Andrés Casillas García de Presno

AndresCasillas99 | andres-casillas-gdp | https://andrescasillas99.github.io | a.casillasgdp@gmail.com | +49 157 54942159

Education

2023 – 2025 **Rheinische Friedrich-Wilhelms-Universität Bonn, Germany**, *M.Sc. Mathematics with minor in Computer Science* (GPA: 9.70 in Mexican grading system)
Thesis: *Machine Learning-Based Control Methods for an Optimal AMG Setup Strategy with Massive Distributed Parallelism*, defended with highest grade.

2019 – 2023 **National Autonomous University of Mexico**, *B.Sc. Mathematics* (GPA: 9.93) Thesis: *A Number-Theoretical Approach to Cellular Automata*, defended with honors.

Awards & Honors

2025 **Sotero Prieto Medal** for the best bachelor's thesis in mathematics in Mexico.
2024 **Gabino Barreda Diploma** for the second best class GPA.
2022-2024 **Academic Excellence Scholarship** from UNAM's Mathematical Institute (IMATE).
2020-2022 **TELMEX-Telcel Scholarship** for outstanding students.

Work Experience

Fraunhofer Institute for Algorithms and Scientific Computing, Bonn, Germany Sept 2024 – present
Research Assistant: Used several Machine Learning techniques to speed up algorithms for solving large sparse systems of equations arising in mathematical models and simulations. Improved average routine's performance by 41% over default settings.

National Autonomous University of Mexico - Faculty of Science, CDMX, Mexico Sept 2021 – June 2023
Teaching Assistant: Taught Linear Algebra I, Higher Algebra I-II, and Calculus I-IV for students enrolled in mathematics, computer science, and actuarial science. Learned to organize and transmit complex ideas clearly.

Projects

Parameter Importance Analysis (Python): Executed a workflow training several ML models on a large matrix dataset, selected the best learner, and predicted optimal parameter subsets for fast solvers.
Lovász Theta Number Calculator (Julia, Jupyter): Julia-based tool approximating Lovász Theta Number for graphs using combinatorics, semidefinite programming, Monte-Carlo, and optimization.
Poisson Problem Galerkin Method (Python, Jupyter): Solved weak Poisson problem on unit square with zero boundary using Galerkin's method, including plots and error computations.
Rule 30 Random Number Generator (Julia, Jupyter): Efficiently computed large values of the central column of Wolfram's Rule 30 to generate random numbers, including statistical analysis.

Skills

Technical Python, Julia, Jupyter, HTML, GitHub, Latex, Linux, Copilot, Microsoft 365.
Languages Spanish (native), English (C2), German (B1), French (A2).

Publications

Casillas-García de Presno, A., Godínez, F. (2022). Construction of empirical models via stepwise fitting of a fractional Newtonian cooling law. Fractals, 30(3), 2250054. https://doi.org/10.1142/S0218348X22501225