The EURO PhD School on Data Driven Decision Making and Optimization, IMUS, Seville, June 13-22, 2022, https://congreso.us.es/epsdata/

Reporting by the co-chairs of the Scientific Committee
Emilio Carrizosa
Professor in Statistics and Operations Research
President of math-in
IMUS-Instituto de Matemáticas de la Universidad de Sevilla, University of Seville, Spain
&
Dolores Romero Morales
Professor in Operations Research
Coordinator & Scientific Leader of the H2020 MSCA NeEDS project,
http://www.riseneeds.eu, @needs_project
Copenhagen Business School, Denmark

The location
The EPS took place at the
Institute of Mathematics of the University of Seville (IMUS)
Celestino Mutis building
Avenida de la Reina Mercedes
41012 Seville
Spain

The students
There were 26 (16 female/10 male) PhD students attending the EPS, from 15 countries (Austria, Belgium, Croatia, Denmark, France, Germany, Israel, Italy, The Netherlands, Norway, Poland, Spain, Sweden, Switzerland, United Kingdom), with different academic backgrounds (mathematics, statistics, engineering, business studies, etc). They were selected by the scientific committee from more than 120 applications.

The scientific activities
On Monday June 13, there was an institutional opening by the Deputy Rector of Research of the University of Seville, the director of the Institute of Mathematics of the University of Seville, and the co-chairs of the scientific committee. The slides presented by the latter are attached at the end of this file.

On Monday June 20, there was an institutional presentation of EURO, where Julia Bennell, Paula Carroll and Alberto Santini talked about the different instruments that EURO can offer to young researchers, such as EURO-k conferences, summer and winter institutes, the EURO Working Groups, the WISDOM Forum, and the EUROYoung Forum.

During the EPS, there have been presentations from 21 speakers from 6 countries (Denmark, Italy, The Netherlands, Spain, United Kingdom), from academia (Copenhagen Business School, Katholieke Universiteit Leuven, Politecnico di Milano, Sapienza University of Rome, University of Amsterdam, University of Cadiz, University of Edinburgh, University of Granada, University of Seville), industry (services, Decide4AI; supply chain management/pharma, Novo Nordisk; energy: REPSOL, Reganosa, VirtualMech; retailing: TESCO), as well as non-academic public sector institutions (Joint Research Center of the European Union, Statistics Denmark). The students were very keen on hearing about the latest research outcomes at the crossing between Machine Learning and Mathematical

Optimization (deep neural networks, interpretability in Machine Learning, fairness, inventory, multi-modal transportation network, sustainability, resilience in supply chains), as well as some of the current challenges that industry and the public sector face. The final program is attached at the end of this file, as well as the short biographies of the speakers.

In addition, the students worked in groups on two modelling challenges. One was proposed by Natalia Rezanova from Novonordisk and a second one was proposed by Emilio Carrizosa. The first one involved modelling a procurement problem using mathematical optimization and using a MILP solver to find the optimal solution. The second one involved modelling a data acquisition problem using mathematical optimization and providing a numerical optimization approach to find a solution. Slots were scheduled for group work, updates, and presentation of the results.

The social events
There were social events both in the city of Seville (visit to the Álcazar, get together by the river) and the city of Cádiz (visit to the center of the city, beach Playa de la Victoria). During these social events, there were opportunities of interactions between the students and the speakers. The slides used at the closing of the EPS are attached at the end of this file with some pictures taken during the lectures, the group work on the modelling challenges, and social activities.

The EPS in the media
The EPS has featured in one of the newspapers of the city of Seville (Diario de Sevilla), the TV channel of the region of Andalucía (Canal Sur), and in social media (Twitter and LinkedIn).

Diario de Sevilla
https://www.diariodesevilla.es/sevilla/jovenes-europa-sevilla-algoritmos_0_1695131086.html?utm_source=whatsapp.com&utm_medium=socialshare&utm_campaign=mobile_amp

Canal Sur
https://www.canalsurmas.es/videos/51522-noticias-1-sevilla-22062022
Starting at 8 minutes 30 seconds.

Social Media
This is attached at the end of this file.

The feedback
We have received very positive feedback from the students, as well as from the speakers. The speakers found a very interactive environment in which the students were curious and asked many questions. The students appreciated the diversity in the groups of students selected as well as the speakers. All written feedback has been anonymized and attached at the end of this file.

Sponsors

EURO PhD Schools

- The EURO PhD Schools (EPS) were proposed and approved in 2012. EURO PhD Schools are an instrument established to encourage the organization of post-graduate education initiatives for PhD students under a school format.

- This instrument differs from the EURO instruments for being training-oriented and by addressing PhD students.

