

- Computers and Operations Research
- Transportation Research Part C
- Computational Optimization and Applications
- Computer Communications

Other academic responsibilities

2023 Workshop Organizer of "RAMOO 2023", 10th Workshop on Recent Advances in Multi-Objective Optimization, 14 September, 2023.

2022 Member of the Scientific Committee of the 11th Triennial Symposium on Transportation Analysis (TRISTAN XI) , Mauritius, June 19-25, 2022.

2021 Editor of the book "Optimization in Artificial Intelligence and Data Sciences - ODS, Rome, Italy, September 14-17, 2021" of the AIRO Springer Series.

2021 Member of the Program Committee of the 1st Hybrid and 50th AIRO International Conference in Optimization and Decision Sciences (ODS2021) on the theme "Optimization in Artificial Intelligence and Data Science", Rome 14-17 September 2021.

2021 Member of the Organizing Committee of the 1st Hybrid and the 50th AIRO International Conference in Optimization and Decision Sciences (ODS2021) on the theme "Optimization in Artificial Intelligence and Data Science", Rome 14-17 September 2021.

2021 Co-chair of the AIROYoung session at EURO2021 with the title "(AIRO) Young Researchers in OR" for the stream Combinatorial Optimization, Athens (and online) 11-14 July 2021.

2020 Guest editor, together with Martina Fischetti, of the special issue "The AIROYoung Experience: Operations Research for Young Enthusiasts" on Springer Nature Operations Research Forum, 2020.

2020 Member of the Organising Committee of the 4th AIROYoung Workshop on the theme "New Advances in Optimization, Machine Learning and Data Science", Bozen 5-7 February 2020.

2019 Co-chair of the AIROYoung session at EURO2019 with the title "Young Researchers in CO" for the stream Combinatorial Optimization, Dublin 23-26 June 2019.

2019 Member of the Organising Committee of the 1st EURO Young Workshop, Seville 2-3 May 2019.

2019 Chair of the Organising Committee of the 3rd AIROYoung Workshop + 1st AIROYoung PhD school on the theme "Advanced Methods in Optimization and Data Science", Rome 26-29 March 2019.

2018-2021 Coordinator, together with Martina Fischetti, of AIROYoung.

2018 Co-founder of EUROYoung, a group of young OR scientists from EURO member countries.

2017 Workshop Organiser, together with Alberto Maria Santini (University of Bologna), of the 1st AIRO Young Workshop, on the theme "Emerging Optimization Problems on Complex Networks", Rome 16-17 February 2017.

2016 Co-founder of AIROYoung, the youth chapter of the Italian Operational Research Association (AIRO).

Supervised theses

2022 Supervisor, Master Thesis (M. in Statistical Methods and Applications) with title "An optimal budget allocation model for online marketing in the Italian real estate market", Federica Marcocchia.

2022 Supervisor, Master Thesis (M. in Statistical and Decisional Sciences) with title "Un modello di ottimizzazione per l'analisi di correlazione canonica sparsa: generazione della frontiera di Pareto", Ilaria Pozzetti.

2021 Supervisor, Bachelor Thesis (B. in Statistics for Management) with title "Un approccio di programmazione lineare intera bi-obiettivo per la generazione di percorsi pedonali brevi e sicuri nelle grandi cittÃă", Jessica Stravato.

2021 Supervisor, Bachelor Thesis (B. in Statistics for Management) with title "Vehicle Routing with Pick-up and Delivery: Analisi di un caso di studio per il trasporto di sacche di sangue", Giorgia Menicucci.

2021 Supervisor, Bachelor Thesis (B. in Statistics for Management) with title "Lo staff scheduling, un'applicazione al caso della ristorazione", Matteo Di Pietro.

2021 Supervisor, Bachelor Thesis (B. in Statistics for Management) with title "Modelli di ottimizzazione deterministici per la distribuzione di dispositivi di protezione personale", Maria Elena Susi.

2020 Supervisor, Bachelor Thesis (B. in Statistics for Management) with title "Risoluzione di un problema di programmazione matematica per l'instradamento e la manutenzione dei treni ad alta velocitá", Alberico Emanuele

2020 Supervisor, Bachelor Thesis (B. in Statistics for Management) with title "Un modello di ottimizzazione multi-obiettivo per la pianificazione di sistemi energetici ibridi: analisi di sensibilitá e generazione della frontiera di Pareto", Ilaria Pozzetti.

