

Manuel López-Ibáñez

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🌐	http://lopez-ibanez.eu	DATE OF BIRTH	May 16, 1980
in	manuel-lopez-ibanez	NATIONALITY	Spanish
☎	+34 95213 2815	LANGUAGES	Spanish (native) English (fluent) French (basic, 2 years) German (basic, 1 year)
✉	University of Málaga, School of Computer Science (ETSI Informática) Bulevar Louis Pasteur, 35 Campus de Teatinos, 29071 Málaga, Spain		

CONTENTS

Knowledge Background, 1 ▶ Publication Track-Record and Citations, 1 ▶ Professional Experience, 2 ▶ Academic Qualifications, 3 ▶ Skills, 3 ▶ Best Paper Awards, 3 ▶ Scientific Collaborations, 4 ▶ Research Projects and Grants, 5 ▶ Other Merits and Awards, 7 ▶ Residence in Foreign Countries, 7 ▶ Interests and Hobbies, 7 ▶ Publications, 8 (*Theses, Papers in peer-reviewed international journals, Edited books, Editor of journal special-issue, Book chapters, Papers in peer-reviewed international conference proceedings, Software publicly available, Oral presentations during conferences with scientific selection committee, Notable Technical/Scientific Reports, Other invited talks*) ▶ Organization, Editorial and Reviewer Experience, 23 (*Conference Organization, Editorial Activity, Reviews of Project Proposals, Award Selection Committees, Conference Program Committee Membership, Reviews for International Journals, Reviews of Book Chapters, Reviews for Conferences, Panel Membership*) ▶ Mentoring Experience, 29 (*Supervision of PhD students (advisor and co-promoter), (Co-)Supervisor role of Master's (MSc) thesis*) ▶ Participation in Examination Panels, 31 (*Participation in PhD Defense Jury / Panel, Evaluation of PhD Theses, Participation in Proposal Evaluation and Progress Review Panels*) ▶ Teaching Experience, 33 (*MSc/PhD Training Schools, MSc Teaching, Undergraduate Teaching, Teaching assessments*) ▶ References, 35

KNOWLEDGE BACKGROUND

My main expertise is the application of **computational intelligence** techniques, such as **stochastic local search** algorithms and **metaheuristics** (including **evolutionary algorithms** and **ant colony optimization**), to optimization problems, including **continuous**, **combinatorial**, and **multi-objective** problems. I have made significant contributions on theoretical and practical aspects of the empirical analysis of multi-objective optimization algorithms. I have also a track record of working on problems relevant in practice, both well-known academic problems with important practical applications, such as the **longest common subsequence problem**, and real-world optimization problems, such as the **scheduling of pump operations** in water distribution networks in order to save energy and reduce operating costs.

I am interested in improving the **understanding of optimization algorithms** by means of experimentation, and I am particularly interested in **difficult multidisciplinary problems**. These interests have led me to study the recent advances on **automatic configuration** and **tuning of algorithms** and how to extend and improve existing methods for more complex optimization problems, such as those with multiple objectives.

PUBLICATION TRACK-RECORD AND CITATIONS

I have published **30 journal papers** (25 in journals indexed ISI-JCR, 21 in Q1), **9 book chapters** and **54 papers in peer-reviewed proceedings** of international conferences, and edited **6 books**. In addition to the presentations associated to peer-reviewed conference papers, I have personally given **35 presentations** during conferences with scientific selection committee, including **9 tutorials** and **14 invited talks**. I have also made available several **software tools** that are widely used by the research community. According to the Google Scholar database (or SCOPUS and excluding self-citations):

- My **h-index** is 34 (SCOPUS: 25).
- The **total number of citations** to my papers are more than 5162 (SCOPUS: 2814).
- My five **most-cited** peer-reviewed publications have more than 50 citations each. In addition, the technical report [TR1] describing the **irace** automatic configuration tool [SW6] has been cited more than 200 times, which shows it is widely used by the research community.

PROFESSIONAL EXPERIENCE ★

Turing Fellow Alan Turing Institute, London, UK.	Oct 2021 – Sep 2022
“Beatriz Galindo” Senior Distinguished Researcher at the University of Málaga, Spain.	May 2020 – Apr 2024
Senior Lecturer (Associate Professor) at Alliance Manchester Business School, University of Manchester, UK.	Dec 2018 – Present
Lecturer (Assistant Professor) at Alliance Manchester Business School, University of Manchester, UK.	Oct 2015 – Nov 2018
Postdoctoral researcher of the Belgian Fund for Scientific Research (<i>Chargé de recherches des Fonds de la Recherche Scientifique-FNRS</i>) at IRIDIA, Université Libre de Bruxelles, Brussels, Belgium.	Oct 2011 – Sep 2015
Postdoctoral researcher at the Artificial Intelligence Research Laboratory (IRIDIA) of the Université Libre de Bruxelles, Brussels, Belgium.	Jul 2009 – Sep 2011
Doctoral researcher at the Artificial Intelligence Research Laboratory (IRIDIA) of the Université Libre de Bruxelles, Brussels, Belgium.	Mar 2009 – Jun 2009
Research Assistant at the research group ALBCOM, Departament Llenguatges i Sistemes Informàtics, Universitat Politècnica de Catalunya (UPC), Barcelona, Spain. Supervisor: Dr. Christian Blum.	Oct 2008 – Nov 2008
Doctoral researcher at Barcelona Supercomputing Centre, Spain (HPC-Europa Transnational Access Programme).	Oct 2007 – Dec 2007
Fully funded PhD position at Edinburgh Napier University, United Kingdom. Supervisors: Dr. T. Devi Prasad and Prof. Ben Paechter.	Nov 2004 – Nov 2007
MS Thesis (Diplomarbeit) at the Technische Universität Darmstadt, Germany, with financial support of an Erasmus scholarship. Supervisors: Dr. Thomas Stützle and Dr. Luís Paquete.	Oct 2003 – Jul 2004

★Full time researcher since November, 2004: More than **16 years of research experience**.

ACADEMIC QUALIFICATIONS

- Nov 2009 **PhD award**, Edinburgh Napier University, United Kingdom.
Viva-voice defense successfully passed on June 26, 2009.
Supervisors: Dr. T. Devi Prasad and Prof. Ben Paechter.
Examination Panel: Prof. David W. Corne, Prof. Emma Hart, and Prof. Dragan Savic.
- Sep 2004 *Ingeniero en Informática* (Spanish equivalent of **MS degree in Computer Science**, minimum 5 years), University of Granada, Spain.

SKILLS

Programming languages:	C, C++, Python, R (statistical programming language), Perl, Bourne Again Shell (Bash)
Mathematical tools:	R (statistical computing), Numpy, Pandas, Scikit-learn, Gnuplot, Mathematica, Matlab
Operating systems:	GNU/Linux, Windows, MS-DOS
Parallel programming:	Threads and semaphores, MPI
Various:	LaTeX, Emacs, Subversion, Git, LibreOffice/OpenOffice

BEST PAPER AWARDS

- SEIO - BBVA Foundation Award 2021** The paper “*Construct, Merge, Solve & Adapt A new general algorithm for combinatorial optimization*” [IJ17], co-authored with Christian Blum, Pedro Pinacho and José A. Lozano, was awarded the “Best methodological contribution in operations research” prize by the Spanish Society of Statistics and Operations Research – BBVA Foundation Awards.
- AI for TSP competition** Our team (Martin Zaefferer, Manuel López-Ibáñez and Ekhine Irurozki) won the 1st place in the *AI for TSP Competition* of the 30th International Joint Conference on Artificial Intelligence (IJCAI-21).
- EVOCOP 2021** The paper “*Hybridization of Racing Methods with Evolutionary Operators for Simulation Optimization of Traffic Lights Programs*” [IC51], co-authored with Christian Cintrano, Javier Ferrer, Manuel López-Ibáñez, and Enrique Alba, received the best paper award of the 21th European Conference on Evolutionary Computation in Combinatorial Optimization (EvoCOP 2021), 2021.
- EJOR, Editor’s Choice Award** The paper “*Incorporating Decision-Maker’s Preferences into the Automatic Configuration of Bi-Objective Optimisation Algorithms*” [IJ27], co-authored with J. E. Díaz, was selected as one of the **Editor’s Choice Articles** of the *European Journal of Operational Research*, January, 2021.
- GECCO 2010** The paper “*The Impact of Design Choices of Multiobjective Ant Colony Optimization Algorithms on Performance: An Experimental Study on the Biobjective TSP*” [IC11], co-authored with Thomas Stützle, received the best paper award of the Ant Colony Optimization and Swarm Intelligence track at the Genetic and Evolutionary Computation Conference (GECCO 2010), Portland, Oregon, 2010.
- LION 4 2010** The paper “*Adaptive Anytime Two-Phase Local Search*” [IC10], co-authored with Jérémie Dubois-Lacoste and Thomas Stützle, received the best paper award of the Learning and Intelligent Optimization conference (LION 4), Venice, Italy, 2010.

EA 2009 The paper “*An Analysis of Algorithmic Components for Multiobjective Ant Colony Optimization: A Case Study on the Biobjective TSP*” [IC9], co-authored with Thomas Stützle, received the 3rd best paper award of the 9th international conference on Artificial Evolution (EA’09), Strasbourg, France, 2009.

