

CELIA RUBIO-MADRIGAL

 celrm.github.io

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 [celia-rubio-madrigal](#)

I am a PhD candidate at CISPA. My work addresses generalization challenges in GNNs by studying the dual role of graphs as both data and computation structures. I hold two degrees in Mathematics and Computer Science from Universidad Complutense de Madrid, and a master's from Strathclyde with a "la Caixa" Foundation Fellowship.

EXPERIENCE



Doctoral researcher – *CISPA Helmholtz Center for Information Security* **2023-now**

– Group:  Relational Machine Learning Lab. Supervisor: Dr. Rebekka Burkholz.

Teaching assistant / Laboratory demonstrator – *University of Strathclyde* **2023**

– “CS310 Foundations of AI” for Year 3 BSc Computer Science. Lecturer: Dr. Andrew Abel.

Consultant Developer Intern – *Guidewire Software* **2021**

EDUCATION



PhD in Computer Science – *Universität des Saarlandes (Saarbrücken, Germany)* **2023-now**

MSc in Advanced CS with AI – *University of Strathclyde (Glasgow, UK)* – 8.57/10 (with Distinction) **2022-23**

– Fully funded by  "la Caixa" Foundation Postgraduate Fellowship. Earned the Dept. Best Overall Prize.


BSc in Computer Science – *Universidad Complutense de Madrid (Spain)* – 9.16/10 **2017-22**

– Secretary of the Computer Science Student Council and member of the Faculty Board 2020-22.

BSc in Mathematics – *Universidad Complutense de Madrid (Spain)* – 9.08/10 **2017-22**


PUBLICATIONS







★ GNNs getting ComFy: Community and feature similarity guided rewiring. Celia Rubio-Madrigal*, Adarsh Jamadandi*, Rebekka Burkholz. 13th International Conference on Learning Representations (ICLR), 2025. 

★ Spectral graph pruning against over-squashing and over-smoothing. Adarsh Jamadandi*, Celia Rubio-Madrigal*, Rebekka Burkholz. 38th Conference on Neural Information Processing Systems (NeurIPS), 2024. 

• Rendering string diagrams recursively. Celia Rubio-Madrigal, Jules Hedges. arXiv, 2024. 

• Analysis of a neural network for the identification of complex Boolean functions. Celia Rubio-Madrigal. Bachelor's thesis at Universidad Complutense de Madrid, 2022. 

• Serialismo y matemáticas (I)  (II)  (III)  (IV) . Celia Rubio-Madrigal. DivulgaMAT, 2019.

INVITED AND CONTRIBUTED TALKS



- International Conference on Network Science (NetSci): *Maastricht, Netherlands.* Jun 2025
- Seminar of the TUWien ML Research Unit 🌐 – visit and invited talk: *Vienna, Austria.* May 2025
- Cohere For AI 🌐 – invited community talk: 📺 Feb 2025
- Helmholtz AI Conference: AI for Science 🌐 (HAICON): *Düsseldorf, Germany.* Jun 2024

AWARDS



- Best Overall Performance Prize: *Top student in MSc Advanced CS at University of Strathclyde.* Oct 2023
- Nova III Student List: 🌐 *Top 10 talents under 25 in Computer Science in Spain.* Mar 2023
- 9th Heidelberg Laureate Forum: 📺 *HLFF Spotlight*, 📺 *Tribuna Complutense.* Sep 2022
- "la Caixa" Foundation Postgraduate Fellowship: 📺 *El País*, 📺 *El Plural*, 📺 *TeleMadrid.* Jun 2022

Undergraduate and before

- Blas Cabrera Summer School for top undergrads in Spain: 🌐 *Menéndez Pelayo International University (UIMP).*
- Becas de Excelencia: *Excellence Grants for undergraduate students from Com. Madrid (2100€).*
- Premio Extraordinario de Bachillerato: 🌐 *Top 25 in general-content exam in Com. Madrid (1000€).*
- Leading Program "la Caixa": *Top 20 university admission marks in Com. Madrid.*
- Baccalaureate of Excellence IES San Mateo: *10/10 and Honours.*

OTHER PROJECTS



- European Girls' Mathematical Olympiad (EGMO)** – *Organization and participation.* 🌐 2017-now
- Permanent member of IT with Joseph Myers: at 2025 Kosovo, 2024 Georgia, and 2023 Slovenia.
 - Deputy Leader of Spain: at EGMO 2022 Hungary and PAGMO 2021.
 - Contestant representing Spain: at EGMO 2017 Switzerland.
- Departmental collaboration grant** – *Ministerio de Educación, Universidad Complutense de Madrid* 2021-22
- Grant: Beca de colaboración from Ministerio de Educación at Dept. Software Systems and Computation.
 - Identification of boolean functions that need big circuits to be computed, with Ismael Rodríguez Laguna.
- Introduction to research ICMAT-Severo Ochoa grant** – *Instituto de Ciencias Matemáticas (ICMAT)* 2021
- Grant: Ayudas de introducción a la investigación ICMAT-Severo Ochoa.
 - Differential geometry methods in Machine Learning applications, with David Martín de Diego. 📺
- LaTeX package: ddphonism** – *Contained in MiKTeX and TeXLive music bundles.* </> 2019
- Professional Music Degree in Baroque Recorder** – *Conservatorio Profesional de Música Arturo Soria* 2006-16