H2020 RISE NeEDS project

- 15 participants across six European countries + USA + Chile, with a budget of more than €1.000.000 for intersectoral and international mobility, with the aim to improve the state of the art in Data Driven Decision Making

- Twitter: @needs_project

- Website: www.riseneeds.eu

About this EURO PhD School

This EURO PhD School (EPS) will focus on giving participants advanced training on Data Driven Decision Making

A methodological as well as an applied (industrial) component:

- Lectures on the mathematical and statistical modeling, as well as the numerical optimization behind data analysis and visualization

- Industrial case studies from industry

- Practical problems to be worked out by the PhD students

The speakers

- From academia (Copenhagen Business School, Katholieke Universiteit Leuven, Politecnico di Milano, Sapienza University of Rome, University of Amsterdam, University of Cadiz, University of Edinburgh, University of Granada, University of Seville)

- Industry (services, Decide4AI; supply chain management/pharma, Novo Nordisk; energy: REPSOL, Reganosa, VirtualMech; retailing: TESCO)

- Non-academic public sector institutions (Joint Research Center of the European Union, Statistics Denmark)

- From 6 countries (Belgium, Denmark, Italy, The Netherlands, Spain, United Kingdom)

The speakers

The students

- 26 PhD students from 15 countries (Austria, Belgium, Croatia, Denmark, France, Germany, Israel, Italy, The Netherlands, Norway, Poland, Spain, Sweden, Switzerland, United Kingdom) selected from more than 120 applications

- With diverse academic backgrounds (mathematics, statistics, engineering, business studies, etc)
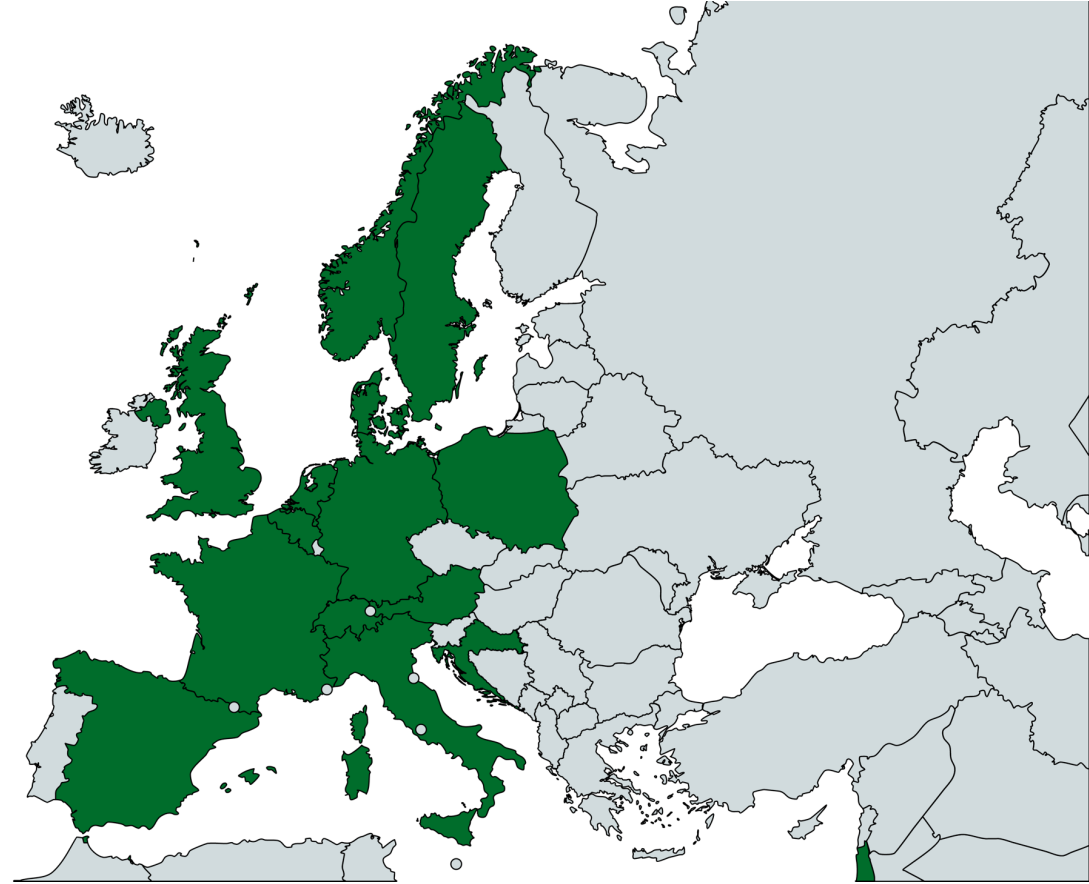
The program

Monday June 13

Welcome to EPS
Dolores Romero Morales, *Copenhagen Business School, Denmark*
Short introduction of PhD students

Tuesday June 14

Dolores Romero Morales, *Copenhagen Business School, Denmark*
Natalia Rezanova, *Novo Nordisk A/S, Denmark*
Emilio Carrizosa, *Institute of Mathematics of the University of Seville, Spain*

Wednesday June 15

Vanesa Guerrero, *Department of Statistics of the University Carlos III of Madrid, Spain*
Belén Martín Barragán, *Business School of the University of Edinburgh, UK*
Emilia Martínez Serrano, *Repsol Technology Lab, Spain*
Prashanth Nadukandi, *Repsol Technology Lab, Spain*
Jochen De Weerdt, *Katholieke Universiteit Leuven, Belgium*

The program

Thursday June 16

EPS @ The Beach (Scientific & social activities in the city of Cádiz)

Friday June 17

Martina Fischetti, *Joint Research Center of the European Union, Spain*
Edwin Reynolds, *TESCO, UK*
Ilker Birbil, *University of Amsterdam, The Netherlands*

