

CELIA RUBIO MADRIGAL

 celrm.github.io

 celia-rubio-madrigal

I am a first year PhD candidate by Universität des Saarlandes, and a researcher at the Relational Machine Learning Lab at the CISPA Helmholtz Center for Information Security, advised by Rebekka Burkholz.

In the past, I have enjoyed applied category theory (string diagrams), complexity theory (P vs. NP), and mathematical music theory (the twelve-tone system). I have been a mathematical olympian and leader at EGMO, a competitive programmer at SWERC, a LaTeX package developer, and a Baroque recorder player.

EDUCATION

PhD in Computer Science · *Universität des Saarlandes (Saarbrücken, Germany)* 2023 – present


MSc in Advanced Computer Science with AI · 88.8/100 · *University of Strathclyde (Glasgow, UK)* 2022 – 2023

- Fully funded by a Postgraduate Fellowship from “la Caixa” Foundation. 
- Dissertation:** “Rendering string diagrams with Haskell’s Diagrams library”. Supervisor: Jules Hedges.

BSc in Mathematics · 90.8/100 · *Universidad Complutense de Madrid (Madrid, Spain)* 2017 – 2022

- Dissertation:** “Search for complex Boolean functions: constructions through monotony, and connection between repetitiveness and endogamy”. Supervisors: Ismael Rodríguez Laguna, Narciso Martí Oliet.
- Activities:** Member of the peer mentoring program at the Faculty of Mathematics.

BEng in Computer Science · 91.6/100 · *Universidad Complutense de Madrid (Madrid, Spain)* 2017 – 2022

- Dissertation:** “Analysis of a neural network for the identification of complex Boolean functions”. Supervisors: Ismael Rodríguez Laguna, Daniel Loscos Barroso. 
- Activities:** Member of the Faculty Board of Computer Science. Secretary of the Students’ Union at the Faculty of CS.

EXPERIENCE

Doctoral researcher · *CISPA Helmholtz Center for Information Security (Saarbrücken, Germany)* Oct 2023 – present

- Group:** Relational Machine Learning Lab. Advisor: Rebekka Burkholz.

Teaching assistant / Laboratory demonstrator · *University of Strathclyde (Glasgow, United Kingdom)* Jan 2023 – Apr 2023

- Course:** “CS310 Foundations of Artificial Intelligence” for Year 3 BSc in Computer Science (6h/week). Lecturer: Andrew Abel.

Departmental collaboration project · *Universidad Complutense de Madrid (Madrid, Spain)* Nov 2021 – Jun 2022

- Project:** “Identification of boolean functions that need big circuits to be computed”. Supervisor: Ismael Rodríguez Laguna.
- Grant:** Beca de colaboración from Ministerio de Educación at the Department of Software Systems and Computation (SIC).





Mathematics research project · *Instituto de Ciencias Matemáticas (CSIC-ICMAT) (Madrid, Spain)* Sep 2021 – Nov 2021

- Project:** “Differential geometry methods in Machine Learning applications”. Supervisor: David Martín de Diego.
- Grant:** Ayudas de introducción a la investigación ICMAT–Severo Ochoa.

Consultant Developer intern · *Guidewire Software (online)* Jul 2021 – Sep 2021

PROJECTS

Articles in Music and Mathematics · *DivulgaMAT (online journal)* Sep 2019 – Dec 2019

- Independent research about the twelve-tone composition system and its mathematical ties to group theory.
- Series of four published articles: “Serialismo y matemáticas (I)” , “(II)” , “(III)”  and “Re-escalando música” .

LaTeX package: ddphonism · *The Comprehensive TeX Archive Network (CTAN)*  Aug 2019 – Sep 2019

- \LaTeX package for twelve-tone diagrams, including twelve-tone matrices, clock diagrams and permutation rows.
- Contained in TeXLive and MiKTeX, so you most likely have it installed on your computer.

LANGUAGES

Spanish · (Native)

English · TOEFL iBT: 110/120 · (Reading: 30/30 · Listening: 30/30 · Writing: 26/30 · Speaking: 24/30)

Dec 2021

German · Goethe-Zertifikat B1 · (Lesen: 83/100 · Hören: 80/100 · Schreiben: 79/100 · Sprechen: 90/100)

Sep 2017

CONFERENCES

9th Heidelberg Laureate Forum · HLF Foundation (Heidelberg, Germany)

Sep 2022

- 200 international young researchers in mathematics and computer science interact with the laureates of the disciplines.
- Personal interview for their series HLFF Spotlight: 9th HLF “Inspiring Women in STEM – Celia Rubio Madrigal”. [🔗](#)
- Front page interview for Tribuna Complutense: “Celia Rubio Madrigal, an example of a woman who succeeds in STEM”. [🔗](#)

13th and 14th JAE School of Mathematics · ICMAT (Madrid, Spain)

Sep 2020 and Jul 2021

7th Mathematics and Computation in Music · Universidad Politécnica de Madrid (Madrid, Spain)

Jun 2019

4th Lambda World Cádiz · An International Functional Programming Conference (Cádiz, Spain)

Oct 2018

ACTIVITIES





Deputy Leader of the Spanish team · Female Mathematics Olympiads (international)

2021 – present

- 2022 European Girls' Mathematical Olympiad (EGMO) in Eger, Hungary.
- 2021 Pan-American Girls' Mathematical Olympiad (PAGMO).

Volunteering at math olympiads · Real Sociedad Matemática Española (RSME)

2018 – present

- 2023 EGMO Staff – IT team member in Portorož, Slovenia.
- Jury at the local phases of the 57th, 58th and 59th Olimpiada Matemática Española (OME) in Madrid.
- Guide at the 23rd Iberoamerican Mathematical Olympiad (IbMO) in La Rábida and Monte Gordo.
- YouTube videos for the math community: “ICMAT Introduction to Research” , “Olympic inspirations” , “Science is written with an A” , and an intervention at the 20th anniversary of ESTALMAT Madrid .

SWERC – Competitive Programming · Southwestern Europe Regional Contest (Milan, Italy) [🔗](#)

Apr 2022

EGMO participant for Spain · European Girls' Mathematical Olympiad (Zürich, Switzerland) [🔗](#)

Apr 2017

Music Conservatory in Recorder · Conservatorio Profesional de Música Arturo Soria (Madrid, Spain)

2006 – 2016

HONOURS AND AWARDS

Nova III Student List · Nova Talent (Spain)

Mar 2023

- Top 10 talents under 25 in Computer Science in the country of Spain. [🔗](#)

6th Aula de Verano Blas Cabrera · Universidad Internacional Menéndez Pelayo (Santander, Spain)

Aug 2022

- Academic seminar for graduates with the best undergraduate records in the country of Spain.

Excellence Grants · Gobierno de la Comunidad de Madrid (Madrid, Spain)

2018 – 2022

- Four times awarded the “Beca de Excelencia” for undergraduates (2100€).

Baccalaureate Extraordinary Award Madrid · Ministerio de Educación (Madrid, Spain)

Jul 2017

- Top 25 at the “Premio Extraordinario de Bachillerato” exam in Comunidad de Madrid (1000€).

University Admission Marks: 13.65/14 · Selectividad · PAU · EVAU (Madrid, Spain)

Jun 2017

- “Leading Program LaCaixa”: Top 20 admission marks in Comunidad de Madrid.
- Top 100 admission marks at Universidad Complutense de Madrid.

Baccalaureate of Excellence with Honours · IES San Mateo (Madrid, Spain)

May 2017