



Alberto Torrejón
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Alberto Torrejón Valenzuela

Mathematician and Statistician

About me

"There is a difference between a thing and talking about a thing."
Kurt Gödel

Education

2021 - now, PhD Candidate in Statistics and Operations Research

Institute of Mathematics University of Seville, Seville, Spain.
Supervisors: Justo Puerto, Miguel A. Pozo.

2020 - 2021, Master's Degree in Mathematics

University of Seville, Seville, Spain.
Specialization: Statistics and Operations Research.

2015 - 2020, Bachelor's Degree of Mathematics and Statistics

University of Seville, Seville, Spain.

Experience

Mar 2025 - now, Research Stay

ESSEC Business School, Cergy, France.
PhD program research stay under the supervision of Prof. Ivana Ljubic.

Sep 2022 - now, PhD Student

University of Seville, Seville, Spain.
Predoctoral contract from the Spanish Government (FPI)

Aug 2021 - Sep 2022, Researcher

University of Seville, Seville, Spain.
Researcher associated to a project.
Project: "New results on design and optimization problems in complex networks: Applications to the design of smart cities".
Principal researcher: Dr. Justo Puerto

May 2021 - Jul 2021, Data Scientist (internship)

Indorama Venture, San Roque, Cadiz, Spain.
Internship as a data scientist and analyst optimizing emissions.

Languages

Native language

- Spanish

Certified language

- English (B2 level)

Computational skills

Programming languages and other software

- | | | |
|----------|----------|-----------------|
| ◦ R | ◦ Python | ◦ Gurobi solver |
| ◦ Excel | ◦ SPSS | ◦ Git |
| ◦ C | ◦ Latex | ◦ Markdown |
| ◦ SQL | ◦ CSS | ◦ Javascript |
| ◦ JQuery | ◦ PHP | ◦ HTML |



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Academic information

Publications

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

Blanco, V.; Pozo, Miguel A.; Puerto, J.; Torrejon, A. (2025)
(<https://doi.org/10.48550/arXiv.2503.18097>)

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

Puerto, J.; Torrejon, A. (2025)
(<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)
Computer and Operations Research
(<https://doi.org/10.1016/j.cor.2024.106746>)

Teaching

Jul 2024, IX International Mathematics Summer School

1.5 hours - Faculty of Mathematics, Seville, Spain.

Jul 2024, Advanced Linear Models for Biology

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

Jun 2024, Introduction to R and Linear Models for Biology

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

2024-2025 (academic year), Statistics

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

2023-2024 (academic year), Statistics

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

2022-2023 (academic year), Statistics

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

Research Projects Participation

PROYECTO ETNIAS: Estrategias para administración de terapias neuroprotectoras para el ictus isquémico identificado mediante biomarcadores en las ambulancias de Sevilla

(PI21/01158)

Principal researcher: *Dr. Joan Montaner Villalonga*

Optimization on data science and network design problems: Large scale network models meet optimization and data science tools

(PID2020-114594GB-C21)

Principal researcher: *Prof. Justo Puerto, Prof. Víctor Blanco*

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

(P18-FR-1422)

Principal researcher: *Prof. Justo Puerto, Prof. Antonio M. Rodríguez-Chía*



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New Results on Design and Optimization Problems in Complex Networks: Applications to the Design of Smart Cities

(US-1256951) Principal researcher: *Prof. Justo Puerto*

Talks in conferences, seminars, workshops, etc.

"Optimización, solvers y R con ejemplos"

7 nov 2024 - III Congreso y XIV Jornadas de Usuarios de R, Institute of Mathematics University of Seville, Seville, Spain.

"Modeling ordered interactions in Location Problems"

7 sep 2024 - XIII International Workshop on Locational Analysis and Related Problems, University of Granada, Granada, Spain.

"Ordered interactions in Location Problems"

19 jun 2024 - EWGLA XXIX, Sheffield University Management School, Sheffield, United Kingdom.