SCIENTIFIC COLLABORATIONS

Invited Professor hosted by Prof. Carola Doerr at the Sorbonne University, Paris, France.	6/9/2021 – 17/9/2021
Member of Institute of Technology and Software Engineering (ITIS) at the University of Málaga, Spain	18/11/2020 – Present
Lorentz Center Workshop “Benchmarked: Optimization Meets Machine Learning” Lorentz Center, Leiden, The Netherlands	9/11/2020 – 9/11/2020
Invited participant to Working Group Meeting of EU COST Action CA15140 (<i>Improving Applicability of Nature-Inspired Optimisation by Joining Theory and Practice</i>), Vilnius, Lithuania	17/2/2020 – 19/2/2020
Dagstuhl Seminar “Scalability in Multiobjective Optimization” Schloss Dagstuhl - Leibniz Center for Informatics, Germany	12/1/2020 – 17/1/2020
Dagstuhl Seminar “Theory of Randomized Optimization Heuristics” Schloss Dagstuhl - Leibniz Center for Informatics, Germany	21/10/2019 – 25/10/2019
Invited visiting researcher hosted by Prof. Juan Esteban Diaz Leiva at the University San Francisco de Quito, Ecuador.	11/6/2019 – 28/6/2019
Invited participant to Working Group Meeting of EU COST Action CA15140 (<i>Improving Applicability of Nature-Inspired Optimisation by Joining Theory and Practice</i>), Málaga, Spain	18/2/2019 – 19/2/2019
Invited visiting researcher hosted by Prof. Kaisa Miettinen at the University of Jyväskylä, Finland.	18/8/2018 – 25/8/2018
Dagstuhl Seminar “Personalized Multiobjective Optimization: An Analytics Perspective” Schloss Dagstuhl - Leibniz Center for Informatics, Germany	14/1/2018 – 19/1/2018
Invited visiting Junior Professor hosted by Prof. Kaisa Miettinen at the University of Jyväskylä, Finland.	27/11/2017 – 21/12/2017
Invited participant to Working Group Meeting of EU COST Action CA15140 (<i>Improving Applicability of Nature-Inspired Optimisation by Joining Theory and Practice</i>), Portorož, Slovenia	21/9/2017 – 22/9/2017
Invited visiting researcher hosted by Dr. Marie-Eléonore Kessaci at the University of Lille, France.	13/9/2017 – 15/9/2017
Invited visiting researcher hosted by Dr. Arnaud Liefoghe at the University of Lille, France.	12/6/2017 – 16/6/2017
Invited visiting researcher hosted by Dr. Thomas Stützle at the Université libre de Bruxelles (ULB), Belgium.	19/6/2017 – 23/6/2017

Dagstuhl Seminar “Automated Algorithm Selection and Configuration” Schloss Dagstuhl - Leibniz Center for Informatics, Germany	9/10/2016 – 14/10/2016
Collaborateur Scientifique at the Faculté des Sciences Appliquées, Université libre de Bruxelles, Belgium	1/2/2016 – 30/9/2019
Member of the Decision and Cognitive Sciences Research Centre (DCSRC) at the University of Manchester, UK	1/10/2015 – Present
43rd CREST Open Workshop “Hyper-Heuristics for Software Engineering” University College London (UCL), UK	26/10/2015 – 27/10/2015
Invited visiting researcher hosted by Prof. Enrique Alba at the University of Málaga (UMA), Spain. Funded by a grant (€ 2 710) by the UMA (Estancias Tipo B, Fondos Propios UMA 2014)	1/5/2015 – 31/7/2015
Dagstuhl Seminar “Understanding Complexity in Multiobjective Optimization” Schloss Dagstuhl - Leibniz Center for Informatics, Germany	11/1/2015 – 16/1/2015
Honorary Postdoctoral Fellow hosted by Prof. Holger H. Hoos at the University of British Columbia, Vancouver, Canada. Funded by F.R.S.-FNRS Crédit bref séjour à l'étranger	25/10/2013 – 1/12/2013
Lorentz Center Workshop “SIMCO – Set-Oriented and Indicator-Based Multi-Criteria Optimization” Lorentz Center, Leiden, The Netherlands	2/9/2013 – 6/9/2013
Invited visit hosted by Prof. Juergen Branke at the University of Warwick, Coventry, United Kingdom. COST (European Cooperation in Science and Technology) Action IC0702	23/3/2012 – 30/3/2012
Dagstuhl Seminar “Learning in Multi-Objective Optimization” Schloss Dagstuhl - Leibniz Center for Informatics, Germany	22/1/2012 – 27/1/2012
Invited visit hosted by Dr. Oliver Korb at the Cambridge Crystallographic Data Centre, Cambridge, United Kingdom.	17/10/2011 – 18/10/2011
Invited visit hosted by Dr. Oscar Cordón at the European Centre for Soft Computing, Mieres, Spain. COST (European Cooperation in Science and Technology) Action IC0702	21/6/2011 – 30/6/2011
Invited visit hosted by Prof. Carlos M. Fonseca at the University of Algarve, Faro, Portugal.	1/12/2005 – 20/12/2005

RESEARCH PROJECTS AND GRANTS

North West Social Science Doctoral Training Partnership CASE PhD	Sep 2021 – Aug 2024
Studentship: Challenges in Home to School Transport: Large-Scale School Bus Routing inclusive of Special Needs Students and Heterogeneous Fleets in the North West	£ 67 827
<i>Funding:</i> Economic and Social Research Council (ESRC), UK, and 365Response (private company)	<i>Role:</i> Co-PI, Academic Supervisor
TAILOR: Foundations of Trustworthy AI - Integrating Reasoning, Learning and Optimization	Sep 2020 – Aug 2023
<i>Funding:</i> European Commission H2020-ICT-2019-3	€ 12M (total) € 99 800 (UMA)
	<i>Role:</i> Participant researcher
EPSRC/IBM Industrial CASE: Tuning Bayesian Optimization for Problems with Dynamic Resource Constraints	Oct 2020 – Oct 2025
<i>Funding:</i> Engineering and Physical Sciences Research Council (EPSRC), UK	£ 116 928
	<i>Role:</i> Co-I, Academic Supervisor
“Beatriz Galindo” Senior Distinguished Researcher	May 2020 – Apr 2024
<i>Funding:</i> Spanish Ministry of Science and Innovation (MICINN)	<i>Role:</i> PI € 260 000
Research Support Fund: Operating theatre planning	Jan 2019 – Jun 2019
<i>Funding:</i> Alliance Manchester Business School	<i>Role:</i> Co-I £ 4 974
Quantitative Models of Realistic Human Decision-Makers for Data Analytics and Optimisation	Jan 2019 – Dec 2021
<i>Funding:</i> Alliance Manchester Business School	<i>Role:</i> PI £ 70 000
	Project proposal for a fully-funded PhD Scholarship
Knowledge Transfer Partnership: Transport in healthcare	Nov 2018 – Dec 2020
<i>Funding:</i> Innovate UK	<i>Role:</i> Co-I £ 219 940
	Canceled due to financial issues in the company
UScore2: City to city local level peer review on Disaster Risk Reduction	Jan 2017 – Dec 2018
<i>Funding:</i> European Commission	<i>Role:</i> Participant researcher £ 1 010 186
Ayuda “Ramón y Cajal” (Independent postdoctoral researcher fellowship)	Sep 2015 – Sep 2020
<i>Funding:</i> Spanish Government	<i>Role:</i> PI € 208 600
	Awarded but declined by me to take a permanent position at Univ. of Manchester
COMEX: Combinatorial Optimization: Metaheuristics and EXact methods	Oct 2012 – Sep 2017
<i>Funding:</i> Inter-university Attraction Poles Programme of the Belgian Federal Science Policy Office (BELSPO)	€ 500 000
	<i>Role:</i> Participant researcher
Hybrid Search Methods for Complex Problems	Jan 2010 – Dec 2013
<i>Funding:</i> Belgian National Science Foundation (FNRS), FRFC program	€ 109 000
	<i>Role:</i> Participant researcher
	Joint FRFC (“Fonds de la recherche fondamentale collective”) research project with the <i>BeCool</i> research group at Université catholique de Louvain
Meta-X: Metaheuristics for Complex Optimization Problems	Oct 2008 – Sep 2013
<i>Funding:</i> ARC Project (“Action de Recherche Concertée ”), Scientific Research Directorate of the French Community of Belgium	€ 650 000
	<i>Role:</i> Participant researcher
Research visit grant (Crédit bref séjour à l’étranger)	Oct 2013 – Dec 2013
<i>Funding:</i> Belgian F.R.S.-FNRS	<i>Role:</i> PI € 1 900
	Grant for a research visit at University of British Columbia, Vancouver

Prime Horizon	Sep 2013 – Sep 2013
<i>Funding:</i> NCP Wallonie, Belgium	<i>Role:</i> PI € 1 925
Grant for the elaboration as a partner of a project proposal for the European Union FET-Open-Xtrack	
Postdoctoral Fellowship (Chargé de recherches)	Oct 2011 – Sep 2015
<i>Funding:</i> Belgian F.R.S.-FNRS	<i>Role:</i> PI approx. € 360 000
High Performance Ant Colony Optimisation of the Pump Scheduling Problem	Oct 2007 – Dec 2007
<i>Funding:</i> HPC-Europa Transnational Access Programme	<i>Role:</i> PI € 4 500
Grant for a research project on parallel optimization at the Barcelona Supercomputing Centre, Spain	

OTHER MERITS AND AWARDS

- *Outstanding Teaching Award*, Faculty of Humanities, University of Manchester, UK (Oct 2020)
- Fellow of The Higher Education Academy in recognition of attainment against the UK Professional Standards Framework for teaching and learning support in higher education (Nov 2018)
- “*Rewarding Exceptional Performance*” awarded by Alliance Manchester Business School, UK (2017)
- Successfully completed *Google Summer of Code* program. 10% acceptance rate (May 2006 – Aug 2006).
- Erasmus scholarship at the Technische Universität Darmstadt, Germany (Oct 2003 – Jun 2004).