Weekend

EPS @ Seville (Scientific & social activities in the city of Seville)

The program

Monday June 20

Laust Mortensen, *University of Copenhagen & Statistics Denmark, Denmark*
Juan Sebastián Valverde García, *Virtualmech S.L., Spain*
Pietro Belotti, *Politecnico di Milano, Italy*

Tuesday June 21

Laura Palagi, *Sapienza University of Rome, Italy*
Rocío Vega Martínez, *Reganosa, Spain*
Daniel Herrero, *Director of the mathematical optimization and ML area at decide4AI, Spain*
Javier León, *Senior Business Consultant at decide4AI, Spain*

Wednesday June 22

Víctor Blanco, *Institute of Mathematics of the University of Granada, Spain*
**Pepa Ramírez Cobo,** *Faculty of Sciences of the University of Cádiz, Spain*
Presentations of PhD students
Closing

Scientific committee

- **Prof Bart Baesens**, Belgium

- **Prof Emilio Carrizosa**, Spain (Co-Chair of t

- **Dr Vanesa Guerrero**, Spain

- **Dr Belen Martin-Barragán**, UK

- **Emilia Martínez Serrano**, Spain

- **Dr Dario Pacino**, Denmark

- **Dr Federico Perea Rojas-Marcos**, Spain

- **Mr Nils Ploug**, Denmark

- **Prof Dolores Romero Morales**, Denmark (

- **Prof Richard Weber**, Chile
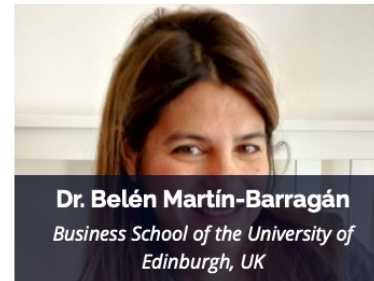
Organizing committee

- **Dr Victor Blanco**, Granada

- **Dr Rafal Blanquero**, Seville

- **Prof Emilio Carrizosa**, Seville (Chair of the

- **Dr Antonia Castaño**, Cádiz

- **Prof Dolores Jiménez Gamero**, Seville

- **Dr Salvador Pineda**, Málaga

- **Dr Pepa Ramírez Cobo**, Cádiz

- **Dr Alfonso Suárez Llorens**, Cádiz

Have a fruitful EURO PhD School, with new knowledge and contacts that this training event will offer you!

Final Version of The Program of
The EURO PhD School on Data Driven Decision Making and Optimization
June 13-22, 2022, Institute of Mathematics of the University of Seville

With the support of

Sunday June 12

Arrival at accommodation

Monday June 13, 9.30-17.30

Institutional welcome to EPS
Dolores Romero Morales, *Copenhagen Business School, Denmark*
Short introduction of PhD students

Tuesday June 14, 9.30-17.30

Natalia Rezanova, *Novo Nordisk A/S, Denmark*
Group Work Session
Dolores Romero Morales, *Copenhagen Business School, Denmark*
Emilio Carrizosa, *Institute of Mathematics of the University of Seville, Spain*

Wednesday June 15, 9.30-17.30

Vanesa Guerrero, *Department of Statistics of the University Carlos III of Madrid, Spain*
Belén Martín Barragán, *Business School of the University of Edinburgh, UK*
Emilia Martínez Serrano, *Repsol Technology Lab, Spain*
Prashanth Nadukandi, *Repsol Technology Lab, Spain*
Jochen De Weerdt, *Katholieke Universiteit Leuven, Belgium*

Thursday June 16, 9.30-21.30

EPS @ The Beach (Scientific & social activities in the city of Cádiz)

Friday June 17, 9.30-17.30

Martina Fischetti, *Joint Research Center of the European Union, Spain*
Group Work Session
Edwin Reynolds, *TESCO, UK*
Ilker Birbil, *University of Amsterdam, The Netherlands*

Weekend

EPS @ Seville (Scientific & social activities in the city of Seville)

Monday June 20, 9.30-17.30

EURO Institutional Presentation
Laust Mortensen, *University of Copenhagen & Statistics Denmark, Denmark*
Juan Sebastián Valverde García, *Virtualmech S.L., Spain*
Miguel Angel Pérez Cutiño, *Virtualmech S.L., Spain*
Pietro Belotti, *Politecnico di Milano, Italy*

Tuesday June 21, 9.30-17.30

Laura Palagi, *Sapienza University of Rome, Italy*
Rocío Vega Martínez, *Reganosa, Spain*
Daniel Herrero, *Director of the mathematical optimization and ML area at decide4AI, Spain*
Javier León, *Senior Business Consultant at decide4AI, Spain*

Wednesday June 22, 9.30-17.30

Víctor Blanco, *Institute of Mathematics of the University of Granada, Spain*
Pepa Ramírez Cobo, *Faculty of Sciences of the University of Cádiz, Spain*
Presentations of PhD students
Closing

