HERNAN IRIARTE

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💼 WORK EXPERIENCE

2022-July 2024	**Postdoctoral Researcher**, The University of Texas at Austin 📍 *USA*
2021-2022	**Temporary Teaching and Research Assistant (ATER)**, Sorbonne Université 📍 *France*

🎓 EDUCATION

2022	**PhD in Mathematics**, École Polytechnique / Sorbonne Université. 📍 *France*
2018	**Master 2 in Mathematics**, Sorbonne Université. 📍 *France*
2017	**Master in Mathematics**, Instituto de Matemática Pura e Aplicada (IMPA). 📍 *Brazil*
2017	**Bachelor in Applied Mathematics, Specialization in Computer Science**, Universidade Federal de Rio de Janeiro. 📍 *Brazil*
2013-2014	**Engineering program** (First two years), Universidad de Chile. 📍 *Chile*

🔷 SHORT TRAINING AND BOOTCAMPS

2024 Sept	**SPAR : Supervised Program for AI Alignment**. *A 3-month research workshop on a project related to interpretability in artificial intelligence models. Mentor : Juan Felipe Cerón Uribe, OpenAI.* **Mentor :** Lucius Bushnaq, Apollo Research. **Project :** *Approximating the Local Learning Coefficient in Neural Networks. See here.*
2024 July	**AI Safety Fundamentals.** A 3-month course on new techniques in artificial intelligence and its risks, Blue-Dot Impact. **Mentor :** Juan Felipe Cerón Uribe, OpenAI.

📅 EVENT MANAGEMENT

> **2023 :** Co-organizer of the Geometry Seminar.   Department of Mathematics at the University of Texas at Austin. Austin, USA.

> **2018-22 :** Co-organizer of the REGA Seminar (Réseau des étudiants en Géométrie Algébrique).   Institut Henri Poincaré, Paris, France

👤 DIRECTED THESES AS AN ADVISOR

> **2022 : Jaime Ignacio Tobar.** Thesis for the degree of Mathematical Engineer, USACH. Highest honors.
> **Area :** Applied mathematics and Microeconomics.
> **Title :** Higher Rank Tropical Geometry For Analyzing Demand In Case Of Disturbances. (Original : Geometría Tropical de Rango Mayor Para Analizar la Demanda Ante Perturbaciones.)

💻 CODING SKILLS

> Python, C++, PyTorch, TensorFlow, JAX, Matlab, Sagemath, Polymake, LaTeX, Jupyter notebooks, R, SQL, HTML, CSS, JavaScript, Typescript, Jekyll, Git.

📚 PUBLICATIONS

> **2023 :** Higher Rank Polyhedral Geometry, Preprint
> **2023 :** Geometry of Higher Rank Valuations. joint with Omid Amini, submitted to Annales de l'institut Fourier
> **2022 :** Polyhedral, Tropical and Analytic Geometry of Higher Rank, PhD thesis

⭐ AWARDS AND SCHOLARSHIPS

> **2022-24 :** Postdoctoral Fellowship, National Science Foundation NSF, United States.
> **2018-21 :** PhD Scholarship, Fondation Sciences Mathématiques de Paris, France
> **2017-18 :** Master's Scholarship, Fondation Sciences Mathématiques de Paris, France
> **2014-16 :** Master's Scholarship, Commission Nationale de Recherche, CNPq, Brasil.
> **2013 :** Summer Program Scholarship, Instituto de Matemática Pura e Aplicada. IMPA.

- ❯ **2012-13 :** Andrónico Luksic Scholarship for Mathematical Talent, Andrónico Luksic Foundation.
- ❯ **2012 :** First Place and Gold Medal, National Mathematics Olympiad, Chilean Mathematical Society.
- ❯ **2012 :** Gold Medal, School Mathematics Championship CMAT.
- ❯ **2012 :** Top National Score in Mathematics, University Selection Test, DEMRE.

✈ ACADEMIC VISITS

- ❯ **2023 :** 5 month academic visit to the mathematics department of Stanford University for the Spring semester. Invited by Ravi Vakil.   Palo Alto, California, USA.
- ❯ **2021 :** Academic visit during November to the mathematics department of the Technical University of Berlin. Invited by Michael Joswig.   Berlin, Germany.

◔ TALKS

- ❯ **2024 :** Joint Mathematics Meetings 2024
  Weak continuity on the variation of Newton-Okounkov bodies.
- ❯ **2023 :** SIAM Texas-Louisiana. Lafayette, LA, United States.
  Higher Rank Tropical Geometry in Microeconomics
- ❯ **2023 :** Conference : AGREGA 2. Universidad Santa Maria, Valparaiso, Chile.
  Weierstrass cycles and their equidistribution
- ❯ **2023 :** Conference : Newton-Okounkov Bodies and Tropical Geometry. Goethe University Frankfurt, Alemania.
  Geometry with higher rank valuations
- ❯ **2023 :** Seminar on Algebra and Combinatorics, Tulane University, New Orleans, USA.
  Higher Rank Tropical Geometry
- ❯ **2023 :** Seminar on Nonlinear Algebra, Max Planck Institute, Leipzig, Alemania.
  Higher rank tropical and polyhedral geometry
- ❯ **2023 :** Stanford Algebraic Geometry Seminar. Stanford University, Palo Alto, USA.
  Weak variation of Newton-Okounkov bodies
- ❯ **2023 :** Algebra Seminar. University of California Los Angeles, Los Angeles, USA.
  Geometry with higher rank valuations
- ❯ **2022 :** Conference : Non-Archimedean and Tropical Geometry. University of Regensburg, Regensburg, Alemania
  Higher Rank Tropical Geometry
- ❯ **2022 :** Seminario de Geometría Algebraica. Universidad Catolica de Chile, Santiago, Chile
  Geometría con valuaciones de rango superior
- ❯ **2022 :** Geometry Seminar, The University of Texas at Austin, Austin, USA.
  Geometry with higher rank valuations
- ❯ **2022 :** Séminaire DGeCo. Sorbonné Université, Paris, France.
  Higher rank polyhedral geometry
- ❯ **2022 :** Séminaire de géométrie, École Polytechnique, Palaiseau, France.
  Higher rank polyhedral geometry and applications
- ❯ **2021 :** Réseau des Étudiants en Géométrie Algébrique. Institut Henri Poincaré, Paris, France
  Geometry of Higher Rank Valuations
- ❯ **2021 :** Student Algebraic Geometry and Foliations Seminar. IMPA, Rio de Janeiro, Brasil.
  Geometry of Higher Rank Valuations

✚ OUTREACH AND VOLUNTEERING

- ❯ **Since 2017 :** Coach of the Chilean Mathematics Team for International Olympiads, Chilean Mathematical Society.
- ❯ **2021 :** Talk "Théorie des graphes et coloration des cartes", Science Festival, École Polytechnique, Palaiseau, France.
- ❯ **2019 :** Talk "Cortando poliedros, el Tercer problema de Hilbert", Alicante del Sol School, Santiago, Chile.
- ❯ **2017 :** Talk "Clasificando teselaciones", Mathematics Week, Don Orione School, Quintero, Chile.

💬 LANGUAGES

Spanish : Native   **English :** Fluent   **Portuguese :** Advanced   **French :** Advanced.