RESIDENCE IN FOREIGN COUNTRIES

Manchester, United Kingdom	October 2015 – June 2021
Brussels, Belgium	March 2009 – September 2015
Edinburgh, United Kingdom	November 2004 – November 2007
Darmstadt, Germany	October 2003 – August 2004

INTERESTS AND HOBBIES

- Free/Open Source Software. I have contributed code to the GNU Compiler Collection (GCC), the R project, and other software projects
- Graphic novels, particularly Alan Moore
- Spanish poetry, particularly Angel González
- Languages
- Traveling
- Capoeira, a Brazilian dance and martial art

Theses

- [TS2] Manuel López-Ibáñez. *Operational Optimisation of Water Distribution Networks*. PhD thesis, School of Engineering and the Built Environment, Edinburgh Napier University, UK, 2009.
- [TS1] Manuel López-Ibáñez. *Multi-objective Ant Colony Optimization*. Diploma thesis, Intellectics Group, Computer Science Department, Technische Universität Darmstadt, Germany, 2004.

Papers in peer-reviewed international journals

- [IJ30] Babooshka Shavazipour, Manuel López-Ibáñez, and Kaisa Miettinen. **Visualizations for Decision Support in Scenario-based Multiobjective Optimization**. *Information Sciences*, 578:1–21, 2021. (2020 ISI-JCR impact factor: 6.795, Q1: 18/162 in COMPUTER SCIENCE, INFORMATION SYSTEMS)
- [IJ29] Marcelo De Souza, Marcus Ritt, Manuel López-Ibáñez, and Leslie Pérez Cáceres. **ACVIZ: A Tool for the Visual Analysis of the Configuration of Algorithms with irace**. *Operations Research Perspectives*, 8:100186, 2021.
- [IJ28] Lucía Rivadeneira, Jian-Bo Yang, and Manuel López-Ibáñez. **Predicting tweet impact using a novel evidential reasoning prediction method**. *Expert Systems with Applications*, 2021. (2020 ISI-JCR impact factor: 6.954, Q1: 23/140 in COMPUTER SCIENCE, ARTIFICIAL INTELLIGENCE)
- [IJ27] Juan Esteban Diaz and Manuel López-Ibáñez. **Incorporating Decision-Maker’s Preferences into the Automatic Configuration of Bi-Objective Optimisation Algorithms**. *European Journal of Operational Research*, 289(3):1209–1222, 2021. ★ *Editor’s Choice Award* (2020 ISI-JCR impact factor: 5.334, Q1: 15/84 in OPERATIONS RESEARCH & MANAGEMENT SCIENCE)
- [IJ26] Patrycja Strycharczuk, Manuel López-Ibáñez, Georgina Brown, and Adrian Leemann. **General Northern English: Exploring regional variation in the North of England with machine learning**. *Frontiers in Artificial Intelligence*, 2020.
- [IJ25] Leonardo C. T. Bezerra, Manuel López-Ibáñez, and Thomas Stützle. **Automatically Designing State-of-the-Art Multi- and Many-Objective Evolutionary Algorithms**. *Evolutionary Computation*, 28(2):195–226, 2020. (2020 ISI-JCR impact factor: 3.277, Q1: 24/110 in COMPUTER SCIENCE, THEORY & METHODS)
- [IJ24] Jennifer Bealt, Duncan Shaw, Chris M. Smith, and Manuel López-Ibáñez. **Peer Reviews for Making Cities Resilient: A Systematic Literature Review**. *International Journal of Emergency Management*, 15(4):334–359, 2019.
- [IJ23] Javier Ferrer, Manuel López-Ibáñez, and Enrique Alba. **Reliable Simulation-Optimization of Traffic Lights in a Real-World City**. *Applied Soft Computing*, 78:697–711, 2019. (2019 ISI-JCR impact factor: 5.472, Q1: 20/136 in COMPUTER SCIENCE, ARTIFICIAL INTELLIGENCE)
- [IJ22] Simon Wessing and Manuel López-Ibáñez. **Latin Hypercube Designs with Branching and Nested Factors for Initialization of Automatic Algorithm Configuration**. *Evolutionary Computation*, 27(1):129–145, 2018. (2018 ISI-JCR impact factor: 3.469, Q1: 14/105 in COMPUTER SCIENCE, THEORY & METHODS)
- [IJ21] Leonardo C. T. Bezerra, Manuel López-Ibáñez, and Thomas Stützle. **A Large-Scale Experimental Evaluation of High-Performing Multi- and Many-Objective Evolutionary**

*These publications are available at <http://lopez-ibanez.eu/publications>

Algorithms. *Evolutionary Computation*, 26(4):621–656, 2018.

(2017 ISI-JCR impact factor: 2.629, Q1: 20/103 in COMPUTER SCIENCE, THEORY & METHODS)

- [IJ20] Elena A. Kabova, Jason C. Cole, Oliver Korb, Manuel López-Ibáñez, Adrian C. Williams, and Kenneth Shankland. **Improved performance of crystal structure solution from powder diffraction data through parameter tuning of a simulated annealing algorithm.** *Journal of Applied Crystallography*, 50(5):1411–1420, Oct 2017.

(2017 ISI-JCR impact factor: 3.422, Q2: 58/171 in CHEMISTRY, MULTIDISCIPLINARY)

- [IJ19] Manuel López-Ibáñez, Jérémie Dubois-Lacoste, Leslie Pérez Cáceres, Thomas Stützle, and Mauro Birattari. **The irace Package: Iterated Racing for Automatic Algorithm Configuration.** *Operations Research Perspectives*, 3:43–58, 2016.

(1192 citations according to Google Scholar)

- [IJ18] Leonardo C. T. Bezerra, Manuel López-Ibáñez, and Thomas Stützle. **Automatic Component-Wise Design of Multi-Objective Evolutionary Algorithms.** *IEEE Transactions on Evolutionary Computation*, 20(3):403–417, 2016.

(2016 ISI-JCR impact factor: 10.629, Q1: 1/104 in COMPUTER SCIENCE, THEORY & METHODS)

- [IJ17] Christian Blum, Pedro Pinacho, Manuel López-Ibáñez, and José A. Lozano. **Construct, Merge, Solve & Adapt: A New General Algorithm for Combinatorial Optimization.** *Computers & Operations Research*, 68:75–88, 2016.

★ “Best methodological contribution in operations research” award by the Spanish Society of Statistics and Operations Research – BBVA Foundation

(2016 ISI-JCR impact factor: 2.600, Q1: 16/83 in OPERATIONS RESEARCH & MANAGEMENT SCIENCE)

- [IJ16] Vito Trianni and Manuel López-Ibáñez. **Advantages of Task-Specific Multi-Objective Optimisation in Evolutionary Robotics.** *PLoS One*, 10(8):e0136406, 2015.

(2015 ISI-JCR impact factor: 3.057, Q1: 11/63 in MULTIDISCIPLINARY SCIENCES)

- [IJ15] Leslie Pérez Cáceres, Manuel López-Ibáñez, and Thomas Stützle. **Ant colony optimization on a limited budget of evaluations.** *Swarm Intelligence*, 9(2-3):103–124, 2015.

(2015 ISI-JCR impact factor: 2.577, Q1: 26/130 in COMPUTER SCIENCE, ARTIFICIAL INTELLIGENCE)

- [IJ14] Jérémie Dubois-Lacoste, Manuel López-Ibáñez, and Thomas Stützle. **Anytime Pareto Local Search.** *European Journal of Operational Research*, 243(2):369–385, 2015.

(2015 ISI-JCR impact factor: 2.679, Q1: 9/82 in OPERATIONS RESEARCH & MANAGEMENT SCIENCE)

- [IJ13] Franco Mascia, Manuel López-Ibáñez, Jérémie Dubois-Lacoste, and Thomas Stützle. **Grammar-Based Generation of Stochastic Local Search Heuristics through Automatic Algorithm Configuration Tools.** *Computers & Operations Research*, 51:190–199, 2014.

(2014 ISI-JCR impact factor: 1.861, Q1: 19/81 in OPERATIONS RESEARCH & MANAGEMENT SCIENCE)

- [IJ12] Manuel López-Ibáñez and Thomas Stützle. **Automatically Improving the Anytime Behaviour of Optimisation Algorithms.** *European Journal of Operational Research*, 235(3):569–582, 2014.

(2014 ISI-JCR impact factor: 2.358, Q1: 10/81 in OPERATIONS RESEARCH & MANAGEMENT SCIENCE)

(69 citations according to Google Scholar)

- [IJ11] Manuel López-Ibáñez, Christian Blum, Jeffrey W. Ohlmann, and Barrett W. Thomas. **The Travelling Salesman Problem with Time Windows: Adapting Algorithms from Travel-time to Makespan Optimization.** *Applied Soft Computing*, 13(9):3806–3815, 2013.

