

# María Dolores Romero Morales

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Current position : Professor, Copenhagen Business School.  
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WoS Researcher ID: M-1131-2016.

## Education

Degree : B.Sc. and M.Sc. in Mathematics, Universidad de Sevilla, 24/6/1994.  
Awarded Best Student in Applied Mathematics.

Doctoral degree : PhD in Operations Research, Erasmus University Rotterdam, 12/10/2000.  
Title of the PhD thesis : Optimization problems in Supply Chain Management.  
Supervisors : Prof. dr. ir. Jo A.E.E. van Nunen and Prof. H. Edwin Romeijn.  
Awarded Best Dissertation by Erasmus Research Institute of Management.

## Professional Employment

- Professor in Operations Research, Copenhagen Business School, August 2014-present.
- Professor in Operations Research, Saïd Business School, and Fellow of St Cross College, University of Oxford, June 2012-July 2014.
- University Reader in Operations Research, Saïd Business School, and Fellow of St Cross College, University of Oxford, April 2006-May 2012.
- University Lecturer in Decision Science, Saïd Business School, and Fellow of St Cross College, University of Oxford, September 2003-March 2006.
- Assistant Professor in Operations Research, Department of Quantitative Economics, Faculty of Economics and Business Administration, Maastricht University, The Netherlands, August 2000-August 2003.
- Assistant Professor in Statistics and Operations Research, Faculty of Mathematics, Universidad de Sevilla, Spain, January 1998-September 1998.
- Research Assistant in Operations Research, Department of Decision and Information Sciences, Faculty of Business Administration, Erasmus University Rotterdam, The Netherlands, September 1996-July 2000.
- Assistant Professor in Quantitative Methods, School of Business Administration, Universidad de Cádiz, Spain, October 1995-September 1996.

## Visiting Positions

- Visiting Scholar, Saïd Business School, University of Oxford, December 2014-December 2015.
- Visiting Scholar, Department of Industrial Engineering and Operations Research, University of California, Berkeley, USA, January-March 2014.
- Visiting Professor, Operations and Information Management Department, The Wharton School, University of Pennsylvania, USA, April-May 2009.
- Visiting Professor, Department of Industrial and Systems Engineering, University of Florida, USA, April-May 2001.
- Visiting Researcher, Department of Industrial and Systems Engineering, University of Florida, USA, April 2000.

## Journal articles

1. Sparse Optimal Randomized Classification Trees, R. Blanquero, E. Carrizosa, C. Molero-Río, D. Romero Morales. Forthcoming in *European Journal of Operational Research*, 2019. doi.org/10.1016/j.ejor.2019.12.002.
2. Enhancing the Interpretability in Factor Analysis by means of Mathematical Optimization, E. Carrizosa, V. Guerrero, D. Romero Morales, A. Satorra. Forthcoming in *Multivariate Behavioral Research*, 2019. doi.org/10.1080/00273171.2019.1677208.
3. On a Mathematical Optimization approach for Feature Selection in Data Envelopment Analysis, S. Benítez Peña, P. Bogetoft, D. Romero Morales. Forthcoming in *Omega*, 2019. doi.org/10.1016/j.omega.2019.05.004.
4. Visualization of complex dynamic datasets by means of Mathematical Optimization, E. Carrizosa, V. Guerrero, D. Romero Morales. *Omega*, 86:125–136, 2019.
5. On the time-consistent stochastic dominance risk averse measure for tactical supply chain planning under uncertainty, L.F. Escudero, J.F. Monge, D. Romero Morales. *Computers and Operations Research*, 100:270–286, 2018.
6. On Building Online Visualization Maps for News Data Streams by Means of Mathematical Optimization, E. Carrizosa, V. Guerrero, D. Hardt, D. Romero Morales. *Big Data*, 6(2): 139–158, 2018.
7. Visualizing data as objects by DC (difference of convex) optimization, E. Carrizosa, V. Guerrero, D. Romero Morales. *Mathematical Programming, Series B*, 169(1):119–140, 2018.
8. On Mathematical Optimization for the visualization of proportions and adjacencies as rectangular maps, E. Carrizosa, V. Guerrero, D. Romero Morales. *European Journal of Operational Research*, 265(1):290–302, 2018.
9. Visualizing proportions and dissimilarities by Space-Filling Maps: a Large Neighborhood Search approach, E. Carrizosa, V. Guerrero, D. Romero Morales. *Computers and Operations Research*, 78:369–380, 2017.
10. Clustering categories in Support Vector Machines, E. Carrizosa, A. Nogales-Gómez, D. Romero Morales. *Omega*, 66:28–37, 2017.
11. Strongly agree or strongly disagree?: Rating features in Support Vector Machines, E. Carrizosa, A. Nogales-Gómez, D. Romero Morales. *Information Sciences*, 329:256–273, 2016.
12. An SDP approach for multiperiod mixed 0–1 linear programming models with stochastic dominance constraints for risk management, L.F. Escudero, J.F. Monge, D. Romero Morales. *Computers and Operations Research*, 58:32–40, 2015.
13. Computational complexity of finding Pareto efficient outcomes for bi-objective lot-sizing models, H.E. Romeijn, D. Romero Morales, W. van den Heuvel, *Naval Research Logistics*, 61(5): 386–402, 2014.
14. Heuristic approaches for support vector machines with the ramp loss, E. Carrizosa, A. Nogales-Gómez, D. Romero Morales, *Optimization Letters*, 8:1125–1135, 2014.
15. A nested heuristic for parameter tuning in Support Vector Machines, E. Carrizosa, B. Martín Barragán, D. Romero Morales, *Computers and Operations Research*, 43: 328–334, 2014.
16. Revenue deficiency under second-price auctions in a supply-chain setting, D. Romero Morales, R. Steinberg, *European Journal of Operational Research*, 233:131–144, 2014.
17. Expected future value decomposition based bid price generation for large-scale network revenue management, L.F. Escudero, J.F. Monge, D. Romero Morales, J. Wang, *Transportation Science*, 47:181–197, 2013.
18. Supervised classification and mathematical optimization, E. Carrizosa, D. Romero Morales, *Computers and Operations Research*, 40:150–165, 2013.
19. Detecting relevant variables and interactions in supervised classification. E. Carrizosa, B. Martín Barragán, D. Romero Morales, *European Journal of Operational Research*, 213(1):260–269, 2011.