The titles of the talks

Speaker	Topic	Affiliation	Country
Pietro Belotti	Multimodal transport networks: a case study with water canals, bicycle trails, and railways	Politecnico di Milano	Italy
Ilker Birbil	Rule generation for learning	University of Amsterdam	The Netherlands
Víctor Blanco	Continuous location-based approaches for supervised classification	Institute of Mathematics of the University of Granada	Spain
Emilio Carrizosa	Interpretability in Machine Learning by Means of Mathematical Optimization: Part II	Institute of Mathematics of the University of Seville	Spain
Jochen De Weerdt	From descriptive to predictive process mining	Katholieke Universiteit Leuven	Belgium
Martina Fischetti	Applications of OR to sustainability topics	Joint Research Center of the European Union	Spain
Vanesa Guerrero	Constrained penalized regression smoothing splines by means of mathematical optimization	Department of Statistics of the University Carlos III of Madrid	Spain
Daniel Herrero	Decomposition approaches for solving large optimization problems	Director of the mathematical optimization and ML area at decide4AI	Spain
Javier León	Decomposition approaches for solving large optimization problems	Senior Business Consultant at decide4AI	Spain
Belén Martín-Barragán	Mathematical programming approaches for inventory problems	Business School of the University of Edinburgh	UK
Emilia Martínez Serrano	Academy & Industry: collaboration......and beyond	Repsol Technology Lab	Spain
Laust Hvas Mortensen	Data Science @ Statistics Denmark	University of Copenhagen & Statistics Denmark	Denmark
Prashanth Nadukandi	Academy & Industry: collaboration......and beyond	Repsol Technology Lab	Spain
Laura Palagi	Optimization Aspects of Deep Networks	Sapienza University of Rome	Italy
Miguel Angel Pérez Cutiño	Industrial applications of automatic inspection and data analysis in the transport and energy sectors. Support to O&M	Virtualmech S.L.	Spain
Edwin Reynolds	Delivering Data Science Products within Tesco using Mathematical Optimisation	Tesco	UK
Pepa Ramírez Cobo	Fairness in linear regression: a Bayesian perspective	University of Cadiz	Spain
Natalia Rezanova	An industrial challenge: Supplier Volume Allocation Optimization	Novo Nordisk A/S	Denmark
Dolores Romero Morales	Interpretability in Machine Learning by Means of Mathematical Optimization: Part I	Copenhagen Business School	Denmark
Juan Sebastián Valverde García	Industrial applications of automatic inspection and data analysis in the transport and energy sectors. Support to O&M	Virtualmech S.L.	Spain
Rocío Vega Martínez	HAL: Hydrogen projects ALgorithm-driven	Reganosa	Spain

Bio Pietro Belotti, Politecnico di Milano, Italy

Pietro Belotti is assistant professor at the Department of Electronics, Information and Bioengineering of the Politecnico di Milano. His research interests are primarily in discrete nonlinear optimization, multiobjective optimization, and optimization under uncertainty. He is currently working on various applications of Optimization to sustainable mobility, both at the national and European level. Pietro obtained a PhD in Computer Engineering in 2003 from Politecnico di Milano. He then worked at Carnegie Mellon University, Lehigh University, and Clemson University. Between 2013 and 2020, he was software engineer at FICO in the development team of the FICO Xpress optimizer. Over the last 20 years, he has collaborated with Linköpings Universitet in Linköping, Sweden; Bilkent University, Ankara; Zuse Institute, Berlin; University of Rome, Tor Vergata; and École Polytechnique, Paris. He is author and maintainer of the open-source software package Couenne for mixed integer nonconvex optimization problems.

Bio Ilker Birbil, University of Amsterdam, The Netherlands

Ilker Birbil is a professor in AI & Optimization Techniques for Business & Society at University of Amsterdam, where he is currently the head of Business Analytics Section. He received his PhD in 2002 from North Carolina State University with a major in Industrial Engineering, and minors in Operations Research and Mathematics. He was a postdoctoral research fellow at the Erasmus Research Institute of Management for two years. From 2004 to 2018, he was a faculty member at Sabanci University in Istanbul, where he was one of the founders of the Data Analytics professional degree program. He held the Chair in Data Science and Optimization at Erasmus University Rotterdam from 2018 to 2021. With his colleagues and students, he authored research articles on mathematical optimization, operations management, and data science. These articles appeared in leading journals such as, Mathematical Programming, SIAM Journal on Optimization, Mathematical Methods of Operations Research, Management Science, European Journal on Operational Research, and Transportation Science. He completed various research projects as the principal investigator and participated in several initiatives as a researcher or as a committee member. He also collaborated with industry to work on business problems ranging from cloud computing to airline crew planning. His research interests center around optimization methods in data science and decision making. Lately, he is interested in interpretable machine learning and data privacy in operations research.

Bio Víctor Blanco, Institute of Mathematics of the University of Granada, Spain

Víctor Blanco is an Associate Professor in Quantitative Methods for Economics & Business at the Universidad de Granada, Spain. He has a MSc in Pure Mathematics from the Universidad de Granada (2005) and PhD in OR from the Universidad de Sevilla (2009). His research has focused in a wide variety of topics related to Mathematical Optimization, as Logistics & Transportation, Data Science, Computational Algebra or Algorithmic with more than 40 papers published in top OR journals, including Mathematical Programming, European Journal of Operations Research, Computers & Operations Research, Omega, Fuzzy Sets & Systems and Advances in Data Analysis and Classification. He has been interested both in the theoretical and applied aspects of Mathematical Programming. He is PI in several (local, regional and national) research projects and has colaborated in different industrial contracts. He has carried several research stays at internationally recognized research centers as the Institute of Mathematics & its application (IMA, University of Minnesota), the University of British Columbia, the University of California-Davis or the University of Edinburgh. He is currently an active member of the Spanish Stats & OR Society (SEIO), the Spanish Network on Location Analysis and Related Problems (REDLOCA) and the Institute of Mathematics of the Universidad de Granada (IMAG).