(2013 ISI-JCR impact factor: 2.679, Q1: 20/121 in COMPUTER SCIENCE, ARTIFICIAL INTELLIGENCE)

- [IJ10] Manuel López-Ibáñez and Thomas Stützle. **An experimental analysis of design choices of multi-objective ant colony optimization algorithms.** *Swarm Intelligence*, 6(3):207–232, 2012.
(2012 ISI-JCR impact factor: 0.640, Q4: 89/115 in COMPUTER SCIENCE, ARTIFICIAL INTELLIGENCE)
- [IJ9] Manuel López-Ibáñez and Thomas Stützle. **The Automatic Design of Multi-Objective Ant Colony Optimization Algorithms.** *IEEE Transactions on Evolutionary Computation*, 16(6):861–875, 2012.
(2012 ISI-JCR impact factor: 4.810, Q1: 1/100 in COMPUTER SCIENCE, THEORY & METHODS)
(188 citations according to Google Scholar)
- [IJ8] Jérémie Dubois-Lacoste, Manuel López-Ibáñez, and Thomas Stützle. **Improving the Anytime Behavior of Two-Phase Local Search.** *Annals of Mathematics and Artificial Intelligence*, 61(2):125–154, 2011.
(2011 ISI-JCR impact factor: 0.358, Q4: 98/111 in COMPUTER SCIENCE, ARTIFICIAL INTELLIGENCE)
(38 citations according to Google Scholar)
- [IJ7] Manuel López-Ibáñez, T. Devi Prasad, and Ben Paechter. **Representations and Evolutionary Operators for the Scheduling of Pump Operations in Water Distribution Networks.** *Evolutionary Computation*, 19(3):429–467, 2011.
(2011 ISI-JCR impact factor: 1.061, Q2: 31/99 in COMPUTER SCIENCE, THEORY & METHODS)
(35 citations according to Google Scholar)
- [IJ6] Jérémie Dubois-Lacoste, Manuel López-Ibáñez, and Thomas Stützle. **A Hybrid TP+PLS Algorithm for Bi-objective Flow-Shop Scheduling Problems.** *Computers & Operations Research*, 38(8):1219–1236, 2011.
(2011 ISI-JCR impact factor: 1.720, Q1: 10/77 in OPERATIONS RESEARCH & MANAGEMENT SCIENCE)
(110 citations according to Google Scholar)
- [IJ5] Manuel López-Ibáñez and Christian Blum. **Beam-ACO for the travelling salesman problem with time windows.** *Computers & Operations Research*, 37(9):1570–1583, 2010.
(2010 ISI-JCR impact factor: 1.769, Q1: 19/75 in OPERATIONS RESEARCH & MANAGEMENT SCIENCE)
(148 citations according to Google Scholar)
- [IJ4] Nicola Beume, Carlos M. Fonseca, Manuel López-Ibáñez, Luís Paquete, and Jan Vahrenhold. **On the complexity of computing the hypervolume indicator.** *IEEE Transactions on Evolutionary Computation*, 13(5):1075–1082, 2009.
(2009 ISI-JCR impact factor: 4.589, Q1: 3/92 in COMPUTER SCIENCE, THEORY & METHODS)
(284 citations according to Google Scholar)
- [IJ3] Christian Blum, María J. Blesa, and Manuel López-Ibáñez. **Beam search for the longest common subsequence problem.** *Computers & Operations Research*, 36(12):3178–3186, 2009.
(2009 ISI-JCR impact factor: 2.116, Q1: 9/73 in OPERATIONS RESEARCH & MANAGEMENT SCIENCE)
(59 citations according to Google Scholar)
- [IJ2] Manuel López-Ibáñez, T. Devi Prasad, and Ben Paechter. **Ant Colony Optimisation for the Optimal Control of Pumps in Water Distribution Networks.** *Journal of Water Resources Planning and Management*, ASCE, 134(4):337–346, 2008.
(2008 ISI-JCR impact factor: 1.275, Q1: 12/91 in ENGINEERING, CIVIL)
(255 citations according to Google Scholar)
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Software publicly available

- [SW7] **MOACO framework**. The multi-objective ant colony optimization (MOACO) framework is able to instantiate most MOACO algorithms from the literature, and also combine components that were never studied in the literature. This is the software originally proposed in [IJ9], and used later in [IJ10][IC21]. [<http://lopez-ibanez.eu/moaco>]
- [SW6] **irace R package**. Implements the Iterated F-Race procedure for automatic configuration (offline tuning) of parametric optimization algorithms. Lead developer and co-maintainer. The irace package is described in [TR1][IJ19]. Close to one-hundred papers have made use of irace, as

evidenced by the high number of citations of the TR.

[<https://mlopez-ibanez.github.io/irace/>] (More than 60,000 total downloads by Nov 2019)

- [SW5] **Multi-objective Archivers**. This software implements most of the currently available archiving algorithms (archivers) in a common framework for simplifying their comparison and analysis. Developed in collaboration with Joshua Knowles and Marco Laumanns [IC15].
[<http://lopez-ibanez.eu/archivers>]
- [SW4] **Graphical tools for the exploratory analysis of bi-objective optimisation algorithms** (eaf R package). Developed in collaboration with Thomas Stützle and Luís Paquete [BC2]. Lead developer and current maintainer. [<http://lopez-ibanez.eu/eaftools>] (More than 21,000 total downloads by Oct 2018)
- [SW3] **Software for computing the hypervolume indicator**. Implementation of our $O(n^{d-2} \log n)$ algorithm [IC4]. Co-authored with Carlos M. Fonseca and Luís Paquete.
[<http://lopez-ibanez.eu/hypervolume>]
This software has been incorporated into two R packages, mco (multi criteria optimization algorithms and related functions) [<http://cran.r-project.org/web/packages/mco>] and emoa (evolutionary multiobjective optimization algorithms) [<http://cran.r-project.org/web/packages/emoa>], and it is used by the project “desiRe” [<http://r-forge.r-project.org/projects/desire>].
- [SW2] **EPANET for GNU/Linux**. A version of the hydraulic simulator library EPANET Toolkit, improved for using it in optimisation algorithms. Sole developer.
[<http://lopez-ibanez.eu/epanetlinux>]
- [SW1] **A Thread-Safe Variant of the EPANET Toolkit for Parallel Applications**. An extensive modification of the EPANET Toolkit for parallel optimisation algorithms [IC5]. Sole developer.
[<http://lopez-ibanez.eu/epanet-thread-safe>]

Oral presentations during conferences with scientific selection committee

(Only those presented by myself and excluding presentations associated to peer-reviewed conference papers, which are listed above)

- [OP35] Martin Zaefferer, Manuel López-Ibáñez, and Ekhine Irurozki. **A Self-Adaptive Bayesian Optimizer based on Clustered Kriging and Feasibility Classification for the Black-box Time-Dependent Orienteering Problem with Stochastic Weights and Time Windows**. In *Data Science Meets Optimisation Workshop, International Joint Conference on Artificial Intelligence (IJCAI-2021)*, 2021.
- [OP34] Luís Paquete and Manuel López-Ibáñez. **Tutorial on Replicability and reproducibility in evolutionary optimization**. In *Genetic and Evolutionary Computation Conference, GECCO*, 2021.
- [OP33] Thomas Stützle and Manuel López-Ibáñez. **Tutorial on Automated Algorithm Configuration and Design**. In *Genetic and Evolutionary Computation Conference, GECCO*, 2021.
- [OP32] Manuel López-Ibáñez. **Some Thoughts on Benchmarking in Combinatorial Optimization**. In *Lorentz Workshop on “Benchmarked: Optimization Meets Machine Learning”*, Nov, 11 2020. Invited Talk. ★
- [OP31] Manuel López-Ibáñez. **Late to the Party: Reproducible Research in Evolutionary Computation**. In *Workshop on “Good Benchmarking Practices for Evolutionary Computation”, Parallel Problem Solving from Nature, PPSN XVI*, Sept, 5 2020. Invited Talk. ★
- [OP30] Manuel López-Ibáñez and Thomas Stützle. **Tutorial on Automated Algorithm Configuration and Design**. In *Genetic and Evolutionary Computation Conference, GECCO*, 2020.

- [OP29] Manuel López-Ibáñez. **Automatic Machine Learning and Optimisation and the Human-in-the-Loop**. In *Human Centred Analytics and AI for Social Science, ESRC Festival of Social Science*, Nov, 6 2019. Invited Talk. ★
- [OP28] Manuel López-Ibáñez. **Automated Algorithm Configuration and Selection for Theoreticians**. In *Dagstuhl Seminar on Theory of Randomized Optimization Heuristics*, 2019. Invited Talk. ★
- [OP27] Manuel López-Ibáñez. **Automatic Configuration of SLS Algorithms**. In *International Workshop on Stochastic Local Search Algorithms (SLS2019)*, 2019. Keynote Talk. ★
- [OP26] Manuel López-Ibáñez. **Automated Design of Metaheuristic Algorithms: Methods, Applications and Perspectives**. In *Optimization Days (Journées de l'Optimisation) 2019*, 2019. Keynote Talk. ★
- [OP25] Manuel López-Ibáñez. **Automatic Design of Hybrid Metaheuristics from Component-Wise Algorithmic Frameworks**. In *Hybrid Metaheuristics*, 2019. Keynote Talk. ★
- [OP24] Manuel López-Ibáñez and Thomas Stützle. **Tutorial on Automated Offline Design of Algorithms**. In *Genetic and Evolutionary Computation Conference, GECCO*, 2018.
- [OP23] Manuel López-Ibáñez and Juan Esteban Diaz. **Semi-interactive Automatic Design of Bi-objective Optimizers**. In *1st International Workshop on Computational Intelligence for Massive Optimization (CIMO 2018)*, 2018. Invited Talk. ★
- [OP22] Manuel López-Ibáñez. **Data-Driven design of multi-objective optimizers**. In *Dagstuhl Seminar on Personalized Multiobjective Optimization*, 2017. Invited Talk. ★
- [OP21] Manuel López-Ibáñez and Thomas Stützle. **Tutorial on Automatic Offline Design of Algorithms**. In *Genetic and Evolutionary Computation Conference, GECCO*, 2017.
- [OP20] Manuel López-Ibáñez. **Challenges in Automated Algorithm Design: Representativeness, One-Shot Expensive Scenarios, Parameter Importance and Sensitivity, and Human-in-the-Loop**. In *Dagstuhl Seminar on Automated Algorithm Selection and Configuration*, 2016. Invited Talk. ★
- [OP19] Manuel López-Ibáñez. **How to Design a New State-of-the-Art Multi-objective Evolutionary Algorithm Every Weekend**. In *28th European Conference on Operational Research, EURO 2016*, 2016.
- [OP18] Manuel López-Ibáñez. **Automatic Configuration and Design of Optimization Algorithms**. In *43rd CREST Open Workshop*, 2015. Invited Talk. ★
- [OP17] Thomas Stützle and Manuel López-Ibáñez. **Tutorial on Automatic (Offline) Configuration of Algorithms**. In *Genetic and Evolutionary Computation Conference, GECCO*, 2015.
- [OP16] Manuel López-Ibáñez. **Machine Decision Makers: from Modeling Preferences to Modeling Decision Makers**. In *Dagstuhl Seminar on Understanding Complexity in Multiobjective Optimization*, 2015. Invited Talk. ★
- [OP15] Manuel López-Ibáñez, Franco Mascia, Marie-Eléonore Marmion, and Thomas Stützle. **A Template for Designing Single-Solution Hybrid Metaheuristics**. In *Workshop on Metaheuristic Design Patterns (MetaDeeP), Genetic and Evolutionary Computation Conference, GECCO*, 2014.
- [OP14] Manuel López-Ibáñez and Thomas Stützle. **Tutorial on Automatic (Offline) Configuration of Algorithms**. In *Genetic and Evolutionary Computation Conference, GECCO*, 2014.
- [OP13] Leonardo C. T. Bezerra, Manuel López-Ibáñez, and Thomas Stützle. **Deconstructing Multi-objective Evolutionary Algorithms**. In *28th Annual Conference of the Belgian Operations Research Society, ORBEL 28*, 2014.

