

Version: March 30, 2026



Alberto Torrejón
Valenzuela

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Spain



Alberto Torrejón Valenzuela

PhD in Mathematics

Statistics, Operations Research and Data Science

About Me

"And the child grew and became strong, and the grace of God was upon him."
Luke 2:40

Education

2021 – 2025, PhD in Mathematics

Specialization in Statistics and Operations Research. Institute of Mathematics of the University of Sevilla, Spain. Dissertation: "Ordered Optimization: Theory, Algorithms and Applications", Supervisors: *Prof. Justo Puerto, Prof. Miguel A. Pozo*. Qualified with "Cum Laude" and "International Doctorate Mention".

2020 – 2021, Master's Degree in Mathematics

Specialization in Statistics and Operations Research. University of Sevilla, Spain.

2015 – 2020, Double Degree in Mathematics and Statistics

University of Sevilla, Spain.

Experience

Jan 2026 – Present, Teaching Assistant

Department of Statistics and Operations Research, University of Sevilla, Spain.

Nov 2025 – Jan 2026, Postdoctoral Researcher

Department of Statistics and Operations Research, University of Sevilla, Spain.

March 2025 – Jun 2025, Research visitor

ESSEC Business School, Cergy, France. Host: *Prof. Ivana Ljubic*.

Sep 2022 – Nov 2025, PhD Student, Spanish Ministry Grant (FPI)

Department of Statistics and Operations Research, University of Sevilla, Spain.

Aug 2021 – Sep 2022, Research Technician

Institute of Mathematics of the University of Sevilla
Developed and implemented mathematical optimization models for complex network design, including computational experiments, within a research project on smart city applications supervised by *Prof. Justo Puerto*.

May 2021 – Jul 2021, Data Scientist Internship

Indorama Ventures Química, San Roque, Cádiz
Contributed to data-driven optimization initiatives aimed at reducing carbon emissions and improving PET production efficiency.

Languages

- Spanish (native)
- English (B2 level)
- French (non-certified)

Programming skills

- R (proficient)
- Python (proficient)
- Gurobi (proficient)
- Microsoft Office (Word, Excel, ...)
- SPSS
- HTML
- Markdown
- Git
- C
- CSS
- Latex
- ...

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Academic Information

Publications

"Revisiting transportation problems under Monge costs with applications to location problems"

Nickel, S.; Puerto, J.; Ramoser, S.; Torrejon, A. (2026) arXiv
(<https://arxiv.org/abs/2602.15151>)

"Fair Vehicle Routing via Bilevel Optimization"

Ljubic, I.; Puerto, J.; Torrejon, A. (2026) Optimization Online
(<https://optimization-online.org/?p=33847>)

"Linear, nested, and quadratic ordered measures: Computation and incorporation into optimization problems"

Blanco, V.; Pozo, M. A.; Puerto, J.; Torrejon, A. (2025) arXiv
(<https://arxiv.org/abs/2503.18097>)

"A fresh view on Least Quantile of Squares Regression based on new optimization approaches"

Puerto, J.; Torrejon, A. (2025) Expert System with Applications
(<https://doi.org/10.1016/j.eswa.2025.127705>)

"Benders Decomposition for the Discrete Ordered Median Problem"

Ljubic, I.; Pozo, Miguel A.; Puerto, J.; Torrejon, A. (2024) European Journal of Operational Research (<https://doi.org/10.1016/j.ejor.2024.04.030>)

"The Ordered Median Tree Location problem"

Pozo, Miguel A.; Puerto, J.; Torrejon, A. (2024) Computers and Operations Research (<https://doi.org/10.1016/j.cor.2024.106746>)

Teaching

2025-2026 (academic year), Probability Theory [Theory + Practice]

120 hours - Degree in Mathematics/Double Degree in Mathematics and Physics/Double Degree in Mathematics and Statistics/Double Degree in Mathematics and Computer Engineering, University of Sevilla, Sevilla, Spain.

2025-2026 (academic year), Statistics [Practice]

6 hours - Degree in Computer Engineering, University of Sevilla, Sevilla, Spain.

2024-2025 (academic year), Statistics [Theory + Practice]

60 hours - Health Engineering Degree, University of Málaga and University of Sevilla, Sevilla, Spain.

Jul 2024, Advanced Linear Models for Biology

18 hours - Institute of Educational Sciences, Sevilla, Spain.