2019 Supervisor, Bachelor Thesis (B. in Computer and System Engineering) with title "A mathematical programming approach for efficient management of hybrid fleet based distribution systems", Riccardo Caprari.

2019 Supervisor, Bachelor Thesis (B. in in Computer and System Engineering) with title "Un algoritmo ricorsivo per la generazione di un insieme completo di soluzioni Pareto ottime per problemi di flusso intero su rete bi-obiettivo", Giulia Castro.

2019 Co-supervisor, Bachelor Thesis (B. in Statistics for Management) with title "Un modello di programmazione lineare intera per il coordinamento ottimo di un sistema di consegna merci con flotte ibride", Greta Panunzi.

2019 Co-supervisor, Bachelor Thesis (B. in Statistics for Management) with title "Un modello di programmazione lineare intera per la minimizzazione dei costi per un sistema di prelievi e consegne merci con flotte ibride", Alessia Angelini.

2019 Co-supervisor, Bachelor Thesis (B. in Statistics for Management) with title "Un modello di programmazione lineare intera mista per la gestione efficiente di un sistema di distribuzione merci con utilizzo di droni", Alessandra Cardinale.

2018 Co-supervisor, Master Thesis (M. in Statistical and Decisional Sciences) with title "Un modello per la pianificazione della manutenzione ferroviaria tramite l'approccio Time-Expanded Graph", Silvia Porfiri.

2017 Co-supervisor, Master Thesis (M. in Statistical and Decisional Sciences) with title "Un modello di programmazione matematica per la generazione di informazioni testuali", Sara Gioffré.

2017 Co-supervisor, Master Thesis (M. in Statistical and Decisional Sciences) with title "Progettazione di un modello di programmazione matematica per la gestione di una rete mobile 5G", Stefania Cartolano.

2017 Co-supervisor, Master Thesis (M. in Statistical and Decisional Sciences) with title "A model of scheduling for the preventive maintenance of the high speed trains", Francesca Calafiore.

2016 Co-supervisor, Master Thesis (M. in Statistical and Decisional Sciences) with title "Analisi sperimentale di modelli di network flow per le Telecomunicazioni", Federico Clori.

2016 Co-supervisor, Master Thesis (M. in Statistical and Decisional Sciences) with title "Implementazione e sperimentazione di modelli di network design per reti di telecomunicazione", Tiziano Di Meglio.

2016 Co-supervisor, Master Thesis (M. in Statistical and Decisional Sciences) with title "Multi-cut problem, analisi delle prestazioni in una rete di telecomunicazioni", Danila Ciufoli.

Research Projects

2020-today Member of the Sapienza project "Models and algorithms for partitioning problems on graph".

2019-today Coordinator of the Sapienza project "Combinatorial Optimization Models for Highly Hybrid Fleet Distribution Systems".

2018-today Member of the Sapienza project "Dynamic and Bi-Criteria Network Models for Smart City Logistics".

2016-2019 Member of the PRIN project "Transportation and Logistics Optimization in the Era of Big and Open Data".

2016-2018 Member of the Sapienza project "Mobility and Logistic Optimization Models in the New Perspective of Big Data Paradigm".

2016-2017 Member of the DIAMETER Awards Project that studies new concepts, architectures and technologies in telecommunication networks by adopting lifetime-aware NDs.

2014-2015 Member of the LIFETEL Awards Project that studies the impact of energy-savings mechanisms on the lifetime of telecommunication network devices.

Grants, Scholarships and Exchange Researches

2020 Visiting research at the Institute of Mathematics of the University of Seville (IMUS), Seville (Spain), invited by Prof. Justo Puerto and co-financed by IMUS, January-February 2020.

2017 3-month Fellowship for Ph.D. research project abroad granted by the University of Rome, Sapienza.

2017 Visiting/Exchange research at the Institute of Mathematics of the University of Seville (IMUS), Seville (Spain), under the supervision of Prof. Justo Puerto., April-June 2017

2017 Fellowship for Ph.D research project with title "A new approach to determine a complete set of Pareto optimal solutions for the bi-objective Minimum Spanning Tree Problem in Telecommunication Networks", granted by the University of Rome, Sapienza.