- [OP12] Manuel López-Ibáñez and Thomas Stützle. **Tutorial on Automatic (Offline) Configuration of Algorithms**. In *Genetic and Evolutionary Computation Conference, GECCO 2013*, 2013.
- [OP11] Franco Mascia, Manuel López-Ibáñez, Jérémie Dubois-Lacoste, and Thomas Stützle. **From Grammars to Parameters: Automatic Design of Iterated Greedy Algorithms**. In *27th Annual Conference of the Belgian Operations Research Society, ORBEL 27*, 2013.
- [OP10] Manuel López-Ibáñez, Jérémie Dubois-Lacoste, Thomas Stützle, and Mauro Birattari. **Automatic Configuration of Optimization Algorithms**. In *Fourth International Workshop on Model-based Metaheuristics, Matheuristics 2012*, 2012.
- [OP9] Manuel López-Ibáñez. **Automatic Design of Algorithms with iRace for Multi-Objective Optimization and Anytime Optimization**. In *12th International Conference on Parallel Problem Solving From Nature, PPSN XII*, 2012. Invited Talk. ★
- [OP8] Manuel López-Ibáñez and Thomas Stützle. **Automatic Design of Multi-Objective Algorithms**. In *25th European Conference on Operational Research, EURO 2012*, 2012.
- [OP7] Manuel López-Ibáñez and Thomas Stützle. **Automatically Improving the Anytime Behavior of Optimisation Algorithms**. In *26th Annual Conference of the Belgian Operations Research Society, ORBEL 26*, 2012.
- [OP6] Manuel López-Ibáñez and Thomas Stützle. **Offline Learning in Multi-Objective Optimization**. In *Dagstuhl Seminar on Learning in Multiobjective Optimization*, 2012. Invited Talk. ★
- [OP5] Manuel López-Ibáñez and Thomas Stützle. **Improving the Anytime Behaviour of Optimisation Algorithms by Automatic Algorithm Configuration Tools**. In *Metaheuristics International Conference, MIC 2011*, 2011.
- [OP4] Manuel López-Ibáñez and Thomas Stützle. **Automatic Design of Ant Colony Optimization Algorithms for Bi-objective Problems**. In *25th Annual Conference of the Belgian Operations Research Society, ORBEL 25*, 2011.
- [OP3] Manuel López-Ibáñez. **Tutorial on Ant Colony Optimization**. In *Genetic and Evolutionary Computation Conference, GECCO 2010*, 2010.
- [OP2] Manuel López-Ibáñez, Thomas Stützle, and Luis Paquete. **Graphical tools for the analysis of bi-objective optimization algorithms**. In *Workshop on Theoretical Aspects of Evolutionary Multiobjective Optimization, Genetic and Evolutionary Computation Conference, GECCO 2010*, 2010.
- [OP1] Manuel López-Ibáñez, T. Devi Prasad, and Ben Paechter. **Solving Optimal Pump Control Problem using Max-Min Ant System**. In D. Thierens et al., editors, *Proceedings of the Genetic and Evolutionary Computation Conference, GECCO 2007*, volume 1, page 176. ACM Press, 2007. (Poster)

Notable Technical/Scientific Reports

(These publications are notable for various reasons and are either pending or not suitable for peer-reviewed publication)

- [TR7] Manuel López-Ibáñez, Leslie Pérez Cáceres, and Thomas Stützle. **irace: A Tool for the Automatic Configuration of Algorithms**. *International Federation of Operational Research Societies (IFORS) News*, 14(2):30–32, Jun 2020.
- [TR6] Manuel López-Ibáñez. **GECCO2019@Prague: Editor-in-Chief Report**. *SIGEVolution*, 12(4):3–7, 2019.

- [TR5] Dimo Brockhoff, Roberto Calandra, Manuel López-Ibáñez, Frank Neumann, and Selvakumar Ulaganathan. **Meta-modeling for (interactive) multi-objective optimization (WG5)**. In K. Klamroth, J. D. Knowles, G. Rudolph, and M. M. Wiecek, editors, *Personalized Multiobjective Optimization: An Analytics Perspective (Dagstuhl Seminar 18031)*, volume 8(1) of *Dagstuhl Reports*, pages 85–94. Schloss Dagstuhl–Leibniz-Zentrum für Informatik, Germany, 2018.
- [TR4] Jürgen Branke, Salvatore Corrente, Salvatore Greco, Milosz Kadzinski, Manuel López-Ibáñez, Vincent Mousseau, Mauro Munerato, and Roman Słowiński. **Behavior-Realistic Artificial Decision-Makers to Test Preference-Based Multi-objective Optimization Method (Working Group “Machine Decision-Making”)**. In S. Greco, K. Klamroth, J. D. Knowles, and G. Rudolph, editors, *Understanding Complexity in Multiobjective Optimization (Dagstuhl Seminar 15031)*, volume 5(1) of *Dagstuhl Reports*, pages 110–116. Schloss Dagstuhl–Leibniz-Zentrum für Informatik, Germany, 2015.
- [TR3] Vito Trianni and Manuel López-Ibáñez. **Advantages of Multi-Objective Optimisation in Evolutionary Robotics: Survey and Case Studies**. Technical Report TR/IRIDIA/2014-014, IRIDIA, Université Libre de Bruxelles, Belgium, 2014.
- [TR2] Anne Auger, Dimo Brockhoff, Manuel López-Ibáñez, Kaisa Miettinen, Boris Naujoks, and Günther Rudolph. **Which questions should be asked to find the most appropriate method for decision making and problem solving? (Working Group “Algorithm Design Methods”)**. In S. Greco, J. D. Knowles, K. Miettinen, and E. Zitzler, editors, *Learning in Multiobjective Optimization (Dagstuhl Seminar 12041)*, volume 2(1) of *Dagstuhl Reports*, pages 92–93. Schloss Dagstuhl–Leibniz-Zentrum für Informatik, Germany, 2012.
- [TR1] Manuel López-Ibáñez, Jérémie Dubois-Lacoste, Thomas Stützle, and Mauro Birattari. **The irace package, Iterated Race for Automatic Algorithm Configuration**. Technical Report TR/IRIDIA/2011-004, IRIDIA, Université Libre de Bruxelles, Belgium, 2011. Published in *Operations Research Perspectives* [220].
(354 citations according to Google Scholar)

Other invited talks

- “*Incorporating Decision-Maker’s Preferences into the Automatic Configuration of Bi-objective Optimisation Algorithms*” 15/9/2021
LIP6, Sorbonne University, Paris, France.
- “*Automatic Algorithm Configuration and Design*” 20/7/2021
Lancaster Intelligent, Robotic and Autonomous Systems Centre,
University of Lancaster, UK.
- “*Automatic Configuration and Design of Algorithms*” 18/12/2019
XXIII Seminar “Latest Advances in Computer Science 2019” (“Últimos Avances en Informática”), Universidad de La Laguna, Spain.
- “*Automatic Tuning of Compiler Options using irace*” 8/9/2018
GNU Tools Cauldron 2018, International Workshop on the GNU Compiler Toolchain,
Manchester, UK.
- “*Intersections between Machine Learning and Optimization*” 21/8/2018
University of Jyväskylä, Finland.
- “*Offline configuration and online control in optimization algorithms: Friends or foes?*” 6/6/2018
Department of Computer Science, University of York, York, UK.
- “*Why Automated Algorithm Design is Inevitable*” 16/5/2018
KULAK, KU Leuven, Belgium.