20. Binarized Support Vector Machines. E. Carrizosa, B. Martín Barragán, D. Romero Morales, *INFORMS Journal on Computing*, 22(1):154–167, 2010.
21. Forecasting cancellation rates for services booking revenue management using data mining. D. Romero Morales, J. Wang, *European Journal of Operational Research*, 202(2):554–562, 2010.
22. Existence of equilibria in a decentralized two-level supply chain. D. Romero Morales, D. Vermeulen, *European Journal of Operational Research*, 197(2):642–658, 2009.
23. Multi-group Support Vector Machines with measurement costs: a biobjective approach, E. Carrizosa, B. Martín Barragán, D. Romero Morales, *Discrete Applied Mathematics*, 156(6):950–966, 2008.
24. On the selection of the globally optimal prototype subset for Nearest-Neighbor classification. E. Carrizosa, B. Martín Barragán, F. Plastria, D. Romero Morales, *INFORMS Journal on Computing*, 19(3):470–479, 2007.
25. A heuristic approach to the multi-period single-sourcing problem with production and inventory capacities and perishability constraints, R.K. Ahuja, W. Huang, H.E. Romeijn, D. Romero Morales, *INFORMS Journal on Computing*, 19:14–26, 2007.
26. Note on the applicability of the VCG mechanism to capacitated assignment problems and extensions. R.B. Lok, D. Romero Morales, D. Vermeulen, *Statistica Neerlandica*, 61(1): 156–171, 2007.
27. A biobjective method for sample allocation in stratified sampling. E. Carrizosa, D. Romero Morales, *European Journal of Operational Research*, 177(2): 1074–1089, 2007.
28. On solving the multi-period single-sourcing problem under uncertainty, A. Alonso-Ayuso, L.F. Escudero, C. Pizarro, H.E. Romeijn, D. Romero Morales, *Computational Management Science*, 3(1): 29–53, 2006.
29. Integrated lot-sizing in serial supply chains with production capacities, S. van Hoesel, H.E. Romeijn, D. Romero Morales, A.P.M. Wagelmans, *Management Science*, 51(11): 1706–1719, 2005.
30. Asymptotic analysis of a greedy heuristic for the multi-period single-sourcing problem: the acyclic case, H.E. Romeijn, D. Romero Morales, *Journal of Heuristics*, 10: 5–35, 2004.
31. A branch and price algorithm for the multi-period single-sourcing problem, R. Freling, H.E. Romeijn, D. Romero Morales, A.P.M. Wagelmans, *Operations Research*, 51(6): 922–939, 2003.
32. An asymptotically optimal greedy heuristic for the multi-period single-sourcing problem: the cyclic case, H.E. Romeijn, D. Romero Morales, *Naval Research Logistics*, 50(5): 412–437, 2003.
33. Generating experimental data for the generalized assignment problem, H.E. Romeijn, D. Romero Morales, *Operations Research*, 49(6): 866–878, 2001.
34. A probabilistic analysis of the multi-period single-sourcing problem, H.E. Romeijn, D. Romero Morales, *Discrete Applied Mathematics*, 112: 301–328, 2001.
35. Combining minsum and minmax. A goal programming approach, E. Carrizosa, D. Romero-Morales, *Operations Research*, 49(1): 169–174, 2001.
36. Finding the principal points of a random variable, E. Carrizosa, E. Conde, A. Castaño, D. Romero-Morales, *RAIRO-Operations Research*, 35: 315–328, 2001.
37. A class of greedy algorithms for the generalized assignment problem, H.E. Romeijn, D. Romero Morales, *Discrete Applied Mathematics*, 103: 209–235, 2000.
38. Attainment of optimal solution in a semiobnoxious location problem, E. Carrizosa, D. Romero-Morales, *Studies in Locational Analysis*, 12: 41–48, 1999.
39. Semi-Obnoxious location models: A global optimization approach, D. Romero-Morales, E. Carrizosa, E. Conde, *European Journal of Operational Research*, 102(2): 296–301, 1997.