Jun 2024, Introduction to R and Linear Models for Biology

10 hours - Institute of Educational Sciences, Sevilla, Spain.

2023-2024 (academic year), Statistics [Theory + Practice]

60 hours - Health Engineering Degree, University of Málaga and University of Sevilla, Sevilla, Spain.

2022-2023 (academic year), Statistics [Theory + Practice]

60 hours - Health Engineering Degree, University of Málaga and University of Sevilla, Sevilla, Spain.

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Participation in Research Projects

Mathematical Optimization for Machine Learning in Complex Networks: Foundations and Methodological Contributions

Agencia Estatal de Investigación (PID2024-156594NB-C21). Principal Investigators: *Prof. Justo Puerto, Prof. Víctor Blanco* (University of Seville / University of Granada). Funding: €185,000. Period: Sep 2025 – Aug 2029. Role: Research Team Member.

Clinical-Experimental Study on the Influence of Sodium on Cognitive Function in Patients with Neurovascular Disease

Instituto de Salud Carlos III (FIS) / Fundación Progreso y Salud (PI25/00474). Principal Investigator: *Dr. Soledad Pérez Sánchez* (Instituto de Biomedicina de Sevilla, IBiS). Funding: €161,713.75. Period: Sep 2025 – Sep 2028. Role: Research Team Member.

ETNIAS Project: Strategies for the Administration of Neuroprotective Therapies for Ischemic Stroke Identified by Blood Biomarkers in the Seville Ambulance Network

Instituto de Salud Carlos III (FIS), co-funded by FEDER (PI21/01158). Principal Investigator: *Dr. Joan Montaner* (Hospital Universitario Virgen Macarena / IBiS). Funding: €246,840. Period: Jan 2022 – Dec 2024 (initial) / Apr 2024 – Jun 2026 (extension). Role: Collaborator.

Thematic Network: Location Science and Related Problems

Agencia Estatal de Investigación (RED2022-134149-T). Principal Investigator: *Prof. Víctor Blanco* (University of Granada). Funding: €20,000. Period: Jun 2023 – Nov 2025. Role: Research Team Member.

Optimization on Data Science and Network Design Problems: Large-Scale Network Models Meet Optimization and Data Science Tools

Agencia Estatal de Investigación (PID2020-114594GB-C21). Principal Investigators: *Prof. Justo Puerto, Prof. Víctor Blanco* (University of Seville). Funding: €217,115. Period: Sep 2021 – Aug 2025. Role: Research Team Member.

Challenges of Combinatorial Optimization in New Complex Network Models and Data Science

Regional Government of Andalusia (PAIDI 2020, P18-FR-1422). Principal Investigators: *Prof. Justo Puerto, Prof. Antonio M. Rodríguez-Chía* (University of Seville). Funding: €109,750. Period: Jan 2020 – Jan 2023. Role: Research Team Member.

New Results on Design and Optimization Problems in Complex Networks: Applications to Smart City Design

Regional Government of Andalusia (FEDER Andalucía 2014–2020, US-1256951). Principal Investigators: *Prof. Justo Puerto, Prof. José F. López-Blázquez* (University of Seville). Funding: €80,000. Period: Feb 2020 – Apr 2022. Role: Research Team Member.

Communications - Conferences, Workshops and Seminars

"Fair Vehicle Routing via Ordered and Bilevel Optimization"

Mar 16–20, 2026 – Workshop "Optimization on the Second Level", CIRM, Marseille, France. (Coauthors: J. Puerto and I. Ljubić). Oral Communication.

"A Fresh View on Least Quantile of Squares Regression Based on New Optimization Approaches"

Dec 15–18, 2025 – 2025 IMS International Conference on Statistics and Data Science (ICSDS), Seville, Spain. (Coauthor: J. Puerto). Oral Communication.

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"Optimal Least Quantile of Squares"

Dec 11–12, 2025 – 1st International New Researchers Conference (1st INRC), IMUS - Institute of Mathematics of the University of Sevilla, Sevilla, Spain. (Coauthor: J. Puerto). Oral Communication.

"Sorting is all you need"

Nov 5–7, 2025 – 5th Spanish Young Statisticians and Operational Researchers Meeting, IMUS - Institute of Mathematics of the University of Sevilla, Sevilla, Spain. (Coauthor: J. Puerto). Oral Communication.

