

# M. Remedios Sillero-Denamiel

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## *Curriculum Vitae*

Postdoctoral Fellow

School of Computer Science and Statistics - Trinity College Dublin

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## Education

- July 2021 **Ph.D. in Mathematics**, *University of Seville*.  
Awarded with the highest distinction (Sobresaliente - Cum laude)  
Title: "Computational methods for the analysis of complex data"  
Supervisors: Dr. Rafael Blanquero Dr. Emilio Carrizosa and Dr. Pepa Ramírez-Cobo
- July 2016 **Master's Degree in Mathematics**, *University of Seville*.
- July 2015 **Master's Degree in Secondary Education**, *University of Seville*.
- July 2014 **Bachelor's Degree in Mathematics (240 ECTS Credits)**, *University of Seville*.  
Research collaboration grant from the *Spanish Ministry of Education, Science and Sports* in the Department of Statistics and Operations Research from October 2013 to June 2014

## Professional activities

- Since Sep 2021 **Postdoctoral Fellow in the Discipline of Statistics and Information Systems, School of Computer Science and Statistics**, *Trinity College Dublin, the University of Dublin*.
- May 2017 - Jun 2021 **Spanish Ministry of Economy and Competitiveness PhD Fellowship (Formación de Personal Investigador - FPI)**, *University of Seville*.  
Teaching load: 178 hours
- Feb - Apr 2017 **University of Seville PhD Fellowship**, *University of Seville*.  
Renounced in order to take Spanish Ministry of Economy and Competitiveness Grant

- Feb - Sep 2016 **Research support technician**, *Project entitled "Construcción de clasificadores"*, UNIVERSAL DX - Fundación de Investigación de la Universidad de Sevilla (FIUS) - IMUS. University of Seville.  
Principal Investigator: Dr. Emilio Carrizosa
- Mar - Dec 2015 **Research support technician**, *Project contract "Identificación de Modelos en Procesos con Reacción Química. Fase II"*, REPSOL - FIUS - IMUS. University of Seville.  
Principal Investigator: Dr. Emilio Carrizosa

## Research

### Publications

**On Extreme Concentrations in Chemical Reactions Networks with Incomplete Measurements**, *Rafael Blanquero, Emilio Carrizosa, Oana Chis, Noemí Esteban, Asunción Jiménez-Cordero, José Francisco Rodríguez, M. Remedios Sillero-Denamiel*, *Industrial & Engineering Chemistry Research*, 55 (44), pp. 11417-11430 (2016).

**Identification problem in plug-flow chemical reactors using the adjoint method**, *Alfredo Bermúdez, Noemí Esteban, José Luis Ferrín, José Francisco Rodríguez, M. Remedios Sillero-Denamiel*, *Computers & Chemical Engineering*, 98, pp. 80-88 (2017).

**A cost-sensitive constrained Lasso**, *Rafael Blanquero, Emilio Carrizosa, Pepa Ramírez-Cobo, M. Remedios Sillero-Denamiel*, *Advances in Data Analysis and Classification*, 15, pp. 121-158 (2021).

**On Sparse Ensemble Methods: An Application to Short-Term Predictions of the Evolution of COVID-19**, *Sandra Benítez-Peña, Emilio Carrizosa, Vanesa Guerrero, M. Dolores Jiménez-Gamero, Belén Martín-Barragán, Cristina Molero-Río, Pepa Ramírez Cobo, Dolores Romero Morales, M. Remedios Sillero-Denamiel*, *European Journal of Operational Research*, 295 (2), pp. 648-663 (2021).

**Variable selection for Naïve Bayes classification**, *Rafael Blanquero, Emilio Carrizosa, Pepa Ramírez-Cobo, M. Remedios Sillero-Denamiel*, *Computers & Operations Research*, 135, pp. 105456 (2021).

**Constrained Naïve Bayes with application to unbalanced data classification**, *Rafael Blanquero, Emilio Carrizosa, Pepa Ramírez-Cobo, M. Remedios Sillero-Denamiel*, *Forthcoming in Central European Journal of Operations Research*, (2021).  
<https://doi.org/10.1007/s10100-021-00782-1>.