## Book chapters

1. The generalized assignment problem and extensions, D. Romero Morales, H.E. Romeijn. Handbook of Combinatorial Optimization, supplement volume B (D.Z. Du and P.M. Pardalos, eds.), Springer, 2005, 259–311.
2. A greedy heuristic for a three-level multi-period single-sourcing problem, H.E. Romeijn, D. Romero Morales, Quantitative Approaches to Distribution Logistics and Supply Chain Management, Lecture Notes in Economics and Mathematical Systems 519 (A. Klose, M.G. Speranza and L.N. Wassenhove, eds.), Springer-Verlag, Berlin, 2002, 191–214.
3. Logistics network design evaluation in a dynamic environment, D. Romero Morales, J.A.E.E. van Nunen, H.E. Romeijn, New trends in distribution logistics, Lecture Notes in Economics and Mathematical Systems 480 (M.G. Speranza and P. Stähly, eds.), Springer-Verlag, Berlin, 1999, 113–135.
4. Location of a semiobnoxious facility. A biobjective approach, E. Carrizosa, E. Conde, D. Romero Morales, Advances in multiple objective and goal programming, Lecture Notes in Economics and Mathematical Systems 455 (R. Caballero, F. Ruiz, and R.E. Steuer, eds.), Springer-Verlag, Berlin, 1997, 338–346.

## Working papers

- Optimal Randomized Classification Trees, R. Blanquero, E. Carrizosa, C. Molero-Río, D. Romero Morales.
- On Clustering Categories of Categorical Predictors in Generalized Linear Models, E. Carrizosa, M. Galvis Restrepo, D. Romero Morales.

## Working in progress

- On the latest advances in mathematical optimization to learn classification and regression trees, E. Carrizosa, C. Molero-Río, D. Romero Morales.
- On mathematical optimization for clustering categories in contingency tables, E. Carrizosa, V. Guerrero, D. Romero Morales.
- Explaining competition in EU public procurement procedures, L. la Cour, M. Galvis, D. Romero Morales, G. Skovgaard Ølykke.
- On Hierarchical Categorical Variables, E. Carrizosa, L. Mortensen, D. Romero Morales, R. Sillero.
- On Optimal Randomized Regression Trees, R. Blanquero, E. Carrizosa, C. Molero-Río, D. Romero Morales.
- On clustered feature selection for Data Envelopment Analysis, S. Benítez Peña, P. Bogetoft, D. Romero Morales.
- On outlier detection in Data Envelopment Analysis, S. Benítez Peña, P. Bogetoft, D. Romero Morales.

## Selected presentations

- Invited Tutorial at CLAIO2020, Madrid (Spain), August 31-September 2, 2020.
- Invited Lecturer at the MIT-ZLC PhD Summer Academy program, Zaragoza (Spain), July 8-10, 2020.
- Invited Speaker at the 2020 STOR-i Workshop on Prediction+Optimization (POP 2020), Lancaster (UK), April 2, 2020.
- The Optimization of Explaining Data Science, Invited Speaker at the 2020 STOR-i Annual Conference, Lancaster (UK), January 10, 2020.

- Mathematical Optimization for Interpretable Machine Learning. Invited Lecturer at IMUS-Institute of Mathematics of the University of Seville (Spain), December 4, 2019.
- On Learning from Complex Data with Mathematical Optimization. Invited Speaker at the 2019 Annual Meeting of the Austrian Operations Research Society, Vienna (Austria), November 22, 2019.
- Interpretability in Data Science matters and Mathematical Optimization can help. Semi-Plenary Speaker at Operations Research 2019, Dresden (Germany), September 3-6, 2019.
- Learning and Interpreting with Mathematical Optimization. Keynote Speaker at the meeting of the EURO Working Group on Operations Research and Health Services (ORAHS2019), Karlsruhe (Germany), July 28-August 2, 2019.
- Latest advances in enhancing Interpretability in Data Science via means of Mathematical Optimization. Lecturer at the 2nd Advanced Course on Data Science & Machine Learning, Siena (Italy), July 15-19, 2019.
- The Opportunities and Challenges of Mathematical Optimization for Data Science. Keynote speaker at DTU CEE Summer School 2019, Lyngby (Denmark), June 17, 2019.
- What Mathematical Optimization can do to enhance the Interpretability of Data Science. Keynote speaker at the Annual Workshop on Applications of Optimization 2019 (AOO19) organized by DORS, Copenhagen (Denmark), May 6, 2019.
- The role of Mathematical Optimization to enhance Interpretability in Data Science, Aachen (Germany), April 26, 2019.
- Learn and Interpret with MINLP, Workshop on Optimization and Data Science, Paris, March 27, 2019.
- Towards Interpretability in Data Science, Workshop on Data Science, Universidad de Sevilla-BBVA Foundation, September 13-14, 2018.
- MINLP and the Cost of Interpretability in Data Science. Keynote speaker at EURO 2018, Valencia (Spain), July 8-11, 2018.
- Feature Selection in Benchmarking, 23rd International Symposium on Mathematical Programming, Bordeaux, July 1-6, 2018.
- The role of Mathematical Optimization in Data Science, Winter School on Optimization and Operations Research, Zinal, January 15-19, 2018.
- The Role of Mathematical Optimization to Visualize Complex Data, Berliner Kolloquium für Wissenschaftliche Visualisierung, Berlin, December 4, 2017.
- Mathematical Optimization in Information Visualization, Basque Center for Applied Mathematics, Bilbao, April 25, 2017.
- Visualizing data as objects by DC (difference of convex) optimization, IMA and OR Society Conference on Mathematics of Operational Research, Birmingham, April 20-21, 2017.
- On Mixed Integer Nonlinear Programming to Visualize Complex Data, COST Project TD1207 Final Conference "Mathematical Optimization for Efficient and Robust Energy Networks", Modena, March 29-31, 2017.
- On Difference of Convex Optimization to Visualize a Word Storm, INFORMS 2016, Nashville, November 13-16, 2016.
- A Multi-Objective approach to visualize proportions and a binary relation by rectangular maps, INFORMS 2015, Philadelphia, November 1-4, 2015.
- Increasing Sparsity in Support Vector Machines in the Presence of Categorical Data, 22nd International Symposium on Mathematical Programming, Pittsburgh, July 12-17, 2015.
- Mathematical Optimization and Interpretability in Support Vector Machines, ISAT The Cassandra Problem: Building Trust in Predictive Models Workshop, DARPA, Arlington, April 15-16, 2015.