"The Measure of Everything, a flexible modeling framework for combinatorial problems"

Oct 15–17, 2025 – 5th EUROYoung Workshop, University of Naples Federico II, Naples, Italy. (Coauthors: J. Puerto, I. Ljubić and M.A. Pozo). Oral Communication.

"After stroke, before deterioration: Neuroprotective clues hidden in massive clinical data"

Sep 24–25, 2025 – INNODATA 2025: National Congress on Innovation via Health Data, Seville, Spain. Oral Communication.

"Order then optimize: A flexible modeling framework in Location"

Sep 17–19, 2025 – EWGLA XXX & XIV International Workshop on Locational Analysis, University of Cádiz, Jerez, Spain. Oral Communication.

"Voyageur, il n'y a pas de chemin... on optimise en marchant"

Jun 16, 2025 – Conference Cycle at Colegio de España de París, Paris, France. Invited Speaker.

"The Measure of Everything, a flexible modeling framework in Location Science"

Jun 10–13, 2025 – XLI National Statistics and Operations Research Congress (SEIO), University of Lleida, Lleida, Spain. (Coauthors: J. Puerto, I. Ljubić and M.A. Pozo). Oral Communication.

"Advances in ordered optimization methods"

Jan 13–17, 2025 – VII Congress of Young Researchers (RSME), University of the Basque Country, Bilbao, Spain. (Coauthors: J. Puerto, I. Ljubić and M.A. Pozo). Oral Communication.

"How to be the best? Better call ordering"

Dec 13, 2024 – VI Beer & Science, Faculty of Physics, University of Sevilla, Spain. Invited Speaker.

"Revisiting the Least Quantile of Squares Regression"

Nov 28–29, 2024 – Workshop of the SEIO Transport Working Group, IMUS - Institute of Mathematics of the University of Sevilla, Sevilla, Spain. (Coauthor: J. Puerto). Oral Communication.

"Optimización, solvers y R con ejemplos"

Nov 6–8, 2024 – III R Users Congress (XIV Jornadas de Usuarios de R), IMUS - Institute of Mathematics of the University of Sevilla, Sevilla, Spain. Oral Communication.

"Modeling ordered interactions in Location Problems"

Sep 4–6, 2024 – XIII International Workshop on Locational Analysis and Related Problems, University of Granada, Granada, Spain. (Coauthors: V. Blanco, M.A. Pozo and J. Puerto). Oral Communication.

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"Ordered interactions in Location Problems"

Jun 19–21, 2024 – EWGLA XXIX, Sheffield University Management School, Sheffield, United Kingdom. (Coauthors: V. Blanco, M.A. Pozo and J. Puerto). Oral Communication.

"Ordered interactions in combinatorial problems"

Jun 6–8, 2024 – ECCO XXXVII Conference 2024, KU Leuven, Ghent, Belgium. (Coauthors: V. Blanco, M.A. Pozo and J. Puerto). Oral Communication.

"Connections at optimal prices"

Jan 22–26, 2024 – Biennial Congress of the Royal Spanish Mathematical Society (RSME), UPNA, Pamplona, Spain. (Coauthors: M. Labbé, M.A. Pozo and J. Puerto). Oral Communication.

"Ordered approach to Equity in Location problems"

Jan 17–18, 2024 – Workshop on Resource Optimization 2024, University of Cádiz, Cádiz, Spain. Oral Communication.

"New Advances in the Stackelberg Minimum Spanning Tree Problem"

Nov 13–14, 2023 – Doc-Course on Data Science Closing Workshop, IMAG, University of Granada, Granada, Spain. (Coauthors: M. Labbé, M.A. Pozo and J. Puerto). Oral Communication.

"Optimally pricing connections"

Oct 7–10, 2023 – XL National Statistics and Operations Research Congress (SEIO), UMH, Elche, Spain. (Coauthors: M. Labbé, M.A. Pozo and J. Puerto). Oral Communication.

"Framework for Fairness Analysis in Location Problems"

Sep 7–8, 2023 – XII International Workshop on Locational Analysis and Related Problems, University of Edinburgh, United Kingdom. (Coauthors: J. Puerto, I. Ljubić and M.A. Pozo). Oral Communication.

"Ordered Median Problems and Fairness in Location Theory"

Jun 25–30, 2023 – ISOLDE XVI and EWGLA XXVIII Conference, Kaiserslautern and Baden-Baden, Germany. (Coauthors: I. Ljubić, M.A. Pozo and J. Puerto). Oral Communication.

