Javier **González Delgado**

Mathematician - Statistician

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"It is true that a mathematician who is not somewhat of a poet, will never be a perfect mathematician"

Professional background

McGill University   *Montréal (Canada)*

POSTDOCTORAL RESEARCHER   *Dec. 2023 - Present*

Research conducted in the Simon Gravel group at the Department of Human Genetics.

Academic background

University of Toulouse III - Paul Sabatier   *Toulouse (France)*

PHD IN APPLIED MATHEMATICS   *Oct. 2020 - Oct. 2023*

- Manuscript: Statistical methods for the structural analysis of highly flexible proteins. [HAL]
- Supervised by Pierre Neuvial at the Toulouse Institute of Mathematics (IMT) and by Juan Cortés at the Laboratory for Analysis and Architecture of Systems (LAAS-CNRS).
- Funded by the LabEx CIMI.

University of Grenoble-Alpes   *Grenoble (France)*

MASTER IN STATISTICS AND DATA SCIENCE   *Sep. 2019 - Aug. 2020*

- Grade Point Average: 16.4/20.

University of Oviedo   *Oviedo (Spain)*

BACHELOR IN MATHEMATICS   *Sep. 2014 - Jul. 2019*

- Grade Point Average: 8.39/10.
- Bachelor's Thesis in Geometry and Topology of Manifolds.

University of Oviedo   *Oviedo (Spain)*

BACHELOR IN PHYSICS   *Sep. 2014 - Jul. 2019*

- Grade Point Average: 8.576/10.
- Bachelor's Thesis in C^* Algebras and their applications to Quantum Mechanics.

University of Grenoble-Alpes   *Grenoble (France)*

ERASMUS+ MOBILITY PROGRAMME   *Sep. 2016 - Jun. 2017*

- Courses in Licence 3 Physique and Master 1 Physique.

Publications and communications

PREPRINTS AND SUBMITTED MANUSCRIPTS

· González-Delgado J, Bernadó P, Neuvial P, Cortés J: *WARIO: Weighted families of contact maps to characterize conformational ensembles of (highly-)flexible proteins*, 2024. [preprint]

· González-Delgado J, Cortés J, Neuvial P: *Post-clustering Inference under Dependency*, 2023 arXiv:2310.11822. [arXiv]

· González-Delgado J, Mier P, Bernadó P, Neuvial P, Cortés J: *Statistical tests to detect differences between codon-specific Ramachandran plots*, 2022 bioRxiv 2022.11.29.518303. [bioRxiv]

Journal papers

[EJS] González-Delgado J, González-Sanz A, Cortés J, Neuvial P: *Two-sample goodness-of-fit tests on the flat torus based on Wasserstein distance and their relevance to structural biology*, Electron. J. Statist., 17(1): 1547–1586, 2023. [url]

[JMB] González-Delgado J, Sagar A, Zanon C, Lindorff-Larsen K, Bernadó P, Neuvial P, Cortés J: *WASCO: A Wasserstein-based statistical tool to compare conformational ensembles of intrinsically disordered proteins*, Journal of Molecular Biology, 435(14): 168053, 2023. [url]

[JSB] González-Delgado J, Bernardó P, Cortés J, Neuvial P: *Statistical proofs of the interdependence between nearest neighbor effects on polypeptide backbone conformations*. Journal of Structural Biology, 214(4): 107907, 2022. [url]

Communications

School lectures

WASCO: A Wasserstein-based statistical tool to compare conformational ensembles of intrinsically disordered proteins
- Lecture and practical session in Algorithms in Structural Bioinformatics (AlgoSB) winter school: "Intrinsic Disorder in Proteins". Institute of Scientific Studies of Cargèse, Corsica, France. November 2022.

Conferences and seminars

Post-clustering inference under dependency
- International Seminar on Selective Inference. Online, Feb 2024.
- IRMAR (Institut de Recherche Mathématique de Rennes) statistics seminar. Rennes, France. Oct 2023.

Statistical methods for the investigation of highly-flexible proteins
- Centre de Biologie Structurale (CBS) seminar. Montpellier, France. May 2023.

WASCO: A Wasserstein-based statistical tool to compare conformational ensembles of intrinsically disordered proteins
- GGMM (French Graphical and Molecular Modelling Group) 2023 - Young Modellers Conference, Toulouse, France. May 2023.