- MINLP and the pursue of interpretability and visualization in Data Science, MINLP 2015, Sevilla, March 30-April 1, 2015.
- Clustering Categories in Support Vector Machines, INFORMS 2014, San Francisco, November 9-12, 2014.
- Dimensionality reduction of categorical data in Support Vector Machines, IFORS 2014, Barcelona, July 13-18, 2014.
- Strongly Agree or Strongly Disagree? Rating Features in Support Vector Machines, INFORMS National Meeting, Minneapolis, Minnesota, October 6-9, 2013.
- Polynomial time algorithms for Cardinality Constrained Robust Lot Sizing models, XXVI EURO-INFORMS Joint International Conference, Rome, July 1-4, 2013.
- A polynomial time algorithm for the minimax regret uncapacitated lot-sizing model, ECCO XXVI, Paris, May 30-June 1, 2013.
- Bi-objective economic lot-sizing problems, 3rd International Workshop on Lot Sizing, Rotterdam, August 27-29, 2012.
- A Multi-Objective Economic Lot-Sizing Problem with environmental considerations, 21st International Symposium on Mathematical Programming, Berlin, August 19-24, 2012.
- Finding Pareto optimal solutions for the multi-objective economic lot-sizing problem, 2nd International Workshop on Lot Sizing, Istanbul, August 24-26, 2011.
- Economic lot-sizing models with environmental awareness: A multi-objective programming approach, ECCO XXIV, Amsterdam, May 30-June 1, 2011.
- Multi-Objective Economic Lot-Sizing Models, VII ALIO/EURO Workshop on Applied Combinatorial Optimization, Porto, May 4-6, 2011.
- Expected future value decomposition based bid price generation for large-scale network revenue management, EURO XXIV, Lisbon, July 11-14, 2010.
- A polynomial time algorithm for a class of two-level capacitated requirements planning and pricing problems, Combinatorial Optimization 2010, Málaga, May 27-29, 2010.
- A stochastic dynamic programming approach to large-scale network revenue management, 20th International Symposium on Mathematical Programming, Chicago, August 23-28, 2009.
- Support vector machines for passenger name record-based cancellation forecasting in revenue management, INFORMS National Meeting, Washington, DC, October 12-15, 2008.
- Discretizing continuous variables for support vector machines by means of classification trees, Combinatorial Optimization 2008, Warwick, March 16-19, 2008.
- Existence of equilibria in a decentralized two-level economic lot-sizing model, 19th International Symposium on Mathematical Programming, Rio de Janeiro, July 30-August 4, 2006.
- Procurement over multiple periods, EURO XXI, Reykjavik, July 2-5, 2006.
- Combinatorial auctions with transformation in procurement, Combinatorial Optimization 2006, Porto, May 11-13, 2006.
- Combinatorial auctions for the procurement of a product over a planning horizon, ALIO/EURO Workshop on Applied Combinatorial Optimization, Paris, October 26-28, 2005.
- Polynomially solvable production and distribution lot-sizing models, Combinatorial Optimization 2004, Lancaster, March 28-31, 2004.
- A biobjective method for sample allocation in stratified sampling, 18th International Symposium on Mathematical Programming, Copenhagen, August 18-22, 2003.
- The stochastic multi-period single-sourcing problem, INFORMS National Meeting, San José, California, November 17-20, 2002.
- Two-level lot-sizing problems in supply chain planning, Mathematical Methods in Manufacturing and Logistics, Oberwolfach, December 16-22, 2001.