**The tree based linear regression model for hierarchical categorical variables**, *Emilio Carrizosa, Laust Hvas Mortensen, Dolores Romero Morales, M. Remedios Sillero-Denamiel*, *Forthcoming in Expert Systems with Applications*, (2022).

### Working papers

**A Bayesian semi-parametric approach to normal/independent and elliptical distributions**, *Juan Miguel Marín, Pepa Ramírez-Cobo, Fabrizio Ruggeri, Michael Wiper, M. Remedios Sillero-Denamiel*.

**Bayesian modelling of the selection bias problem in regression**, *Hieu Cao, M. Remedios Sillero-Denamiel, Simon Wilson*.

## Main invited & contributed talks presented

- Dec 2021 **Bayesian modelling of the selection bias problem in regression.**  
CFE-CMStatistics 2021 (14th International Conference of the ERCIM WG on Computational and Methodological Statistics and 15th International Conference on Computational and Financial Econometrics)
- Oct 2021 **On linear regression models with hierarchical categorical variables.**  
Virtual IMUS Seminar: YOUNG Online Seminar Series Machine Learning NeEDS Mathematical Optimization
- May 2020 **On Sparse Ensemble Methods: An Application to Short-Term Predictions of the Evolution of COVID-19.**  
Online seminar *Matemáticas y la COVID*, Mathematical Research Institute of the University of Seville (IMUS), Sevilla, Spain
- Jan 2020 **Novel Regression approaches to deal with complex data.**  
V Congreso de Jóvenes Investigadores RSME - Castelló 2020, Universitat Jaume I de Castelló, Castellón, Spain
- Dec 2019 **A Bayesian semi-parametric approach to estimate elliptical distributions.**  
12th International Conference of the ERCIM WG on Computational and Methodological Statistics 13th International Conference on Computational and Financial Econometrics, Senate House, University of London, UK
- Jun 2019 **Enhancing the Lasso by adding performance constraints.**  
2nd Young Statisticians and Operational Researchers Meeting (SYSORM), Real Centro Universitario Escorial - María Cristina (UCM), San Lorenzo de El Escorial, Madrid, Spain
- May 2019 **Constrained Lasso Regression.**  
1st EUROYoung Workshop, Mathematical Research Institute of the University of Seville (IMUS), Seville, Spain
- Jul 2018 **Dealing with heterogeneous data via constrained Lasso.**  
29th European Conference on Operational Research (EURO2018), Valencia, Spain
- May 2018 **A proposal of a constrained Lasso on heterogeneous data.**  
XXXVII Congreso Nacional de Estadística e Investigación Operativa (SEIO), University of Oviedo, Oviedo, Spain
- Nov 2017 **On sparse and constrained Naïve Bayes.**  
1st Spanish Young Statisticians and Operational Researchers Meeting (SEIO), University of Granada, Granada, Spain
- Nov 2017 **Sparse and Constrained Naïve Bayes for cost-sensitive classification.**  
Symposium on Big Data in Finance, Retail and Commerce - Statistical and Computational Challenges, Institute of Financial Big Data, Universidad Carlos III de Madrid, Centro de Estadística e Aplicações, Universidade de Lisboa (CEAUL), Sociedad Española de Estadística e Investigación Operativa (SEIO) and Sociedade Portuguesa de Estadística (SPE). Jupiter Lisboa Hotel, Lisbon, Portugal
- Oct 2017 **Enhancing the Naïve Bayes classifier by adding sparsity and performance constraints.**  
III International Workshop on Proximity Data, Multivariate Analysis and Classification (Group AMYC of SEIO), University of Valladolid, Valladolid, Spain
- Sep 2017 **Sparse Naïve Bayes Classification.**  
11th Scientific Meeting of the CLAssification and Data Analysis Group of the Italian Statistical Society (CLADAG), Milano-Bicocca University, Milan, Italy