<p><i>“Reliable Simulation-Optimization of Traffic Lights in a Real-World City”</i> Industrial Optimization Group, University of Jyväskylä, Finland.</p>	18/12/2017
<p><i>“Analysing Stochastic Multi-criteria Data by means of the Empirical Attainment Function”</i> Industrial Optimization Group, University of Jyväskylä, Finland.</p>	12/12/2017
<p><i>“Automatic Offline Design of Algorithms”</i> Industrial Optimization Group, University of Jyväskylä, Finland.</p>	1/12/2017
<p><i>“Let my configurator tune your algorithm: Hyper-parameter optimisation with irace”</i> Machine Learning and Optimisation Group, University of Manchester, UK.</p>	19/10/2017
<p><i>“Let the Cloud design your next multi-objective optimiser”</i> Computer Science Department, University of Exeter, UK.</p>	27/10/2016
<p><i>“How (not) to design the new best optimisation algorithm every weekend”</i> Department of Automatic Control & Systems Engineering (ACSE), University of Sheffield, UK.</p>	4/5/2016
<p><i>“A practical introduction to irace”</i> NEO Research Group, University of Málaga, Spain.</p>	10/6/2015
<p><i>“Optimization for Complex Real-World Problems”</i> University of Namur, Belgium.</p>	5/3/2015
<p><i>“Metaheuristics From Complex Problems to Automatic Configuration”</i> Institute of Applied Mathematics and Information Technology “E. Magenes” (IMATI), Milano, Italy.</p>	10/11/2014
<p><i>“Automatic Configuration and Design of Algorithms”</i> KU Leuven, Belgium.</p>	10/11/2014
<p><i>“irace: Iterated Racing for Automatic Algorithm Configuration”</i> Université of Liège, Belgium.</p>	6/5/2014
<p><i>“Generating Hybrid Local Search Algorithms From a Grammar”</i> KULAK, KU Leuven, Belgium.</p>	11/4/2014
<p><i>“The irace Package: Iterated Race for Automatic Algorithm Configuration and Scoring Function Parameterisation”</i> Cambridge Crystallographic Data Centre, Cambridge, United Kingdom. Invited by Dr. Oliver Korb.</p>	17/10/2011

Conference Organization

- Editor-in-Chief of the “*Genetic and Evolutionary Computation Conference (GECCO)*”, Prague, Czech Republic (2019).
- Stream Co-Organiser, with Luís Paquete, of the “*Multiobjective Combinatorial Optimization*” stream for the 31st European Conference on Operational Research (EURO), Athens, Greece (2021).
- Stream Co-Organiser, with Richard Allmendinger, of the “*Multiobjective Optimization*” stream for the 22nd Conference of the International Federation of Operational Research Societies (IFORS), Seoul, Korea (2020).
- Stream Co-Organiser, with Kaisa Miettinen and Michael Emmerich, of the “*Multiobjective Optimization*” stream for the 29th European Conference on Operational Research (EURO), Valencia, Spain (2018).
- Programme Chair:
 - 2018 “*18th European Conference on Evolutionary Computation in Combinatorial Optimisation*” (EvoCOP), Parma, Italy, with Arnaud Liefoghe
 - 2017 “*17th European Conference on Evolutionary Computation in Combinatorial Optimisation*” (EvoCOP), Amsterdam, The Netherlands, with Bin Hu
 - 2016 “*Tenth International Conference on Swarm Intelligence*” (ANTS), Brussels, Belgium, with Xiaodong Li and Kazuhiro Ohkura
 - 2016 “*14th International Conference on Parallel Problem Solving from Nature*” (PPSN), Edinburgh, UK, with Gabriela Ochoa and Julia Handl
- Co-organiser, with Sašo Džeroski, Dragi Kocev, and Bertrand Le Saux, of “*Space and Artificial Intelligence*”, online conference in association with ECML PKDD 2021, September 2021.
- Co-Chair, with John Woodward and Daniel Tauritz, of the “*Workshop on Evolutionary Computation for the Automated Design of Algorithms (ECADA)*”, at the Genetic and Evolutionary Computation Conference (GECCO) 2015–2018, 2021.
- Co-Chair, with Holger H. Hoos, of the “*Evolutionary Combinatorial Optimization and Metaheuristics Track*” at the Genetic and Evolutionary Computation Conference (GECCO), Denver, USA (2016).
- Chair and Organizer of the session “*Algorithmic Components of Evolutionary Multi-objective Optimization*” at the 28th European Conference on Operational Research, EURO 2016, Poznan, Poland, 2016.
- Co-Chair, with Sanaz Mostaghim, of the “*Ant Colony Optimization and Swarm Intelligence Track*” at the Genetic and Evolutionary Computation Conference (GECCO), Madrid, Spain (2015).
- Co-organizer, with Franco Mascia, of the “*COMEX Workshop on Practical Automatic Algorithm Configuration*”, Brussels, Belgium (November 2014).
- Co-Chair, with Thomas Stützle, of the “*Evolutionary Combinatorial Optimization and Metaheuristics Track*” at the Genetic and Evolutionary Computation Conference (GECCO), Amsterdam, The Netherlands (2013).
- Web Chair CIBCB 2017 IEEE International Conference on Computational Intelligence in Bioinformatics and Computational Biology. <https://ewh.ieee.org/conf/cibcb/2017/>

Editorial Activity

- Guest Editorial Board of the Journal Track of the *European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD)*, 2021.
- *Evolutionary Computation*, MIT Press, Editorial Board Member and Associate Editor since April 2019. (2019 IF: 3.933)
- *ACM Transactions on Evolutionary Learning and Optimization (TELO)*, Editorial Board Member and Associate Editor since July 2019, Area Editor since August 2020.
- *Swarm Intelligence*, Springer, Associate Editor since October 2015. (2019 Impact factor: 2.556)
- *Operations Research Perspectives*, Elsevier, editorial board member since July 2016.

Reviews of Project Proposals

- Spanish National Programme of R&D Projects (“Programa Estatal Proyectos de I+D de Generación de Conocimiento Tipo B”), Spain, 2020.
- National Fund for Scientific and Technological Research (FONDECYT), Chile, 2020.
- Ministère de l’enseignement supérieur et de la recherche, Programme ECOS-SUD, France, 2020.
- Remote Referee of European Research Council (ERC) Consolidator Grant, 2020.
- National Commission for Scientific and Technological Research (CONICYT), Chile, 2019.
- Engineering and Physical Sciences Research Council (EPSRC), United Kingdom, 2018.
- Leverhulme Trust Grant, United Kingdom, 2017.
- Engineering and Physical Sciences Research Council (EPSRC), United Kingdom, 2012.
- Romanian National Council for Development and Innovation, Romania. Evaluation of project proposals for 2011 funding call.

Award Selection Committees

- Chair of [ACM SIGEVO Best Dissertation Award](#), 2020, 2021.

Conference Program Committee Membership

WCCI: IEEE World Congress on Computational Intelligence / CEC: Congress on Evolutionary Computation
Kraków, Poland (2021); Glasgow, UK (2020); Rio de Janeiro, Brasil (2018);
Donostia - San Sebastián, Spain (2017); Vancouver, Canada, (2016);
Sendai, Japan (2015); Beijing, China (2014); Cancun, Mexico (2013)

GECCO: Genetic and Evolutionary Computation Conference

Lille, France (2021); Cancun, Mexico (2020); Prague, Czech Republic (2019); Kyoto, Japan (2018); Berlin, Germany (2017); Denver, USA (2016); Vancouver, Canada (2014); Philadelphia, USA (2012); Dublin, Ireland (2011); Portland, Oregon, USA (2010); Seattle, WA, USA (2006)

EMO: International Conference on Evolutionary Multi-Criterion Optimization

Shenzhen, China (2021); Michigan, USA (2019); Munster, Germany (2017); Guimarães, Portugal (2015); Sheffield, UK (2013)

PPSN: International Conference on Parallel Problem Solving From Nature
 Leiden, The Netherlands (2020); Coimbra, Portugal (2018);
 Ljubljana, Slovenia (2014); Taormina, Italy (2012)

EA: Evolution Artificielle, Artificial Evolution
 Mulhouse, France (2019); Paris, France (2017); Lyon, France (2015)

IJCAI: International Joint Conference on Artificial Intelligence
 Montreal, Canada (2021); Buenos Aires, Argentina
 (2015); Beijing, China (2013); Barcelona, Spain (2011)

EvoCOP: European Conference on Evolutionary Computation in Combinatorial Optimisation
 Seville, Spain (2021); Seville, Spain (2020); Leipzig, Germany (2019); Parma, Italy (2018)

FOGA: ACM/SIGEVO Workshop on Foundations of Genetic Algorithms
 Dornbirn, Austria (2021); Potsdam, Germany (2019)

ANTS: International Conference on Swarm Intelligence
 Barcelona, Spain (2020); Rome, Italy (2018); Brussels, Belgium (2010, 2012, 2014)

HM: Hybrid Metaheuristics
 Concepción, Chile (2019); Plymouth, United Kingdom (2016);
 Hamburg, Germany (2014); Viena, Austria (2010); Udine, Italy (2009)

SLS: International Workshop on Stochastic Local Search Algorithms
 University of Lille, Lille, France (2019)

MOD: International Workshop on Machine Learning, Optimization and Big Data
 Volterra, Italy (2016)

LION: Learning and Intelligent Optimization
 LION9, Lille, France (2015); LION8, Florida, USA (2014); LION7, Catania, Italy (2013);
 LION6, Paris, France (2012); LION5, Rome, Italy (2011); LION4, Venice, Italy (2010)

IAM: 6th Workshop on Industrial Applications of Metaheuristics (at GECCO)
 Lille, France (2021)

BBOB: International Workshop on Black Box Discrete Optimization Benchmarking (at GECCO)
 Kyoto, Japan (2018)

ICACI: International Workshop on Benchmarking of Computational Intelligence Algorithms (BOCIA)
 at the Tenth International Conference on Advanced Computational Intelligence
 Xiamen, China (2018)