- New capacitated lot-sizing problems arising when coordinating transportation and inventory decisions in a supply chain, INFORMS International Hawaii, Maui, Hawaii, June 17-20, 2001.
- A class of greedy heuristics for minimizing the transportation and inventory costs in a logistics network, 17th International Symposium on Mathematical Programming, Atlanta, Georgia, August 7-11, 2000.
- The multi-resource generalized assignment problem with an application to the distribution of gasoline products, Third Alio-Euro Workshop: Applied Combinatorial Optimization, Erice, November 1-7, 1999.
- A column generation approach for the multi-period single-sourcing problem, INFORMS National Meeting, Seattle, Washington, October 25-28, 1998.
- A class of generalized greedy algorithms for the generalized assignment problem, 16th International Symposium on Mathematical Programming, Lausanne, August 24-29, 1997.

## Grants

- R & D project granted by Consejería de Conocimiento, Investigación y Universidad, Junta de Andalucía, Spain, on *Data Science: From Mathematical Modeling to Mathematical Optimization*, led by Prof. Carrizosa and Dr. Blanquero Bravo, Universidad de Sevilla. February 2020-January 2023. 109,750 EUR.
- Research project granted by the Danish Research Council, Denmark, on *Benchmarking-based incentives and regulatory applications*, led by Prof. Bogetoft, Copenhagen Business School. August 2019-July 2023. 4,582,832 DKK.
- Raised funding from EURO to organize the EURO PhD School on *Data Driven Decision Making and Optimization*, IMUS-Institute of Mathematics of the University of Seville (Spain), July 10-19, 2020. 15,000 EUR.
- H2020-MSCA-RISE granted by the EU on *Research and Innovation Staff Exchange Network of European Data Scientists (NeEDS)*. Project ID 822214. Roles: Coordinator and Scientific Leader. January 2019-December 2022. 1,168,400.00 EUR.
- Raised funding from EU COST MI-NET (TD 1409), EURO General Support Fund, and Copenhagen Business School to organize the first Modeling Week on *Data Driven Decision Making and Optimization (D<sup>3</sup>EMO)*, Copenhagen Business School (Denmark), September 3-7, 2018. 14,700 EUR.
- Raised funding from Otto Mønsted Fond for a Visiting Professorship for Foreigners at the Department of Economics (Prof. Carrizosa, Universidad de Sevilla). Summer 2018.
- R & D project granted by Ministerio de Economía y Competitividad, Spain, on *Mathematical Optimization For Data Visualization And Decision Making*, led by Prof. Carrizosa and Dr. Blanquero Bravo, Universidad de Sevilla. January 2016-December 2019. 140,600 EUR.
- Cost Sensitive Classification. A Mathematical Optimization Approach. BBVA Foundation, led by Prof. Carrizosa. September 2016-August 2018. 100,000 EUR.
- R & D project granted by Ministerio de Economía y Competitividad, Spain, on *Models and Methods of Mathematical Programming and its Applications*, led by Prof. Emilio Carrizosa, Universidad de Sevilla. January 2013-December 2015. 77,220 EUR.
- R & D project granted by Ministerio de Ciencia e Innovación, Spain, on *Models and Methods of Mathematical Programming and Applications (OPTIMOS2)*, led by Prof. Emilio Carrizosa, Universidad de Sevilla. January 2010-December 2012. 78,700 EUR.
- R & D project granted by Ministerio de Ciencia e Innovación, Spain, on *Continuous Location. New applications, models and algorithms*, led by Prof. Emilio Carrizosa, Universidad de Sevilla. January 2009-December 2009. 15,400 EUR.
- Research and traveling grants from the US National Science Foundation; NWO (Netherlands Organisation for Scientific Research); METEOR (Maastricht Research School of Economics of Technology and Organizations); the Astor Travel Fund at the University of Oxford; the John Fell Oxford University Press Research Fund; Otto Mønsted Fond; The Danish Agency for Science, Technology and Innovation.

## Awards and Fellowships

- Collaborator of IMUS-Institute of Mathematics of the University of Seville (Spain). June 2019-December 2022.
- METEOR Extramural Fellow. January 2004-December 2008.
- 2004 Operations Research Meritorious Service Award, for reviewing service to the journal Operations Research.
- ERIM (Erasmus Research Institute of Management) Best Dissertation Award. December 2002.
- Best Student in Applied Mathematics, Universidad de Sevilla. October 1994.

## Engagement with companies

- Data Science: Ageas, BancoEstado, Centraal Bureau voor de Statistiek, DSB, Geographica, IECISA, Statistics Denmark, Repsol, TESCO.
- Analytics and Big Data: Deloitte, IBM, SAS.
  - Analytics: The real-world use of big data, M. Schroeder, R. Shockley, J. Smart, D. Romero Morales, P. Tufano, Research Report by the IBM Institute for Business Value in collaboration with Saïd Business School. October 2012.
  - Honorary SAS Fellow and member of SAS Academic Advisory Board, May 2013-April 2016.
- Revenue Management: KLM, Radisson Edwardian Hotels.
- Supply Chain Management: Ortec.