## Research projects

- Jan 2022 - **Mathematical Optimization in Data Science: Towards Interpretability in**  
Dec 2022 **Classification, Regression and Dimensionality Reduction.**  
Funded by: Junta de Andalucía (Proyectos I+D+i FEDER Andalucía 2014-2020)  
Principal Investigator: Dr. Emilio Carrizosa
- Jan 2020 - **Mathematical Optimization for Data-Driven Decision-Making (PID2019-**  
Dec 2022 **110886RB-I00).**  
Funded by: Ministry of Science and Innovation, Spanish Government  
Principal Investigators: Dr. Emilio Carrizosa and Dr. Rafael Blanquero
- Jan 2020 - **Data Science: from mathematical modelling to mathematical optimization**  
Dec 2022 **(P18-FR-2369).**  
Funded by: Junta de Andalucía  
Principal Investigators: Dr. Emilio Carrizosa and Dr. Rafael Blanquero
- Jan 2019 - **Research and Innovation Staff Exchange Network of European Data Scientists**  
Dec 2022 - **NeEDS.**  
Funded by: European Union's Horizon 2020  
Project Coordinator: Dr. Dolores Romero Morales
- Sep 2016 - **Cost-sensitive classification. A mathematical optimization approach**  
Aug 2018 **(COSECLA).**  
Funded by: BBVA Foundation  
Principal Investigator: Dr. Emilio Carrizosa
- Jan 2016 - **Mathematical Optimization for Data Visualization and Decision Making**  
Dec 2019 **(MTM2015-65915-R).**  
Funded by: Ministry of Economy and Competitiveness, Spanish Government  
Principal Investigators: Dr. Emilio Carrizosa and Dr. Rafael Blanquero

## Awards and Accreditations

- Feb 2022 **Acreditación de Ayudante Doctor.** Agencia Nacional de Evaluación de la Calidad y Acreditación.
- 2021 **Named as one of the 12 Young Women for Operational Research 2021** by The Association of European Operational Research Societies (EURO). <https://www.euro-online.org/web/pages/1654/wisdom>
- Jun 30, 2020 **Special Fellow of the Week**, Marie Skłodowska-Curie actions fellows. <https://es-la.facebook.com/Marie.Curie.Actions/posts/not-one-but-three-msca-rise-fellows-of-the-week-special-edition-today-please-mee/4186106198129548/>

## Academic visits

- 2019 **Copenhagen Business School.**  
Three-month stay Department of Economics. Frederiksberg, Denmark  
Visiting Ph.D. Student
- 2018 - 2019 **Universidad Carlos III de Madrid.**  
One-month stay Department of Statistics. Madrid, Spain  
Visiting Ph.D. Student

## Teaching experience

- 2020/2021 **Department of Statistics and Operations Research of the University of Seville.**  
Statistical Inference, 6 hours (BSc in Mathematics)
- 2019/2020 **Department of Statistics and Operations Research of the University of Seville.**  
Statistical methods for Biochemistry, 8 hours (BSc in Biochemistry)  
Statistics, 12 hours (BSc in Computer Science)  
Statistics, 40 hours (BSc in Physiotherapy and Science Physical Activity and Sports)
- 2018/2019 **Department of Statistics and Operations Research of the University of Seville.**  
Statistical methods for Biochemistry, 8 hours (BSc in Biochemistry)  
Statistics, 12 hours (BSc in Computer Science)  
Introduction to Statistics, 38 hours (BSc in Law, Management and Public Administration)
- 2017/2018 **Department of Statistics and Operations Research of the University of Seville.**  
Statistical methods for Biochemistry, 7 hours (BSc in Biochemistry)  
Statistics, 12 hours (BSc in Computer Science)  
Introduction to Statistics, 30 hours (BSc in Law, Management and Public Administration)  
Statistics, 5 hours (BSc in Health Engineering)

## Membership

- Since Sep 2021 Insight Centre for Data Analytics, Dublin, Ireland.
- Since Mar 2017 Spanish Statistics and Operations Research Society (SEIO)
- Since 2016 Research group FQM - 329 of the University of Seville
- Since Nov 2015 Spanish Network for Mathematics & Industry (math-in)

## Other merits

- Since Nov 2021 Collaborator of the Mathematical Research Institute of the University of Seville (IMUS). University of Seville. Seville, Spain
- Dec, 2019 C1 level of English. Certificate by Trinity College of London.