"Ordered interactions in combinatorial problems"

7 jun 2024 - ECCO XXXVII Conference 2024, KU Leuven, Ghent, Belgium.

"Conexiones con precios óptimos"

22 jan 2024 - Congreso Bienal de la Real Sociedad Matemática Española, Public University of Navarra, Pamplona, Spain.

"Ordered approach to Equity in Location problems"

18 jan 2024 - Workshop on Resource Optimization 2024, University of Cadiz, Cadiz, Spain.

"New Advances in the Stackelberg Minimum Spanning Tree Problem"

14 nov 2024 - International Doc Course Closing Workshop, Institute of Mathematics University of Granada, Granada, Spain.

"Optimally pricing connections"

10 nov 2023 - XL Congreso Nacional de Estadística e Investigación Operativa, University Miguel Hernández of Elche, Elche, Spain.

"Framework for Fairness Analysis in Location Problems"

8 sep 2023 - XII International Workshop on Locational Analysis and Related Problems, University of Edinburgh, Edinburgh, United Kingdom.

"Ordered Median Problems and Fairness in Location Theory"

26 jun 2023 - ISOLDE XVI and EWGLA XXVIII Conference, Karlsruhe Institute of Technology, Kaiserslautern and Baden-Baden, Germany.

"Concerning fairness in Location Analysis"

5 jun 2023 - Third EUROYoung Workshop, ESSEC Business School, Cergy, Paris, France.

"Improving algorithm efficiency for fairness location in optimization"

7 feb 2023 - VI Congreso de Jóvenes Investigadores de la Real Sociedad Matemática Española, University of Leon, Leon, Spain.

"Recent advances on the Discrete Ordered Median Problem"

22 dic 2021 - Seminar "Aplicaciones de la Optimización 2022", Institute of Mathematics University of Seville, Seville, Spain.

"Ordered median location problems with connection structure"

10 nov 2022 - Fourth BYMAT Conference: Bringing Young Mathematicians Together, Polytechnic University of Valencia, Online.

"Optimización, solvers y R con ejemplos"

28 sep 2022 - R Murcia Users Association, Online.



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"Location, connection and order in discrete networks"

16 sept 2022 - EWGLA XXVII, University of Aveiro, Aveiro, Portugal.

"Location, connection and order in discrete network problems."

22 jun 2022 - Second EUROYoung Workshop, Porto School of Engineering, Porto, Portugal.

"The Ordered Median Tree Location Problem"

8 jun 2022 - XXXIX Congreso Nacional de Estadística e Investigación Operativa, University of Granada, Granada, Spain.

"Localización, conexión y orden en problemas de redes discretas"

10 mar 2022 - PhD Seminar, Institute of Mathematics University of Seville, Seville, Spain.

"The Ordered Median Tree Location Problem"

21 dic 2021 - Seminar "Advances on data analysis, logistics and transportation problems on complex networks", Institute of Mathematics University of Seville, Seville, Spain.

Dissemination talks

"Matemáticas para la Lengua y la Literatura"

19 mar 2025 - Highschool La Campiña, Arahal, Seville, Spain.

"Matemáticas para aprobar Lengua y Literatura"

23 jan 2025 - IMUS program of visits from secondary schools and high schools, Intitute of Mathematics of the University of Seville, Seville, Spain.

"¿Elipses en un billar?"

11/12 nov 2024 - Open Days "QUIFIBIOMAT 2024", Faculty of Mathematics, University of Seville, Seville, Spain.

"Magia, Potagia, ¡ChatGPT!... ¿o Matemáticas?"

13 mar 2024 - Program of Activities 2024, Faculty of Mathematics, University of Seville, Seville, Spain.

"Modelos Equitativos"

24 nov 2023 - IMUS program of visits from secondary schools and high schools, Intitute of Mathematics of the University of Seville, Seville, Spain.