2016 Visiting/Exchange research Management Science Program at the Lancaster University Management School (LUMS), Lancaster (UK), under the supervision of Prof. Matthias Ehrgott, February-July 2016.

2015-17 3-year Ph.D. Fellowship won by national competitive written and oral examination and granted by the Italian Ministry for University and Research (MIUR).

Courses and PhD schools

11-15 January 2016 NetOpt2016 PhD School on Network Optimization, Estoril.

September 28 - October 10 2015 CO@Work PhD School on Combinatorial Optimization, Zuse Institute Berlin (ZIB), Berlin.

June 24 - July 3 2015 EURO PhD School on Routing and Logistics, Department of Economics and Management, University of Brescia.

23-25 February 2015 CINECA Course "Introduction to Parallel Computing with MPI and OpenMP", CINECA Rome.

Awards

2020 Selected among the YoungWomen4OR 2020

Computer skills

Programming languages C++, JAVA

Softwares IBM CPLEX, GUROBI, POLYSCIP, BENSOLVE, MATLAB, SAS, R, WEKA

Operating Systems Windows, Mac OS X, Linux

Certifications

2014 Certificate "SAS Certified Predictive Modeler using SAS Enterprise Miner", SAS Rome.

Languages

Italian **Mothertongue**

English **B2**

Bibliometric indices from Scopus (extracted on October 19th, 2022)

https://www.scopus.com/authid/detail.uri?authorId=56820075100

- Number of publications: 23
- Number of citations: 143
- H-index: 7

Publications

Journal papers under review

1. Amorosi, L., Puerto, J., Valverde C., "A multiple-drone arc routing and mothership coordination problem". (under review)
2. Amorosi, L., Caprari, R., Dell'Olmo, P., "A fast and effective time-space network model for a fully automated truck and drones delivery system". (under review)
3. Amorosi, L., Dell'Olmo, P., Giacco, G.L, "An Integrated Model for High-Speed Rolling-Stock Planning and Maintenance Scheduling". (under review)

Journal papers in preparation

4. Amorosi, L., Ehrgott, M., WeiÃ§ing, B. "A new two-phase algorithm for the bi-objective integer minimum cost flow problem".
5. Amorosi, L., Fischetti, M., Paradiso, R., Roberti, R. "Optimization Models for the Installation Planning of Offshore Wind Farms".
6. Amorosi, L., Padellini T., Puerto J., Valverde C., "A Mathematical Programming approach to Sparse Canonical Correlation".
7. Amorosi, L., De Santis M., "A criterion space search algorithm for bi-objective mixed integer linear programs".

Journal papers

8. Amorosi, L., Puerto, J., Valverde C., "An extended model of coordination of an all-terrain vehicle and a multivisit drone". International Transaction in Operational Research, 2022.
9. Amorosi, L., Puerto, J., "Two-phase strategies for the bi-objective minimum spanning tree problem". International Transaction in Operational Research, 2022.
10. Amorosi, L., Cedola, L., Dell'Olmo, P., Lucchetta, F., "Multi-objective mathematical programming to optimally sizing and managing battery energy storage for solar photovoltaic system integration of a multi-apartment building". Engineering Optimization, 2022.
11. Amorosi, L., Puerto, J., Valverde C., "Coordinating drones with mothership vehicles: The mothership and drone routing problem with Graphs". Computers and Operations Research, 2021.
12. Chiaraviglio L., Amorosi L. et al., "Minimum Cost Design of UAV-based 5G Networks for Rural Coverage: Formulation and Solutions", IEEE Transactions on Green Communications and Networking, 2019.
13. Amorosi L., Chiaraviglio L., Galán-Jiménez J., "Optimal Energy Management of UAV-based 5G Networks Powered by Solar Panels and Batteries: Formulation and Solutions", IEEE Access, 2019
14. Amorosi L., Dell'Olmo P, Giacco, G.L., "Mathematical Models for On-Line Train Calendars Generation", Computers and Operations Research, Vol.102, p.1-9, 2019 .
15. Chiaraviglio L., Amorosi L. et al., "Optimal Management of Reusable Functional Blocks in 5G Superfluid Networks", Wiley International Journal of Network Management, Vol.29(1), 2019.