"Concerning fairness in Location Analysis"

Jun 5–6, 2023 – 3rd EUROYoung Workshop, ESSEC Business School, Cergy, France. (Coauthors: J. Puerto, I. Ljubić and M.A. Pozo). Oral Communication.

"Improving algorithm efficiency for fairness location in optimization"

Feb 6–10, 2023 – VI Congress of Young Researchers (RSME), University of León, León, Spain. (Coauthors: J. Puerto, I. Ljubić and M.A. Pozo). Oral Communication.

"Recent advances on the Discrete Ordered Median Problem"

Dec 22–23, 2022 – Optimization Applications Seminar 2022, IMUS - Institute of Mathematics of the University of Sevilla, Sevilla, Spain. (Coauthors: J. Puerto, I. Ljubić and M.A. Pozo). Oral Communication.

"Ordered median location problems with connection structure"

Nov 9–11, 2022 – Fourth BYMAT Conference: Bringing Young Mathematicians Together, University of Valencia, Spain. (Coauthors: M.A. Pozo and J. Puerto). Oral Communication.

"Optimization, solvers and R with examples"

Sep 28, 2022 – Murcia R Users Association (UMUR) Workshops, Online. Invited Speaker.

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"Location, connection and order in discrete networks"

Sep 14–16, 2022 – EWGLA XXVII, University of Aveiro, Aveiro, Portugal. (Coauthors: J. Puerto and M.A. Pozo). Oral Communication.

"The Ordered Median Tree Location Problem"

Jun 7–10, 2022 – XXXIX National Statistics and Operations Research Congress (SEIO), University of Granada, Granada, Spain. (Coauthors: J. Puerto and M.A. Pozo). Oral Communication.

"Localization, connection, and ordering in discrete network problems"

Mar 10, 2022 – PhD Seminar, IMUS - Institute of Mathematics of the University of Sevilla, Sevilla, Spain. (Coauthors: J. Puerto and M.A. Pozo). Oral Communication.

"The Ordered Median Tree Location Problem"

Dec 21, 2021 – Seminar: Advances on data analysis, logistics and transportation, IMUS - Institute of Mathematics of the University of Sevilla, Sevilla, Spain. (Coauthors: J. Puerto and M.A. Pozo). Oral Communication.

Society and working groups memberships

Member of the EURO Working Group in Location Analysis (EWGLA)

Member of the Institute of Mathematical Statistics (IMS)

Member of the Spanish Society of Statistics, Operations Research and Data Science (SEIO)

Member of the Spanish Mathematical Society (RMSE)

Member of the R Hispano Association

Member of the Local R Users Goup in Sevilla (SevillaR)

Participation in Editorial, Scientific and Organization Committees

Organizing Committee – 1st International New Researchers Conference from IMS

Dec 11–12, 2025. Institute of Mathematics, University of Sevilla, Sevilla, Spain.

Scientific Committee – IV Congreso y XV Jornadas de Usuarios de R

Nov 5–7, 2025. Polytechnic University of Valencia, Valencia, Spain.

Organizing Committee – 5th Spanish Young Statisticians and Operational Researchers Meeting (5th SYSORM)

Nov 5–7, 2025. Institute of Mathematics, University of Sevilla, Sevilla, Spain.

Organizing Committee – III Congreso y XIV Jornadas Usuarios de R

Nov 6–8, 2024. Institute of Mathematics, University of Sevilla, Sevilla, Spain.

Organizing Committee – XIII International Workshop on Locational Analysis and Related Problems

Sep 4–6, 2024. Institute of Mathematics, University of Granada, Granada, Spain.

Organizing Committee – 3rd Sevilla MINLP Workshop

Mar 30–31, 2023. Institute of Mathematics, University of Sevilla, Sevilla, Spain.

Technical Editor of BEIO - Bulletin of SEIO

Apr 1, 2025 - Present. Society of Statistics, Operations Research and Data Science, Spain.

Organization and promotion tasks at the 30th Meeting of the EURO Working Group on Locational Analysis & XIV International Workshop on Locational Analysis

Sep 17–19, 2025. University of Cádiz, Jerez, Spain.

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Organizer of the invited session *Localización (GELOCA3)*

Jun 10–13, 2025. XLI Congreso Nacional de Estadística e Investigación Operativa (SEIO 2025), University of Lleida, Lleida, Spain.