## PhD supervision

- K. Kurishchenko, *Interpretability for Econometrics Models*, expected September 2022.
- M. Galvis Restrepo, *Machine Learning for Econometrics*, expected September 2021.
- C. Molero Río, *Mathematical Optimization for Classification Trees*, expected December 2020. Joint supervision with Dr. Blanquero Bravo and Prof. Carrizosa.
- V. Guerrero Lozano, *Mathematical Optimization for the Visualization of Complex Datasets*, June 2017. Jointly supervised with Prof. Carrizosa. First job: Assistant Professor, Departamento de Estadística, Universidad Carlos III de Madrid.
- D. Li, *Robust Optimisation with Applications in Supply Chain Management*, March 2017.
- A. Nogales Gómez, *Mixed Integer Nonlinear Optimization. Applications to Competitive Location and Supervised Learning*, February 2015. Jointly supervised with Dr. Blanquero Bravo and Prof. Carrizosa. First job at Huawei France R&D Center (France).
- J. Wang, *Estimation and Optimization in Revenue Management*, September 2009. First job at Deutsche Bank in Hong Kong (China).
- R.B. Lok, *Auction Mechanisms in Supply Chain Optimization*, June 2007. Jointly supervised with Prof. Van Hoesel. First job at Centraal Bureau voor de Statistiek, Heerlen (The Netherlands).
- B. Martín Barragán, *Mathematical Programming for Support Vector Machines*, September 2006. Jointly supervised with Prof. Carrizosa. First job: Assistant Professor, Departamento de Estadística, Universidad Carlos III de Madrid. Current job: Lecturer in Management Science, The University of Edinburgh Business School (United Kingdom).



## Teaching experience

- Mathematical Optimization: Models, Methods and Applications. M.Sc. Copenhagen Business School.
- Analytics and Big Data. MBA. Copenhagen Business School.
- Data Science: Data Driven Decision Making. M.Sc. and MBA. Copenhagen Business School.
- Dissertation supervision. M.Sc. Copenhagen Business School.
- Mathematical Optimization in Data Science. Ph.D. University of Bern.
- The Role of Combinatorial Optimisation in Data Analysis and Visualisation. DPhil. NATCOR course in Combinatorial Optimization.
- The Economics of Health Care Innovation: Analytics. M.Sc. Copenhagen Business School.
- Business Analytics and Decision Making. M.Sc. Copenhagen Business School.
- Analytics. MBA and EMBA. University of Oxford.
- Combinatorial Optimization and the Design and Operation of Supply Chains. DPhil. NATCOR course in Combinatorial Optimization.
- Statistical Research Methods. M.Sc. and DPhil in Management Studies. University of Oxford.
- Optimization and Decisions. Indiana Summer School at Oxford on Decision Making and Governance.
- Operational Hotel Management. MBA in Hotel & Tourism Management. Maastricht Hotel Management School.
- Operations Management. M.Sc. in Economics. Maastricht University.
- Logistics. M.Sc. in Econometrics. Maastricht University.
- Service Operations Management. M.Sc. in International Business Administration. Maastricht University.
- Service Operations Management. *Vodafone International Business Strategy Program*, Graduate School of International Management. Maastricht University.
- Linear Programming. M.Sc. in Econometrics. Maastricht University.
- Statistical Methods in Social and Labor Audit. M.Sc. in Audits. Universidad de Sevilla.
- Public Statistics. M.Sc. in Statistics. Universidad de Sevilla.
- Mathematics. M.Sc. in Business Administration. Universidad de Cádiz.

## Professional duties

### *Editorial and reviewing duties*

- Editor-in-Chief of TOP, the Operations Research journal of the Spanish Society of Statistics and Operations Research, January 2020-December 2022.
- H2020 MSCA Individual Fellowships (H2020-MSCA-IF) expert, 2019, 2018, 2017 calls.
- FCT (Portuguese National Funding agency for Science, Research and Technology) expert, Panel in Economics and Business, 2017.
- FWO (Research Foundation - Flanders) expert, Panel in Economics, Business Economics and Management (G&M2), January 2017-December 2018.
- Associate Editor of Journal of Global Optimization, September 2015-December 2018.
- Associate Editor of Asia-Pacific Journal of Operational Research, December 2013-December 2018.

- Associate Editor of *Omega*, Analytics, October 2013-present.
- Area Editor (Logistics, Distribution, Inventory and Transportation) of *Asia-Pacific Journal of Operational Research*, November 2010-October 2013.
- Associate Editor of *Asia-Pacific Journal of Operational Research*, January 2008-November 2010.
- Associate Editor of *TOP*, October 2006-December 2019.
- Editorial Board member of *International Journal of Inventory Research*, July 2006-December 2018.
- Editorial Review Board member of *Production and Operations Management* (Department of E-business and Operations), May 2006-December 2018.
- Ad hoc reviewer for: *4OR*, *Annals of Operations Research*, *Applied Mathematical Modelling*, *Computers and Operations Research*, *Discrete Applied Mathematics*, *European Journal of Operational Research*, *Expert Systems With Applications*, *IEEE Transactions on Neural Networks*, *IIE Transactions*, *IMA Journal of Management Mathematics*, *INFORMS Journal on Computing*, *International Journal of Production Economics*, *International Journal of Systems Science*, *International Transactions in Operational Research*, *Journal of Artificial Intelligence Research*, *Journal of Computational and Applied Mathematics*, *Journal of Global Optimization*, *Journal of the Operational Research Society*, *Machine Learning*, *Management Science*, *Manufacturing & Service Operations Management*, *Naval Research Logistics*, *Omega*, *Operations Research*, *Optimization Letters*, *Optimization Methods & Software*, *Production and Operations Management*, *SIAM Journal of Optimization*, *TOP*, *Transportation Research E*, *Transportation Science*.
- Evaluator for national research agencies: ANEP ([www.anep.es](http://www.anep.es)), EPSRC ([www.epsrc.ac.uk](http://www.epsrc.ac.uk)), ESRC ([www.esrc.ac.uk](http://www.esrc.ac.uk)), FWO ([www.fwo.be](http://www.fwo.be)), NWO ([www.nwo.nl](http://www.nwo.nl)).