16. Chiaraviglio L., Amorosi L., Dell'Olmo P., Liu W., Gutierrez J.A., Cianfrani A., Polverini M., Le Rouzic E., Listanti M., "Lifetime-Aware ISP Networks: Optimal Formulation and Solutions", Transactions on Networking, Vol.27 (3), p.1924-1937, 2017.
17. Chiaraviglio L.,Amorosi L., Baiocchi A., Cianfrani A., Cuomo F., Dell'Olmo P., Listanti M., "LIFETEL: Managing the Energy-Lifetime Tradeoff in Telecommunication Networks", Communications Magazine, Series on Green Communications and Computing Networks, Vol.54(11), p.150-157, 2016.

Conference papers

18. Amorosi, L., Di Rocco, L., Ferraro Petrillo, U., "Scheduling K-mers Counting in a Distributed Environment". ODS2021, International Conference on Optimization and Decision Sciences, September 2021, Rome.
19. Bosi, T., D'Ariano, A., Amorosi, L., Giacco, G.L., "A Fast and Effective Greedy Heuristic for On-line Train Calendars Generation", MT-ITS 2021 International Conference, June 2021, online.
20. Chiaraviglio, L., Amorosi, L., Malandrino, F., Chiasserini, C.F, Dell'Olmo, P., Casetti, C., "Optimal Throughput Management in UAV-based Networks during Disasters", IEEE International Conference on Computer Communications (INFOCOM), 2019, Paris.
21. Jimenez, J.G., Chiaraviglio, L., Amorosi, L., Blefari-Melazzi, N., "Multi-Period Mission Planning of UAVs for 5G Coverage in Rural Areas: A Heuristic Approach", IEEE International Conference on the Network of the Future, (NOF), 2018, Poznań.
22. Chiaraviglio, L., Amorosi, L. et al., "Optimal Design of 5G Networks in Rural Zones with UAVs, Optical Rings, Solar Panels and Batteries", IEEE International Conference on Transparent Optical Networks (IEEE ICTON), 2018, Bucharest.
23. Amorosi, L., Chiaraviglio, L et al. "Energy-Efficient Mission Planning of UAVs for 5G Coverage in Rural Zones", IEEE International Conference on Environmental Engineering (IEEE EE), 2018, Milano.
24. Chiaraviglio, L., Amorosi, L., Cartolano L., Blefari-Melazzi N., Dell'Olmo P., Shojafar M., Salsano S., "Optimal Superfluid Management of 5G Networks", 3rd IEEE Conference on Network Softwarization (IEEE NetSoft), 2017, Bologna.
25. Amorosi, L., Chiaraviglio, L., Dell'Olmo, P., Listanti, M., "Optimal Sustainable Management of Backbone Networks", ICTON 2016 International Conference , July 2016, Trento.
26. Amorosi, L., Chiaraviglio, L., Dell'Olmo, P., Listanti, M., "Sleep to stay alive: Optimizing Reliability in Energy-Efficient Backbone Networks, RONEXT 2015 International Workshop, July 2015, Budapest.
27. Amorosi, L., Dell'Olmo, P., Giacco, G.L., "A new approach for train calendar description generation", MT-ITS 2015 International Conference, June 2015, Budapest.
28. Amorosi, L., Dell'Olmo, P., Giacco, G.L, "A New Mixed Integer Linear Programming Formulation For A Maintenance Problem In Italian Railways", CASPT 2015 International Conference, July 2015, Rotterdam.

Technical Reports

29. Amorosi, L., Padellini T., "A Mathematical Programming approach to Sparse Canonical Correlation", Technical Report, DSS Sapienza University of Rome, 2021.
30. Amorosi, L., Puerto, J., "Two-phase strategies for the bi-objective minimum spanning tree problem", Technical Report, DSS Sapienza University of Rome, 2018.
31. Amorosi, L., Dell'Olmo, P, Giacco, G.L., "A Mathematical Programming Approach for Calendar Generation", Technical Report, DSS Sapienza University of Rome, 2016.

October 19, 2022