Goodness-of-fit tests on the flat torus based on Wasserstein distance and their relevance to structural biology
- Journée toulousaine "Statistique pour la Biologie", INRAE center Occitanie-Toulouse. November 2022.
- 14th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2021), King's College London, December 2021.
- IRMAR PhD Probability and Statistics seminar, Rennes, France, November 2021.
- GdR ISIS meeting on Optimal Transport and Statistical Learning, Institut Henri Poincaré, November 2021.
- 52th Journées de Statistiques of the French Society of Statistics (SFdS), Côte d'Azur University, Nice, France, June 2021.

Scientific dissemination

- How to estimate cancer survival (an overview). Dissemination for non-statisticians. IMT PhD seminar, Toulouse, France, March 2022.

Schools and workshops

Algorithms in Structural Bioinformatics (AlgoSB) winter school.	*I.S.S. of Cargèse (France)*
Intrinsic Disorder in Proteins	*November 2022*
Algorithms in Structural Bioinformatics (AlgoSB) winter school.	*CIRM, Marseille (France)*
Machine Learning Methods to Analyze and Predict Protein Structure, Dynamics and Function	*November 2021*

Further research experience

International Agency for Research on Cancer (World Health Organization)	*Lyon (France)*
Master Biostatistics Internship 'Net survival and cohort data'	*Mar. 2020 - Aug. 2020*

Supervised by Vivian Viallon (IARC-WHO), Hadrien Charvat (IARC-WHO) and Grégoire Rey (INSERM).

University of Grenoble-Alpes and CHU Grenoble-Alpes (Centre Hospitalier Universitaire) *Grenoble (France)*

RESEARCH PROJECT ON CARDIOLOGICAL PARAMETERS ANALYSIS AND PERFORMANCE MODELING OF UT4M RUNNERS. *Oct. 2019 - Feb. 2020*

Supervised by Adeline Leclercq Samson (LJK, UGA).

Advising

MASTER (M1) INTERNSHIP (4MA INSA TOULOUSE)

- Flavie Kolb. *Construction et analyse statistique d'une base de données exhaustive de fragments à trois résidus extraits de structures protéiques.* June 2022 - September 2022. With Christophe Zanon (LAAS) and Juan Cortés (LAAS).

Teaching

Toulouse III - Paul Sabatier University *Toulouse (France)*

BACHELOR IN MATHEMATICS

- Set theory I. Tutorials (TD). 28h, 2022 - 2023.
- Linear Algebra I. Lectures (Cours): 28h, Lectures and tutorials (Cours-TD): 64h. 2020 - 2023.
- Mathematics I. Tutorials (TD). 60h, 2020 - 2022.

BACHELOR IN STATISTICS AND DECISION INFORMATICS

- Statistical Inference. Practical works (TP). 25h, 2021 - 2023.

BACHELOR IN HIGHER EDUCATION AND RESEARCH ON MATHEMATICS

- Topology. Teaching assistant for tutorials (Colles). 2h, 2020 - 2021.

Other activities

Review activities

- **For journals in Statistics**: Electronic Journal of Statistics (2022).
- **For journals in Biology**: Protein Science (2023).

Local scientific animation

- Co-organizer of the IMT PhD seminar. September 2021 - June 2023. With Viviana Grasselli and Corentin Kilque.
- Co-organizer of the IMT PhD Statistics and Optimization seminar. September 2021 - June 2023. With Dominique Bontemps.
- Co-manager of *Les maths à Toulouse* Twitter account (IMT, EUR MINT and Labex CIMI). September 2021 - June 2023. With Viviana Grasselli and Isabelle Guichard.

Honors & Awards

2014	**Awarded**, Secondary school distinction award. 9.94/10.	*Avilés (Spain)*
2014	**Awarded**, Merit-based grant after University entrance examination. 13.464/14.	*Asturias (Spain)*

Programming skills

Programming languages	Python, R.
Platforms	Windows, Ubuntu.
Tools	LaTeX, Office Suite.

Language skills

Spanish	Mother tongue
English	C1 level certificate (CEFR)
French	C1 level certificate (CEFR)