Bio Emilio Carrizosa, Institute of Mathematics of the University of Seville, Spain

Professor of Statistics and OR at the University of Seville. President of math-in, the Spanish Network of Mathematics for Industry. Past President of the Spanish Statistics and Operations Research Society, past Director of the Mathematical Institute of the University of Seville, past Editor-in-Chief of TOP, and now Associate Editor of TOP and ADAC. His publications track record includes papers in Operations Research, Data Science and Industrial Mathematics, published in top OR journals (e.g. Opns Res, Manage Sci, Maths of OR) and in applied fields as a consequence of his crossdisciplinary research. Since 1996, PI in projects funded by public and private agencies and leader of industrial contracts in different sectors. 10 PhD theses supervised (plus 6 ongoing) in the last 10 years. Visiting Professor at Copenhagen Business School (Otto Mønsted Visiting Professor), Vrije Universiteit Brussel, U. Montréal, U. Wien.

Bio Jochen De Weerdt, Katholieke Universiteit Leuven, Belgium

Jochen De Weerdt is an Associate Professor in Process and Business Analytics at the Research Centre of Information Systems Engineering (LIRIS) of the Faculty of Economics and Business at KU Leuven. He obtained a PhD in Business Economics at KU Leuven in 2012 on the topic of Automated Business Process Discovery. Subsequently, he worked as a postdoctoral research fellow at the Information Systems School of the Queensland University of Technology (Brisbane, Australia). His research and teaching interests include Business Information Systems, Business Analytics, Process Mining, Machine Learning, Learning Analytics, and Business Process Management. He has published over 70 papers on these topics, including academic book chapters, peer-reviewed journal articles, and refereed papers at international conferences and workshops. He published papers in renowned journals such as IEEE Transactions on Knowledge and Data Engineering, Data Mining and Knowledge Discovery, Decision Support Systems, Information Systems, Computers in Human Behavior, etc. In addition, his findings have been presented at well-known international conferences such as BPM, ECML-PKDD, DSAA, and IEEE CEC.

Bio Martina Fischetti, Joint Research Center of the European Union, Spain

Martina Fischetti is Senior Researcher-Transport Policy Analyst at the Joint Research Center of the European Union, in Seville. She holds a PhD in Operations Research from the Technical University of Denmark, titled "Mathematical Programming Models and Algorithms for Offshore Wind Park Design". This was an industrial PhD in collaboration with a leading energy company in North Europe: Vattenfall. The models and algorithms developed during her PhD have been used by the company to design the layout of important wind farms, such as Danish Kriegers Flak and Hollandse Kust Zuid. The PhD project was awarded several international prizes, including best thesis in Europe in Operations Research (EURO-EDDA award), best Industrial PhD in Denmark, the Glover-Kingsman prize, and finalist position at the prestigious INFORMS Franz Edelman Award. Martina was also awardee for the EURO WISDO WOMEN4OR last year. Her areas of expertise include networks, mathematical modelling, heuristics for large-scale optimization problems and machine learning. She is also active in promoting Operations Research with talks and different activities. In particular, she is co-founder of the EUROYoung network for PhD students in OR. She has been founder and coordinator of AIROYoung, the Young Researchers Chapter of the Italian Operational Research Society (AIRO) for several years. She has been in the organization committee of different workshops, and guest editor for a special issue in Springer OR Forum.

Bio Vanesa Guerrero, Department of Statistics of the University Carlos III of Madrid, Spain

Vanesa Guerrero is an Assistant Professor (on tenure-track) at the Department of Statistics in Universidad Carlos III de Madrid since 2017. Her research interests consist of developing innovative frameworks that enhance interpretability of complex datasets by combining theoretical modeling methods of mathematical optimization and statistical data analysis with computational tools. Her work has been published in leading scholarly journals such as Mathematical Programming, Omega, European Journal of Operational Research or Multivariate Behavioral Research. She is the principal investigator of two publicly funded research projects, one in collaboration with industry and the other involving a multidisciplinary academic group. She has a BSc, MSc and PhD in Mathematics from Universidad de Sevilla and she has visited Copenhagen Business School (Frederiksberg, Denmark) and École Polytechnique (Palaisseau, France) as a pre- and post-doctoral researcher, respectively.

Bio Daniel Herrero Giner, Director of the mathematical optimization and ML area at decide4AI, Spain

Daniel Herrero Giner, Industrial engineer from the Polytechnic University of Madrid, Master in Industrial Organization and director of the mathematical optimization and machine learning area at decide4AI. Daniel has more than 10 years of experience implementing optimization solutions based on linear programming, heuristic techniques, constraint programming, local search, uncertainty programming, column generation, etc. During his career, he has developed solutions in the logistics field, personnel planning, energy solutions and TELCO. He is interested in real optimization and data science use cases, focused in out of the box thinking for solving huge optimization problems and always willing to improve efficiency in his projects with state of the art algorithms.

