

# Andrés Casillas García de Presno

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## EDUCATION

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- 2023 – 2025 **Rheinische Friedrich-Wilhelms-Universität Bonn, Germany**, *M.Sc. Mathematics with minor in Computer Science* (GPA: 3.8)  
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: 4.0)  
Thesis: *A Number-Theoretical Approach to Cellular Automata*, defended with honors.

## AWARDS & HONORS

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- 2025 **Sotero Prieto Medal** for the best bachelor's thesis in mathematics in Mexico.
- 2024 **Gabino Barrera 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

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- 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

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- 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

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

## PUBLICATIONS

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- 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>