

# 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 Barreda Diploma** for the second best class GPA.  
2022-2024 **Academic Excellence Scholarship** from UNAM's Mathematical Institute (IMATE).  
2020-2022 **TELME-X-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 Languages** 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>