Bio Javier León, Senior Business Consultant at decide4AI, Spain

Javier León is a senior business consultant at decide4AI. In 2020 he received his PhD in Operations Research from Complutense University of Madrid (UCM) and RMIT University (Melbourne, Australia). He was a predoctoral and postdoctoral researcher at UCM, where he is also a member of the research group 'Decision aid models in logistics and disaster management'. His research interests are mathematical programming with uncertainty and multicriteria decision making. From 2021 he has been working at Decide4AI, helping customers with optimization-related problems identify their needs, as well as developing solutions using tools such as mathematical programming, heuristics, constraint programming or column generation.

Bio Belen Martín-Barragán, Business School of the University of Edinburgh, UK

Belen Martín-Barragán is Reader in Management Science at The University of Edinburgh. Her research lies at the interface between Data Science and Mathematical Programming, with a special interest on Explainable Artificial Intelligence. In a board sense, her research interests focus on using or developing variants of Operational Research techniques and applying them to data analysis problems, such as classification and clustering. Her work has appeared in a variety of top-ranked journals such as European Journal of Operational Research, Risk Analysis, INFORMS Journal on Computing, Discrete Applied Mathematics, Computers and Operations Research. She is also contributed to other areas such as statistics (Journal of Applied Statistics) and economics (Economic Modelling). She has been PI of the EPSRC-funded project "Optimisation Models for Interpretable Analytics".

Bio Emilia Martínez Serrano, Repsol Technology Lab, Spain

University degree in Mathematics at University of Oviedo- Spain, master degree in Information Systems at EOI Business School and AMP at IE Business School. She has combined the academic and professional scopes into her professional career.

After 10 years of working in consultancy, she understands multiple industries, such as food, trade, telecommunications, education, energy, transportation and others. This allows her to directly apply methods to diverse real scenarios, proving high adaptation skills.

She has over 14 years of experience in such a leader company as REPSOL. She has been working in IT for Trading, Gas and Power business until 2018 when she has joined to Technology Corporative Area.

Currently, she is *SR Manager of Optimization Tech & Experimentation* in Repsol TechnologyLab leading Optimization Processes, Advanced Mathematics & Labs teams.

Bio Laust Hvas Mortensen, University of Copenhagen & Statistics Denmark, Denmark

Professor of epidemiology at the University of Copenhagen and head of the Data Science Lab at Statistics Denmark, which is the Danish statistical institution. His work covers various fields in epidemiology, but has increasingly focused on large scale studies based on the Danish administrative registers across multiple disciplines. He has a particular interest in developing and promoting new ways of creating value by reusing data collected for other purposes. Visiting positions at Duke University and Stanford University.

Bio Prashanth Nadukandi, Repsol Technology Lab, Spain

Received the B.Tech degree in civil engineering from IIT Guwahati, India, in 2005, and the PhD degree in computational mechanics from the UPC-BarcelonaTech, Spain, in 2011. He worked at CIMNE-Barcelona as a Research Engineer (2009), Research Scientist (2011) and as an Assistant Research Professor from 2014 to 2016. He held a Marie Skłodowska-Curie Individual Fellowship in Mathematics, University of Manchester, UK, from 2016 to 2018. Since 2018, he has been the Numerical Methods Technical Advisor with the Advanced Mathematics department, Repsol Technology Lab, Spain. Currently, he works at the interface of computational mechanics and machine learning for applications in the energy industry.

Bio Laura Palagi, Sapienza University of Rome, Italy

Laura Palagi is Full Professor in Operations Research at Sapienza University of Rome, Italy. She has an MSc in Electronic Engineering (1990) and a Ph.D. in OR (1996) from Sapienza University of Rome. Her research has focused mainly on algorithms for nonlinear continuous optimization problems, focusing on those arising in training machine learning (Deep Network and Support Vector Machines) and on mixed-integer nonlinear problems. She has been interested both in the theoretical aspects of Mathematical Programming and Machine Learning and in the application, particularly in the health field. She authored more than 50 papers in top OR journals, including Mathematical Programming, Siam Journal on Optimization, Computational Optimization and Application, Mathematics for OR, European Journal of Operations Research, Optimization Methods and Software. She was a founding member of the Italian start-up ACTOR Srl (Analytics, Control Technologies and Operations Research) in 2011. She is currently a member of the Italian Operations research society (AIRO). She is a member elected to the managing board of EUROPT (The Continuous Optimization Working Group of EURO).

Bio Miguel Angel Pérez Cutiño, Virtualmech S.L., Spain

Miguel Angel Pérez Cutiño is a Data Scientis and Deep Learning specialist at VirtualMech. He has a bachelor's degree in computer science from the University of Havana (2018); a Msc in Logic, Computing and Artificial Intelligence from the University of Seville (2021), and he is currently working at Virtualmechanics s.l. and doing an Industrial PhD in Mathematics from the University of Seville. His research has focused on a wide variety of topics related to Artificial Intelligence, such as the classification of animals from wild sounds, the identification of people from aerial robots, and automatic fault detection from unbalance data in the railway and energy sector. He has been involved in european projects such as GRIFFIN, and spanish projects such as OPTIDRON. His main interests lies in the intersection of Computer Vision, Deep Learning, and discrete mathematics.