ICORES: International Conference on Operations Research and Enterprise Systems
 Porto, Portugal (2017); Rome, Italy (2016)

ICART: International Conference on Agents and Artificial Intelligence
 Porto, Portugal (2017); Rome, Italy (2016)

AAAI: Twenty-Ninth AAI Conference on Artificial Intelligence
 Austin, Texas (2014)

ECAI: European Conference on Artificial Intelligence
 Prague, Czech Republic (2014)

MCDM: International Conference on Multiple Criteria Decision Making
 (Evolutionary Multiobjective Optimization Session), Málaga, Spain (2013)

MIBISOC: International Conference on Medical Imaging using Bio-inspired and Soft Computing
 Brussels, Belgium (2013)

Reviews for International Journals

<i>IEEE Transactions on Evolutionary Computation</i>	2006, 2009–2011, 2013–2021
<i>European Journal of Operational Research</i>	2013, 2014, 2016–2021
<i>Evolutionary Computation Journal</i> , MIT Press	2006–2018, 2020
<i>Computers & Operations Research</i>	2008 (special issue on “Hybrid Metaheuristics”), 2009, 2011, 2014–2016, 2018, 2020–2021
<i>Machine Learning</i> , Springer	2020–2021
<i>ACM Transactions on Evolutionary Learning and Optimization (TELO)</i>	2020
<i>Operations Research Perspectives</i>	2017, 2020, 2021
<i>Swarm Intelligence</i> , Springer New York	2008 (special issue on “Ant Colony Optimization”), 2009, 2011, 2012, 2015–2021
<i>Artificial Intelligence</i> , Elsevier	2015, 2017, 2020, 2021
<i>Journal of Heuristics</i> , Springer	2010–2019
<i>Data Mining and Knowledge Discovery</i>	2021
<i>Journal of Artificial Intelligence Research (JAIR)</i>	2017, 2021
<i>International Transactions in Operational Research</i>	2015, 2018
<i>Computers & Industrial Engineering</i>	2009, 2010, 2016, 2017
<i>International Journal of Automation & Computing</i>	2017
<i>IEEE Computational Intelligence Magazine</i>	2014 (special issue on “Computational Intelligence in Production and Logistics Systems”), 2017
<i>Soft Computing</i> , Springer	2011, 2017
<i>Applied Soft Computing</i> , Elsevier	2012, 2013, 2014, 2016
<i>Theoretical Computer Science</i>	2016
<i>IEEE Transactions on Cybernetics</i>	2016 (when known as <i>IEEE Transactions on Systems, Man, and Cybernetics–Part B: Cybernetics</i>), 2010, 2012, 2013
<i>Information Sciences</i>	2016
<i>Transactions on Computational Collective Intelligence</i> , Springer	2016
<i>AI Communications</i> , IOS Press	2011, 2016
<i>The R Journal</i>	2016
<i>Mathematical Problems in Engineering</i>	2015
<i>Annals of Operations Research</i>	2015
<i>Artificial Intelligence Review</i> , Springer	2015
<i>Knowledge-Based Systems</i> , Elsevier	2015
<i>Journal of Water Resources Planning and Management</i> , ASCE	2014
<i>Journal of Industrial and Management Optimization</i> , AIMS	2007, 2014
<i>Communications of the ACM</i>	2013
<i>Journal of Hydroinformatics</i>	2010, 2013
<i>IEEE Transactions on Parallel and Distributed Systems</i>	2013
<i>PLoS ONE</i> , Public Library of Science	2012
<i>Journal of Global Optimization</i> , Springer	2011, 2012
<i>European Journal of Industrial Engineering</i>	2012

<i>Fundamenta Informaticae</i> , IOS Press	2012
<i>Computational Optimization and Applications</i>	2006, 2012
<i>International Journal of Production Economics</i>	2012
<i>Journal of Computer Science and Technology</i>	2011
<i>Journal of Multi-Criteria Decision Analysis</i> , Wiley	2011
<i>Engineering Optimization</i> , Taylor & Francis	2011
<i>Engineering Applications of Artificial Intelligence</i> , Elsevier	2011
<i>Natural Computing</i> , Springer	2011
<i>International Journal of Information Technology & Decision Making</i>	2010
<i>Expert Systems</i> , Wiley	2010
<i>Adaptive Behavior</i>	2010
<i>Journal of Systems and Software</i> , Elsevier	2010
<i>Integrated Computer-Aided Engineering</i>	2010
<i>BRAIN: Broad Research in Artificial Intelligence and Neuroscience</i>	2010
<i>Journal of Aerospace Computing, Information, and Communication</i> , AIAA	2009
<i>Computational Intelligence</i> , Wiley	2009
<i>International Journal of Intelligence Systems</i> 2007 (special issue “Nature Inspired Cooperative Strategies for Optimization”)	
<i>Mathematics and Computers in Simulation (MATCOM)</i> , Elsevier	2007

Reviews of Book Chapters

- Chapter of the book “*Handbook of Heuristics*”, Springer (2018).
- Chapter of the book “*Optimization Techniques for Solving Complex Problems*”, Wiley (2008).

Reviews for Conferences

- 18th International Conference on Theory and Applications of Satisfiability Testing (SAT 2015), Austin, Texas, USA, 2015.
- 17th IEEE International Conferences on High Performance Computing and Communications (HPCC), New York, USA, 2015.
- Metaheuristics International Conference (MIC), Udine, Italy, 2011.
- 2nd Doctoral Symposium on Computing, York, UK, 2008.
- IEEE World Congress on Computational Intelligence (WCCI), Hong Kong, 2008.
- 14th Annual European Symposium on Algorithms (ESA), Zürich, Switzerland, 2006.
- Fifth International Workshop on Ant Colony Optimization and Swarm Intelligence (ANTS), Brussels, Belgium, 2006.

Panel Membership

- Feb 2021 – Present, Committee Member of AI Special Interest Group on Space (CLAIRE-ESA)
- Oct 2019–Present, IEEE Task Force on Automated Algorithm Design, Configuration and Selection (AADCS).
- Jul 2019–Present, elected member of the ACM SIGEVO Executive Board.
- May 2017–Present, European Conference on Evolutionary Computation in Combinatorial Optimisation (EvoCOP), Steering Committee Member.
- Expert panel member of the *Student Workshop* at the Genetic and Evolutionary Computation Conference, GECCO 2014.

Supervision of PhD students (advisor and co-promoter)

1. Stefan Pricopie “EPSRC/IBM INDUSTRIAL CASE: Tuning Bayesian Optimization for Problems with Dynamic Resource Constraints” (October 2020–Present), dir. Richard Allmendinger, Matt Benatan, Manuel López-Ibáñez and Joshua Knowles, University of Manchester, UK.
2. Maura Hunt “Exploring Computational Rationality to Better Understand Human Interactions with Multi-Criteria Optimization” (September 2019–Present), dir. Manuel López-Ibáñez, Paul Warren and George Farmer, University of Manchester, UK.
3. Youngmin Kim “Safety-Oriented Learning and Optimisation Algorithms and Their Applications” (September 2019–Present), dir. Richard Allmendinger and Manuel Lopez-Ibáñez, University of Manchester, UK.
4. Andreea Avramescu “Data-driven Optimization for Personalized Medicine Development and Delivery” (September 2019–Present), dir. Richard Allmendinger and Manuel López-Ibáñez, University of Manchester, UK.
5. Seyed Mahdi Shavarani “Quantitative Models of Realistic Human Decision-Makers for Data Analytics and Optimisation” (January 2019–Present), dir. Manuel López-Ibáñez and Richard Allmendinger, University of Manchester, UK.
6. Mudita Sharma “Learning to Control Differential Evolution Operators” (2016–January 2020), dir. Dimitar Kazakov and Manuel López-Ibáñez, University of York, UK.
7. Lucía Rivadeneira Barreiro “Decision Modelling Driven by Twitter Data: A Case Study of the 2017 Presidential Election in Ecuador” (September 2015–December 2019), dir. Jian-bo Yang and Manuel López-Ibáñez, University of Manchester, UK.
8. Leslie Pérez Cáceres “Automatic Algorithm Configuration” (2012–2017), dir. Thomas Stützle and Manuel López-Ibáñez, Université libre de Bruxelles, Belgium.
9. Leonardo C. T. Bezerra “A Component-wise Approach to Multi-objective Evolutionary Algorithms” (2012–2016), dir. Thomas Stützle and Manuel López-Ibáñez, Université libre de Bruxelles, Belgium.
10. Jérémie Dubois-Lacoste “Anytime Local Search for Multi-Objective Combinatorial Optimization: Design, Analysis and Automatic Configuration” (2009–2014), dir. Thomas Stützle and Manuel López-Ibáñez, Université libre de Bruxelles, Belgium.

(Co-)Supervisor role of Master’s (MSc) thesis

At University of Manchester:

1. Nicolas Montano Cardenas (2021), *Optimal Classification Trees and Optimal Regression Trees*.
2. Deepanshu Narula (2021), *Rank Learning methods: A Review*.
3. Revecca Christou (2021), *Modelling And Optimizing The School Bus Routing and Scheduling Problem by Using Local Search Improvement Techniques: A Real-World Case Study*.
4. Yirong Wang (2021), *Cutting Stock Optimisation For Conservatory Roof Design As A Way To Meet Customer Needs And Sustainability Goals*.