#### *PhD committees*

- T.I. Ashley, *New Methods and Results in the Optimisation of Solar Power Tower Plants*, Sevilla (Spain), December 2019.
- L.R. Boscán F., *Essays on the Design of Contracts and Markets for Power System Flexibility*, Copenhagen (Denmark), October 2016.
- A.V. Olivares Nadal, *Enhancing Robustness and Sparsity via Mathematical Optimization*, Sevilla (Spain), September 2016.
- I. Fragkos, *Large-Scale Optimisation in Operations Management: Algorithms and Applications*, University College London, London (UK), December 2013.
- M.J. Retel Helmrich, *Green Lot-Sizing*, Rotterdam (The Netherlands), October 2013.
- S. Arora, *Time Series Forecasting with Applications in Macroeconomics and Energy*, Oxford (UK), March 2013.
- S.J. Miller, *Simple Plant Location Problem: Heuristics, Algorithms and Reductions*, Lancaster (UK), December 2012.
- A.K. Strauss, *Optimisation in Choice-Based Network Revenue Management*, Lancaster (UK), December 2009.
- P. Schütz, *Managing Uncertainty and Flexibility in Supply Chain Optimization*, Trondheim (Norway), June 2009.
- J. López Redondo, *Solving Competitive Location Problems via Memetic Algorithms. High Performance Computing Approaches*, Almería (Spain), September 2008. (External reviewer.)
- D. Martens, *Building Acceptable Classification Models for Financial Engineering Applications*, Leuven (Belgium), January 2008.
- J.Y. Yu, *Models and Software for Improving the Profitability of Pharmaceutical Research*, Oxford (UK), October 2007.
- C. Pizarro Romero, *New Algorithmic Approaches in Stochastic Integer Programming*, Madrid (Spain), June 2006.

- S. García Quiles, *Advances in Discrete Location*, Murcia (Spain), April 2006.
- P. Kostuch, *University Course Timetabling and Meta-Heuristics*, Oxford (UK), September 2005.
- A. van der Kraaij, *Pricing in Telecommunication Networks*, Maastricht (The Netherlands), November 2004.

*Program committees, executive committees, management committees*

- Member of the Program Committee of CO 2020, Bath, September 2-5, 2020.
- Judge for the INFORMS Data Mining Best Paper Award, INFORMS 2019, 2018, 2017, 2016.
- Member of the Program Committee of the Workshop “Data Science meets Optimization” at IJCAI 2019, The 28th International Joint Conference on Artificial Intelligence, Macao, (China), August 10-16, 2019.
- Member of the Program Committee of SEIO2019, Alcoi (Spain), September 3-6, 2019.
- Member of the Academic Committee (Operations Research) of the Spanish Statistics and Operations Research Society. June 2018-to present.
- Member of the Program Committee of “OR60 Anniversary Conference”, Lancaster (UK), September 11-13, 2018.
- Member of the Program Committee of “IEEE 2018 International Congress on Big Data”, San Francisco, July 2-7, 2018.
- Member of the Program Committee of “ICORES 2017 : XV International Conference on Operations Research and Enterprise Systems”, Porto (Portugal), February 23-25, 2017.
- Member of the Management Committee, Cost Action: TD 1409 MI-NET, Mathematics for Industry. January 2016-December 2018.
- Member of the Scientific Committee of the Royal Spanish Mathematical Society. January 2016-to present.
- Member of the Program Committee of “Statistical analysis of intra-firm data: Opportunities and challenges for the private sector, academic research and the provision of higher education”, Frederiksberg (Denmark), May 24-25, 2016.
- Member of the Program Committee of CO 2016, Canterbury (UK), September 1-3, 2016.
- Member of the Program Committee of “EURO 2016”, Poznań (Poland), July 3-6, 2016.
- Member of the Program Committee of “ICORES 2016 : XIV International Conference on Operations Research and Enterprise Systems”, Tokyo (Japan), May 26-27, 2016.
- Member of the Program Committee of “Workshop on Theory and Applications of Operations Research for Sustainability”, International Federation of Operational Research Societies, Barcelona (Spain), November 2-3, 2015.
- Member of the International Program Committee of “4th International Conference on Operations Research and Enterprise Systems” (ICORES 2015), Dubai (UAE), January 30-31, 2015.
- Member of the Program Committee of “International Conference on Applied Mathematical Optimization and Modelling” (APMOD 2014), University of Warwick, April 9-11, 2014.
- Member of the International Program Committee of “3rd International Conference on Operations Research and Enterprise Systems” (ICORES 2014), Eseo (Angers, Loire Valley, France), March 6-8, 2014.
- Member of the Advisory Board of the INFORMS Section on Data Mining, 2013.
- Member of the Program Committee of the joint ECCO XXVII / CO 2014, Munich, May 1-3, 2014.
- Chair of the stream “Supply Chain Management, Logistics and Inventory” in OR 2013, Rotterdam, September 3-6, 2013.