Bio Pepa Ramírez-Cobo, Faculty of Sciences of the University of Cádiz, Spain

Pepa Ramírez-Cobo is an Associate Professor at the University of Cádiz, and Associate Researcher at IMUS. She has a BSc in Mathematics from Universidad Autónoma de Madrid, a MSc in Applied Mathematics for Social Sciences from Université Paris-Dauphine, and a PhD in Quantitative Methods for Business and Economy from Universidad Carlos III de Madrid. She has been research visitor as a Fullbright fellow at the Department of Biomedical Engineering, Georgia Institute of Technology (Atlanta), and also at the Gipsa-Lab (Grenoble) through a CNRS contract. On top of her works in statistical estimation for stochastic processes, she has conducted research in several Data Science problems related to signal processing, environment, and interpretable and cost-sensitive learning methods. She has co-supervised five doctoral theses and published a total of 35 ISI JCR papers on top journals as Biostatistics, Annals of Applied Statistics, Bayesian Analysis, European Journal of Operational Research, Reliability Engineering & System Safety, Computers & Operations Research or Advances in Data Analysis and Classification. She has actively participated in a number of research and transfer projects.

Bio Natalia Rezanova, Novo Nordisk A/S, Denmark

Natalia Rezanova is a Senior Operations Data Scientist in a Danish pharmaceutical company Novo Nordisk A/S, where she develops mathematical modelling-based applications within supply chain optimization, personnel, and production planning. After finishing her PhD in Operations Research from the Technical University of Denmark, Natalia has been mainly focusing on OR applications within transportation: crew rostering in the airline industry (Jeppesen), vehicle routing problems (AMCS) and passenger railway transportation (Danish State Railways), with focus on rolling stock and crew rostering and scheduling. Natalia's interests lie within mixed integer linear programming modelling, but also in developing heuristic and metaheuristic approaches to solve optimization problems.

Bio Edwin Reynolds, TESCO, UK

Edwin Reynolds is a Data Scientist at Tesco, the largest retailer in the UK. During his 18 months there, he has worked on applying advanced mathematical optimisation techniques across a variety of business areas. Before joining Tesco, he obtained a PhD from Lancaster University, focusing on integer programming decomposition methods for problems in railway disruption management.

Bio Dolores Romero Morales, Copenhagen Business School, Denmark

Dolores Romero Morales is a Professor in Operations Research at Copenhagen Business School. Her areas of expertise include Data Science, Supply Chain Optimization and Revenue Management. Her work has appeared in a variety of leading scholarly journals, including European Journal of Operational Research, Management Science, Mathematical Programming and Operations Research, and has received various distinctions. Currently, she is Editor-in-Chief to TOP, the Operations Research journal of the Spanish Society of Statistics and Operations Research, and an Associate Editor of Journal of the Operational Research Society, Omega and the INFORMS Journal on Data Science. She has worked with and advised various companies on these topics, including IBM, SAS, KLM and Radisson Edwardian Hotels, as a result of which these companies managed to improve some of their practices. SAS named her an Honorary SAS Fellow and member of the SAS Academic Advisory Board. She currently leads the EU H2020-MSCA-RISE NeEDS project, which has a total of 15 participants and a budget of more than €1.000.000 for intersectoral and international mobility, with the aim to improve the state of the art in Data Driven Decision Making. Dolores joined Copenhagen Business School in 2014. Prior to coming to Copenhagen Business School, she was a Full Professor at University of Oxford (2003-2014) and an Assistant Professor at Maastricht University (2000-2003). She has a BSc and an MSc in Mathematics from Universidad de Sevilla and a PhD in Operations Research from Erasmus University Rotterdam.

Bio Juan Sebastián Valverde García, Virtualmech S.L., Spain

Dr. Valverde is Scientific Advisor at Virtualmechanics sl. He was formerly Chief Technology Officer for 8 years and founding member of the company. He received his PhD. at University of Seville in the Advanced Design in Mechanical Engineering program and did a postdoc at University of California Berkeley under the Fulbright program. He has worked in the academy at both University of Seville (Mechanical Engineering Dept. and Applied Mathematics Dept.) and University of Cádiz (Physics of Condensed Matter). Dr. Valverde is specialized in coupled field simulation applied to Renewable Energy and Thermal Energy Storage as well as vehicle and mechatronic system dynamics. He has recently started working on Data Analytics and AI applied to Automatic Fault Detection at industrial environments. Dr Valverde has been PI at many research projects publicly funded by EU programs and Spanish government where multidisciplinary groups of companies and universities have managed large budgets (~M€). He has developed his industrial research both at low TRL and medium TRL projects, including the management and construction of pilot plants and infrastructures (www.socratces.eu).

