

María Lucía Aparicio García

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EDUCATION

Bachelor's Degree at Mathematics **CFIS-UPC** 2022 - present
Bachelor's Degree at Computer Science **CFIS-UPC** 2022 - present

WORK EXPERIENCE

Student Researcher - Institute of Robotics and Informatics October 2025 - present

- JAE - ICU research grant for Bachelor's and Master students.
- Took up the physics simulator already developed.
- Integrated it within Unity and a VR system.

SWE Intern - Google June 2025 - October 2025

- Worked on health and monitoring of ML models and autoraters in AI Mode in Shopping.
- Improved the training process for DNNs and raised alerts when pertinent.

Student Researcher - Institute of Robotics and Informatics October 2024 - May 2025

- INIREC research grant by IRI-CSIC.
- The goal of the project is to implement and deploy the physical simulator for dynamic clothing manipulation.
- We have built a physically accurate cloth model and empirically validated its realism.

STEP Intern - Google July 2024 - September 2024

- Built API support for reviews mainly in Java, as well as the ingestion flow for the data in C++.
- Improved the ingestion for product and merchant reviews and started a migration for internal ids of reviews.

Student Researcher - Polytechnic University of Catalonia April 2024 - June 2024

- INIREC research grant by GEOMVAP - UPC.
- Learned the basics for discrete Morse theory.
- Developed a pruning algorithm that could obtain acyclic matchings for Betti splittings.

AI Researcher Intern - i2CAT June 2023 - September 2023

- I used a C++ simulator (ns3) that connected with a RL model which implemented the PPO algorithm.

PROJECTS

Algorithm visualization and documentation for olympiads [See here](#)

Wrote the main notes for the intermediate and advanced tracks in the Girl's Olympiad in Informatics. Created algorithms and data structures visualization using Latex(tikz) and Manim.

Development of an online judge

I am currently developing the back-end of an online judge that should execute a program, run it on different testcases stored on a database and then give a verdict/score depending on the code's performance.

Development for personal website

See here

Built my own personal website using HTML, CSS, Javascript and React. Integrated with Mathjax for creation of notes for different courses.

PUBLICATIONS

Alvarez Monatner, Josep et al. (Feb. 2025). “Morse Resolutions of Monomial Ideals and Betti Splittings”.
In: URL: <https://arxiv.org/pdf/2502.02122>.

CERTIFIED LANGUAGES

Spanish	C2 Native
English - Cambridge	C2 Proficiency
French - DELF	B2 Advanced

SKILLS

Main programming languages (> 20k l.o.c.)	Java, C++, Python
Used programming languages	SQL, Haskell, Lean 4, Prolog, Matlab, C, C#, HTML, CSS, Javascript, Macauley2, Perl, Lua, PHP

HONORS & AWARDS

South-Western European Regional Contest (SWERC) contestant (27th/120)	February 2023
FME Datathon - 1st in Qualcomm challenge	November 2022
Extraordinary Baccalaureate Award	June 2022
European’s Girl Olympiad in Informatics (EGOI)	
II Edition - Silver medal	October 2022
I Edition - Bronze medal	June 2021
Spanish Girl’s Olympiad in Informatics (OIFem)	
I-II Edition - Gold medal	2021 & 2022
Spanish Olympiad in Informatics (OIE)	
XXV-XXVI Editions - Silver medal	2021 & 2022
International Junior Scientific Olympiad (IJSO)	
XVI Edition - Bronze medal	December 2019

VOLUNTEERING

Spanish Girl’s Olympiad in Informatics (OIFem)	
President and head of the scientific committee	2024 - present
Teacher, problemsetter and tester	2022 - present
Spanish Olympiad in Informatics (OIE)	
Member of the scientific committee and tester	2023 - present
Catalan Olympiad in Informatics (OICat)	
Teacher at math and programming workshops	2024 - present