"Matemáticas y Literatura"

16 nov 2023 - Open Days "QIFIBIOMAT 2023", Faculty of Mathematics, University of Seville, Seville, Spain.

Invited speaker at the panel discussion

30 oct 2023 - I Jornadas de Jóvenes Investigadores Barreños, Los Barrios City Council, Los Barrios, Cádiz, Spain.

"¿Matemáticas y Literatura?"

3 mayo 2023 - Course of mathematical dissemination, Highschool Carlos Cano, Los Barrios, Cádiz, Spain.

"Un Billar Infalible"

8 nov 2021 - Open Days "QIFIBIOMAT 2021", Faculty of Mathematics, University of Seville, Seville, Spain

Organization in activities

Organizing member of the conference "5th Spanish Young Statisticians and Operational Researchers Meeting (SYSORM)"

Location: Institute of Mathematics University of Seville, Seville, Spain.

Date: 05/11/2024-07/11/2025



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Organizing member of the conference "III Congreso y XIV Jornadas de usuarios de R"

Location: Institute of Mathematics University of Seville, Seville, Spain.

Date: 06/11/2024-08/11/2024

Organizing member of the workshop "XIII International Workshop on Locational Analysis and Related Problems"

Location: Institute of Mathematics University of Granada, Granada, Spain.

Date: 04/09/2024-06/09/2024

Organizing member of the workshop "3rd Sevilla MINLP Workshop"

Location: Institute of Mathematics University of Seville, Seville, Spain.

Date: 30/03/2023-31/03/2023

Organizing member of the seminars "Seminarios PhD"

Location: Institute of Mathematics University of Seville, Seville, Spain.

Date: 2022-23 (full academic year).

Organizing member of the seminars "Los Martes Se Investiga – LMSI"

Location: Faculty of Mathematics of the University of Seville, Seville, Spain.

Date: 2022-23 (full academic year).

Further training

sep 2023 - nov 2023, Doc-Course on Data Science

Institute of Mathematics University of Granada, Granada, Spain.

jan 2023, Winter School on Data Science, Optimization and Operations Research

École Polytechnique de Lausanne, Zinal, Switzerland.

nov 2022, Metaheuristic Algorithm Design for Combinatorial Optimization Problems Course

Institute of Mathematics University of Seville, Seville, Spain.

oct 2022, Portfolio Optimization Course

Institute of Mathematics University of Seville, Seville, Spain.

sep 2022, Seminar: A Convolutional Persistence Transform

Institute of Mathematics University of Seville, Seville, Spain

sep 2022, Seminar: Machine Learning & Drug Discovery

Institute of Mathematics University of Seville, Seville, Spain

may 2022, Intersection of computer science, data science, atmospheric science and climate

Institute of Mathematics University of Seville, Seville, Spain.

oct 2020, Seminar on Structural Analysis of Complex Networks

Institute of Mathematics University of Seville, Seville, Spain.

jun 2019, C Programming Certificate

Centro de Formación Permanente, University of Seville, Seville, Spain.

feb 2019, Seminar on Quantitative Finance

Department of Statistics and Operations Research.

Faculty of Mathematics, University of Seville, Seville, Spain.

sept 2015 - jun 2016, Internal Student

Department of Algebra, Faculty of Mathematics, University of Seville, Seville, Spain.



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Achievements

feb 2016, Runner-up in the Mathematical Olympiad of Cádiz

Royal Spanish Mathematical Society.

may 2015, Third prize in the II rhetoric and argumentation contest

Organized by the Edith Stein Institute of Philosophy

Volunteering

2015-2016-2017, Disseminator student

Faculty of Mathematics, University of Seville, Seville, Spain.

Disseminating student representing the Faculty of Mathematics.

sept 2012 - jun 2013 Radio caster

Coordinadora Abril, Los Barrios, Cadiz, Spain.

Collaborator of the local radio program "I don't like Monday" on RadioSol.