Bio Rocío Vega Martínez, Reganosa, Spain

Undergraduate degree in mathematics from the University of Oviedo (2015), with a scholarship during the last year in a company in the energy sector. Interuniversity Master in Industrial Mathematics at Universidad Carlos III (2017), with contract in the area of applied mathematics as a research assistant. PhD in Mathematical Engineering (international doctorate, Cum Laude, 2021).Thesis on mathematical models applied to biomedicine, with research stay at the Courant Institute in New York, short stays at the Fields Institute in Toronto and at the University of Colorado, talks at international conferences and two articles published in prestigious journals. Lecturer at UC3M (2017-2021) and institutional representative of the university giving outreach talks (2018-2021). Since 2021, researcher and current Digitalization manager at Reganosa, a company that operates and maintain energy infrastructures and provides energy-related services. I work on the development of digital tools, with a solid mathematical basis, that help to improve energy efficiency and move towards decarbonization.

The speakers

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Thank you very much!

And recall… your feedback is important!

Email to eps2022@cbs.dk before leaving Seville!

The EURO PhD School on Data Driven Decision Making and Optimization, IMUS, Seville, June 13-22, 2022, https://congreso.us.es/epsdata/

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Day 5

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The EURO PhD School on Data Driven Decision Making and Optimization, IMUS, Seville, June 13-22, 2022, https://congreso.us.es/epsdata/

Written feedback by students

Feedback from student #1

I would like to provide feedback in this mail on the EURO PhD School on Data Driven Decision Making and Optimization.

I really enjoyed this PhD school and I am very grateful that I was given the opportunity to attend. The organizers clearly put a lot of effort in organizing this PhD school and this became clear through many different aspects. The invited speakers were clearly carefully chosen and presented work that was very relevant for the scope of this PhD school. It was nice to see connections between some of these works and this made it easier to distinguish between established practices and novel aspects of the presented work. The PhD school has successfully broadened my knowledge on the interplay between mathematical optimization and data driven decision making. I believe that in my further career I will be able to benefit from the knowledge gained during this PhD school.

I am also very fond of the great diversity that we were able to see in this PhD school on many different levels. For both the professors and the PhD students, there was a great diversity in background, gender, geographical location and other criteria. Apart from this, there was a good mixture of speakers from academia and industry. I believe this is important for several PhD students, who will need to make a choice between academia and industry in the near future. I can imagine that getting international speakers from industry to attend Seville was not an easy task, as this is not their main job and the CEO's of the companies might be reluctant to share internal information with a highly skilled audience who might be able to use some of these ideas in the future in a competing company.

Apart from lectures, there were also two hands-on case studies that the students had to solve in groups during 10 days using mathematical optimization. The two case studies were also interesting and made it possible to apply our knowledge and get to know the strengths of our peers. I personally was also able to learn a lot from talking to my peers and this would not have been possible without these case studies.

The scientific programme took a big part of the available time (as it should in my opinion), but there was also room for social events. These social events were also well organized and I consider these events very important as well. During these social events, we were not only able to discover the beauty of Seville, but also get to know the personality and the research of the other PhD students in a relaxed environment without any pressure. Through this, I believe that I have made interesting research connections who I can gladly call my friends now.

Finally, I would like to express once again my gratitude to the organizers of this PhD school as well as to EURO for making this possible. An event like this can only be possible if one sincerely believes and wants to support young researchers in their further career. I am sure that everything related to this PhD school took a lot of time to set up and I am very grateful for the time that was invested by all involved people. I want to express my deepest gratitude for this service to the OR community, and I hope that I will someday be able to return the favour in one way or another.

Feedback from student #2

Once again, thanks for this wonderful PhD school. My feedback is very positive. In these 10 days, I have got to know many fascinating topics and I was constantly inspired by related ideas and possible applications. Most importantly, I am grateful for having met some brilliant researchers and beautiful friends. I really enjoyed the combination of industry and academia. And I also enjoyed the talks for being and overview/ideas rather than extremely detailed. The challenges were really interesting and let me know very well the people in my group.

Feedback from student #3

I wanted to let you know and to say thank you very much for everything. Appreciate all the effort it must have been for you to make it happen.

I had a great time and learned a lot.

Feedback from student #4

I would appreciate everything you did to make this event more fruitful, scientifically, and socially 💐
I enjoyed and am so happy to have this opportunity to participate in this school.

I was going to take part in a summer school in Seville, but I received more than what I expected. I met nice and smart people and got ideas and inspiration. I visited a nice city with a different vibe and experienced a wonderful period of my life here in Seville that I never forget. Thank you so much for this chance you granted to me.

I genuinely liked this event, but as you asked for feedback 😊, It might be better to have more information about lectures on the preliminary program page: the topic they would present, and the duration of their presentation.

Another thing that might help, is a short biography of each participant with name and picture (two lines about our university, our topic and anything else we think should be mentioned) on a page on Dropbox, this way we do not forget each other's name and field during and after the program.

Feedback from student #5

Many thanks for organizing such a wonderful phd school. I'm so happy to meet many peers from different backgrounds and listen to various topics related to ML and Optimization from 21 lecturers.

The program was quite intensive as it involved not only lectures, assignments but also social activities among peers. It would be less stressful if the assessments were a bit easier. We didn't get the modeling assessment was quit hard until we went deeply into the problem.

We're from different backgrounds so not everyone can do the good modeling and use the same math solver and it takes time to communicate with each other.

Thank you again for organizing this Phd school and hope in future I have the same opportunity to organize some events for younger peers.