Organizer of the session *CD04: Optimización Matemática*

Jan 13–17, 2025. VII Congreso de Jóvenes Investigadores de la Real Sociedad Matemática Española, Bilbao, Spain.

Organizing member of the seminar series *Seminarios PhD*

2022–23. Institute of Mathematics, University of Sevilla, Sevilla, Spain.

Organizing member of the activity *Los Martes Se Investiga – LMSI*

2022–23. Faculty of Mathematics, University of Sevilla, Sevilla, Spain.

Awards and honors

Feb 2016, 2nd Place in Spanish Math Olympiad - 1st Phase

Royal Spanish Mathematical Society
University of Cádiz, Cádiz.

May 2015, Third Prize in Rhetoric and Argumentation Contest

Edith Stein Institute of Philosophy, Granada.

Outreach, volunteering and other activities

Podcast Creator and Host

Jan 2026 – Present. "El Cajón del Autómata", Canal Sur Radio (Andalucía). Creator of the podcast discussing Mathematics, AI, and Data Science for a general audience. Speaker.

Member of the Outreach Commission

Mar 2026 – Present. Spanish Society of Statistics, Operations Research and Data Science (SEIO), Spain. Member.

Organizer of the round table

Mar 2026. III Conference for Young Researchers from Los Barrios, City Hall of Los Barrios, Cádiz, Spain. Organizer.

Member of the Outreach Commission

Jan 2026 – Present. IMUS - Institute of Mathematics of the University of Sevilla – Maria de Maeztu Excellence Unit, Sevilla, Spain. Member.

Volunteer of the 2025 ICSDS Conference

Dec 15–18, 2025. IMUS - Institute of Mathematics of the University of Sevilla, Sevilla, Spain. Volunteer.

"Win, win, and win... at billiards!"

Nov 11, 2025. Activity "QUIFIBIOMAT 2025", Faculty of Mathematics, University of Sevilla, Sevilla, Spain. Speaker.

"Mathematics for Language and Literature"

Mar 19, 2025. I.E.S. La Campiña (High School), Arahál, Sevilla, Spain. Speaker.

Coordinator for dissemination of scientific activities

Oct 2023 – Feb 2025. IMUS - Institute of Mathematics of the University of Sevilla, Sevilla, Spain. Coordinator.

"Mathematics to pass Language and Literature"

Jan 23, 2025. IMUS program for high school visits, IMUS - Institute of Mathematics of the University of Sevilla, Sevilla, Spain. Speaker.

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Invited speaker at the round table

Dec 5, 2024. II Conference for Young Researchers from Los Barrios, City Hall of Los Barrios, Cádiz, Spain. Speaker.

"Ellipses in a billiard table?"

Nov 11–12, 2024. Open House "QUIFIBIOMAT 2024", Faculty of Mathematics, University of Sevilla, Sevilla, Spain. Speaker.

"Hocus Pocus, ChatGPT!... or Mathematics?"

Mar 13, 2024. 2024 Activity Program, Faculty of Mathematics, University of Sevilla, Sevilla, Spain. Speaker.

"Equitable Models"

Nov 24, 2023. IMUS program for high school visits, IMUS - Institute of Mathematics of the University of Sevilla, Sevilla, Spain. Speaker.

"Mathematics and Literature"

Nov 16, 2023. Open House "QIFIBIOMAT 2023", Faculty of Mathematics, University of Sevilla, Sevilla, Spain. Speaker.

Invited speaker at the round table

Oct 30, 2023. I Conference for Young Researchers from Los Barrios, City Hall of Los Barrios, Cádiz, Spain. Speaker.

"Mathematics and Literature?"

May 3, 2023. Mathematical Outreach Course, I.E.S. Carlos Cano (High School), Los Barrios, Cádiz, Spain. Speaker.

"An Infallible Billiard"

Nov 8, 2021. Open House "QIFIBIOMAT 2021", Faculty of Mathematics, University of Sevilla, Sevilla, Spain. Speaker.

Science Communicator

Sep 2021. European Researchers' Night, University of Sevilla, Sevilla, Spain. Speaker.

Collaborating Student

Academic Years 2015, 2016, 2017 and 2020. QUIFIBIOMAT, Faculty of Mathematics, University of Sevilla, Spain. Volunteer.

Radio Host

Sep 2012 – Jun 2013. Radio program "No me gustan los Lunes" on Radio Sol Los Barrios, Coordinadora Abril, Cádiz, Spain. Speaker.