5. Kenzy Drewty Kusmulyadi (2020), *Multiobjective Optimization for Optimal Camera Placement*.
6. Savvas Aravantinos (2020), *Demand Forecasting for Airline Space*.
7. Maria Olympia Zeeri (2020), *School Bus Routing Optimisation Problem*.
8. Alessandro Samaja (2019), *Selection of a subset of items with non-linear benefit*.
9. Epameinondas Tsokanos (2019), *Prediction of sets, mixtures and compositions*.
10. Ilias Raftoulis (2019), *Optimal dynamic management of adwords campaign*.
11. Maura Hunt (2019), *Using computational rationality to improve the modelling of human biases in goal programming*.
12. Jianglu Li (2019), *Make-to-order Production Allocation with Time-sensitive Pricing*.
13. Xiaoyang Chen (2019), *Worklessness in North West England*.
14. Aleksandra Firkowska (2018), *Outlet Inventory Management based on Stock Mix Optimisation*.
15. Elias Schede (2018), *Optimization of Multi-Objective Order Assignment and Price Quotation*.
16. Zhi Li (2018), *Real time order scheduling in supply chain management of manufacturing industry: A multi-objective optimization approach*.
17. Tomas Surik (2017), *Sequential Testing by means of Racing*.
18. Ulkar Hasan (2017), *Optimal Portfolio Selection with Logic Dependence and Budget Constraints*.
19. Zixuan Wang (2017), *Multiobjective Optimisation guided by Evidential Reasoning*.
20. Xiaoqian Jiang (2017), *Simultaneous optimization of sales price and production allocation: Literature review of strategies and real use cases*.
21. Jindan Li (2016), *Forecasting Retail Sales of Walmart's Stores*.
22. Xuan Du (2016), *Multiple Objective Parameter Selection for Classifiers*.
23. Akshay Saxena (2016), *Prediction of Prices using Machine Learning Techniques*.
24. Shengian Li (2016), *Open Data Sources in the City of Manchester*.
25. Xiaoyan Yuan (2016), *Prices Forecast for Raw Materials and Final Products*.
26. Yurui Cui (2016), *GP Practice Assessments and Recommendations in Manchester Based on Customer Satisfaction*.

At other universities:

27. Aurelien Marion (2015), *Fast heuristics for the longest common subsequence problem*, Université libre de Bruxelles, Belgium.
28. Javier Pérez (2014), *A framework of ant colony optimization for the automatic design on permutation problems*, Universidad Politécnica de Madrid, Spain.
29. Luc Coene (2013), *Two-Phase and Pareto Local Search for multi-objective continuous optimization*, Université libre de Bruxelles, Belgium.

30. Andreea Radulescu (2012), *Automatically Improving the Anytime Behaviour of Multiobjective Evolutionary Algorithms*, Université Nantes, France. Related publications: [IC25]
31. Michael Maur (2010), *Adaptive Ant Colony Optimization for the Traveling Salesman Problem*, Technical University of Darmstadt, Germany. Related publications: [IC12] [BC5]

PARTICIPATION IN EXAMINATION PANELS

Participation in PhD Defense Jury / Panel

- Jun 2021 **George Hall**. *A Framework for the Runtime Analysis of Algorithm Configurators*, University of Sheffield, UK (External examiner).
- Mar 2020 **Cameron Shand**. *Evolutionary algorithms in clustering: Challenging problem generation and search space adaptation*, University of Manchester, UK (Internal examiner).
- Dec 2019 **Wendi Ouyang**. *Regional sustainable development efficiency assessment model with the future performance for OECD countries: based on dynamic ratio measure model with network*, University of Manchester, UK (Internal examiner).
- Oct 2019 **Federico Pagnozzi**. *Automatic Design of Hybrid Stochastic Local Search Algorithms: Analysis and application*, Université libre de Bruxelles, Belgium (External examiner).
- Nov 2018 **Cristóbal Barba González**. *Big Data Optimization: Algorithmic Framework for Data Analytics Guided by Semantics*, Universidad de Málaga, Spain (External examiner).
- Feb 2018 **Nguyen Thi Thanh Dang**. *Data analytics for algorithm design*, KU Leuven, Belgium (External examiner).
- Apr 2016 **Annelies De Corte**. *Optimization of water distribution networks using metaheuristics*, Faculty of Applied Economics, University of Antwerp, Belgium (External examiner).
- Dec 2015 **Mohamed Saifullah Hussin**. *Stochastic Local Search Algorithms for Single and Bi-objective Quadratic Assignment Problems*, Université libre de Bruxelles, Belgium (External examiner).
- May 2015 **Leticia Hernando**. *Instances of Combinatorial Optimization Problems: Complexity and Generation*, University of the Basque Country, Spain (External examiner).
- Jun 2013 **Tianjun Liao**. *Population-based Heuristic Algorithms for Continuous and Mixed Discrete-Continuous Optimization Problems*, Université libre de Bruxelles, Belgium (Internal examiner).

Evaluation of PhD Theses

- Oct 2017 **Esteban López Camacho**. *Optimización multi-objetivo en las ciencias de la vida*, Universidad de Málaga, Málaga, Spain (External examiner).
- Dec 2015 **Fernando Alvarruiz Bermejo**. *Reducción del Tiempo de Simulación de Redes de Distribución de Agua mediante el Método de Mallas y la Computación de Altas Prestaciones*, Universitat Politècnica de València, València, Spain (External examiner).

Participation in Proposal Evaluation and Progress Review Panels

At University of Manchester:

- Jul 2020 DBA End of year review of Ayesha Alhosani.
- Jul 2018 PhD End of year review of Wendi Ouyang.
- Jul 2018 PhD End of year review of Chidinma Chukwuemeka.
- Jul 2017 DBA End of year review of Jeffrey Savitz.

- Jul 2017 PhD End of year review of Wendi Ouyang.
- Jul 2017 PhD End of year review of Chidinma Chukwuemeka.
- Jul 2016 PhD End of year review of Wendi Ouyang.

At other universities:

- Nov 2019 **Carlos Eduardo Morais Vieira.** Undergraduate thesis for Bachelor in Computer Science, *Assessing irace for automated machine learning*, Federal University of Rio Grande do Norte.
- Jan 2016 **Nicolás Emilio Rojas Morales.** Evaluation panel, *PhD thesis proposal*, Universidad Técnica Federico Santa María, Valparaiso, Chile.
- Jan 2016 **Alan Juan Toledo Vargas.** Ms. Thesis (Tesis de Magister en Ciencias de la Ingeniería Informática), *Una Hiperheurística para resolver Orienteering Problem with Hotel Selection and Time Windows*, Universidad Técnica Federico Santa María, Valparaiso, Chile.

TEACHING EXPERIENCE

- Programme Director “MSc Business Analytics: Operational Research and Risk Analysis“, Alliance Manchester Business School, University of Manchester, UK (Aug 2018 – Jul 2020)
(QS Ranking 2020: 8th in the world and 2nd in UK, <https://www.topuniversities.com/university-rankings/business-masters-rankings/business-analytics/2020>)
(QS Ranking 2019: 7th in the world and 2nd in UK, <https://www.topuniversities.com/university-rankings/business-masters-rankings/business-analytics/2019>)

MSc/PhD Training Schools

SIGEVO (ACM) Summer School 5/7/2021 – 9/7/2021

Lecturer. Held along with ACM GECCO 2021, Online Conference.

28th Jyväskylä Summer School 13/8/2018 – 17/8/2018

Designed and delivered the course: “*Data Analytics + Machine Learning + Optimization*”,
University of Jyväskylä, Finland

Training School of COST Action CA15140 21/10/2017

Full-day lecturer. Held at Pierre et Marie Curie University, Paris, France

SIGEVO (ACM) Summer School 14/7/2017 – 21/7/2017

Lecturer and Mentor. Held along with ACM GECCO 2017, Berlin, Germany

MSc Teaching

At Alliance Manchester Business School, UK:

Mathematical Programming and Optimisation WS/2019-20, WS/2020-21

Course coordinator, lectures, seminars

Programming in Python for Business Analytics SS/2017, WS/2018-21

Course coordinator, lectures, seminars

Data Visualisation and Statistical Programming 16/6/2016

Full-day workshop, DBA (Doctor of Business Administration) Research Conference

Risk, Performance and Decision Analysis SS/2016

Lecturer, Seminars

At Warwick Business School, University of Warwick, UK:

Business Analytics with Python 8/3/2017, 15/3/2017

Full-day (2 days) module for MSc students

At Université libre de Bruxelles, Brussels, Belgium:

Heuristic Optimization SS/2011 and SS/2013

Seminars, design of coursework

Undergraduate Teaching

At University of Málaga, Spain:

Programming I WS/2020

Course coordinator, lectures and labs

At Alliance Manchester Business School, UK:

Decision Analysis for Business & Management Lecturer	SS/2016-17
Quantitative Methods for Business & Management Course coordinator, lecturer	SS/2016-18
Academic and Career Development Seminar leader	2016/7
Human Computer Interaction Seminars	WS/2015

Teaching assessments

- *Outstanding Teaching Award*, Faculty of Humanities, University of Manchester, UK (Oct 2020)
- Fellow of The Higher Education Academy in recognition of attainment against the UK Professional Standards Framework for teaching and learning support in higher education (Nov 2018)
- “Teaching Excellence” acknowledgment by Alliance Manchester Business School on 2018/19 and 2019/20.
- “*Programming in Python for Business Analytics*” was created by me in 2016/7 and it achieved an “Excellent” rating within the course evaluation process of Alliance Manchester Business School.
- Overall assessment of Faculty Peer Review of Teaching, University of Manchester (2016): “*All, or almost all, aspects of the teaching reviewed were of very high quality, few or no suggestions for improvement could be made*”
- Periodic Review by eLearning Team, Alliance Manchester Business School (2016): “*[Quantitative Methods for Business & Management] is an engaging, easy to use Blackboard space for students.*”

REFERENCES

References are available upon request.