- Member of the Executive Committee of the National Taught Course Centre in Operational Research NATCOR ([www.natcor.ac.uk](http://www.natcor.ac.uk)). September 2012-July 2014.
- Member of the International Program Committee of “2nd International Conference on Operations Research and Enterprise Systems” (ICORES 2013), Barcelona, February 16-18, 2013.
- Chair of the Organizing committee/Chair of the Program committee of “International Symposium on Combinatorial Optimization” (CO 2012), Oxford, September 17-19, 2012.
- Member of the International Program Committee of “1st International Conference on Operations Research and Enterprise Systems” (ICORES 2012), Vilamoura-Algarve, February 4-6, 2012.

### *Organization of scientific activities*

- Co-organizer the stream of invited sessions of the “EURO Working Group on Data Science meets Optimization” in EURO 2019, Dublin (Ireland), June 23-26, 2019.
- Organizer of the first Modeling Week on “Data Driven Decision Making and Optimization (D<sup>3</sup>EMO)”, Copenhagen Business School (Denmark), September 3-7, 2018.
- Co-organizer the stream of invited sessions of the “EURO Working Group on Data Science meets Optimization” in EURO 2018, Valencia (Spain), July 8-11, 2018.
- Organizer of a stream of invited sessions in “Data Science and MINLP” in ISMP 2018, Bordeaux (France), July 1-6, 2018.
- Organizer of two invited sessions on “Mathematical Optimization in Data Science” in IMA and OR Society Conference on Mathematics of Operational Research, Birmingham (UK), April 20-21, 2017.
- Organizer of the invited session “Mathematical Optimization Models for Data Science” in INFORMS 2015, Philadelphia, November 1-4, 2015.
- Organizer of a stream of invited sessions in “Data Mining and Integer Programming” in ISMP 2015, Pittsburgh, July 12-17, 2015.
- Organizer of a stream of invited sessions in “Data Mining” in IFORS 2014, Barcelona, July 13-18, 2014.
- Organizer of a stream of invited sessions in “Supply Chain Optimization” in EURO 2013, Rome, July 1-4, 2013.
- Chair of the Organizing committee/Chair of the Program committee of “International Symposium on Combinatorial Optimization” (CO 2012), Oxford, September 17-19, 2012.
- Organizer of an invited session in “Integer Programming in Data Mining” in the 21st International Symposium on Mathematical Programming, Berlin, August 19-24, 2012.
- Organizer of a stream of invited sessions in “Inventory Management” in EURO 2012, Vilnius, July 8-11, 2012.
- Organizer of a stream of invited sessions in “Inventory Management” in EURO 2010, Lisbon, July 11-14, 2010.
- Organizer of a session in “Optimization and Classification” in the International Workshop on Operational Research in the honour of Prof Escudero, Madrid, June 4-7, 2008.
- Organizer of a session in “Feature Selection in Data Mining” in EURO 2006, Reykjavik, July 2-5, 2006.
- Organizer of the workshop “Feature Selection in Data Mining”, Saïd Business School, University of Oxford, June 29, 2006.
- Organizer of the workshop “Coordination Schemes for Decentralized Supply Chain Planning”, Saïd Business School, University of Oxford, June 15, 2004.
- Organizer of the workshop “Optimization in Supply Chain Planning”, Maastricht, June 10-11, 2002. Together with Stan van Hoesel (UM), Yves Pochet (CORE), Laurence Wolsey (CORE).

- Organizer of sessions in international conferences: INFORMS International Hawaii, Maui, Hawaii, June 17-20, 2001, and EURO 2001, Rotterdam, July 9-11, 2001.

### *External examining and evaluation committees*

- Member of Assessment Committee for Faculty positions at Johannes Kepler Universität Linz (2020); University of Graz (2019); TU Munich (2019); Aarhus University (2017).
- External examiner for Operations Research related projects and courses at Technical University of Denmark, November 2017-to present.
- External examiner for MSc in Marketing and Business Analysis, The University of Edinburgh Business School, October 2014–September 2015.
- External examiner for the Operations Research programmes (BSc and MSc), University of Southampton, October 2013–September 2016.

### *Memberships*

- DORS, Danish Operations Research Society.
- EWG DSO, EURO Working Data Science Meets Optimization.
- EWG LOT, EURO Working Group on Lot-Sizing.
- INFORMS, Institute for Operations Research and the Management Sciences.
- MOS, Mathematical Optimization Society.
- SEIO, Spanish Statistics and Operations Research Society.

## **Internal Service (at Copenhagen Business School)**

- PhD Coordinator at the Department of Economics, February 2020-to present.
- Member of the Departmental Faculty Forum, Department of Economics, June 2019-to present.
- Member of the CBS-Wide Appointment Committee, January 2017-December 2020.
- Member of the management team of the CBS Business in Society Platform *Transformations: Technology, Data and Knowledge in the Digital Age*.
- Member of various appointment panels, tenure track committees, review panels, and prize committees.