

Gabriel Catalini

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About me

Inquisitive and critical by nature, developed skills include researching, data manipulation and modelling. Due to my experience as a teaching assistant I have acquired very solid communication skills in the transmission of complex ideas in a simple manner. Constantly willing to learn, I perform best with *the right balance between individual and team work*. Frequent hobbies include guitar playing and music production.

Languages

Spanish (Native)

English (CAE)

Italian (B2)

Work

2013 - 2024 Teaching Assistant
@ Universidad Nacional del Sur in a variety of courses: Experimental Laboratory II (Current), Wave Physics, Physics II (Electromagnetism), Physics I (Mechanics).

2017 - 2024 PhD Research
@ IFISUR (Bahía Blanca) on Molecular Dynamics Simulations of Thin Films of Block Copolymers

May 2024 - On. AI Engineer
@Leniolabs Development of pipelines and applications using LLMs.

Education

2017 - On. PhD in Physics
@Universidad Nacional del Sur, Bahía Blanca.

2017 Degree in Physics (Licenciatura en Física)
@Universidad Nacional del Sur, Bahía Blanca.

2009 Vocational High School (Business Management and Economics)
@Escuela Sup. de Comercio “Prof. Prudencio Cornejo”, Bahía Blanca.

Scholarships

2017-2023 Internal Doctoral Scholarship
@National Council for Scientific and Technical Investigations (CONICET)

2015 Stimulus to Scientific Vocations Scholarship
@National Interuniversity Council (CIN)

2014 EURICA Scholarship (Erasmus Mundus): Exchange student
@University of Groningen, The Netherlands

Publications

Abate et al. "Order–Order Phase Transitions Induced by Supercritical Carbon Dioxide in Triblock Copolymer Thin Films". *Macromolecules* 52(20) (2019).
Adroher et al. "Effect of Polymer Architecture on the Adsorption and Coating Stability on Heterogeneous Biomimetic Surfaces". *Macromolecules* 56(24) (2023).
Catalini et al. "Simulations of Thin Polymer Films on Flat and Curved Substrates". *Macromolecules* 57(5) (2024).

Projects

In 2017 and 2019 I performed short stays at the Johannes Gutenberg Universität (Mainz, Germany) under supervision of Dr. Arash Nikoubashman. In 2022 and 2023 was involved in a Research & Development project in collaboration with L'Oréal and the University of Grenoble Alpes under supervision of Dr. Fabien Leonforte and Dr. Jean-Louis Barrat.

Skill Summary

During my Physics Degree I worked in developing a Cell Dynamic Simulation of Thin Copolymer Films in MATLAB, which included both numeric calculation and visualization.
In my PhD I moved completely to Python, where I scripted all of my numerically oriented codes. Frequently used packages include: HOOMD-blue, Numpy, OVITO, Pandas, Numba, Matplotlib, etc. Automatization of Python scripts (run in clusters) and data handling via Bash scripting. Data visualization usually via Gnuplot or Matplotlib.
Communication of results via LaTeX. Linux (Debian) user for +7 years.
I have taken Posgraduate courses in statistical modelling using R, Neural Networks with packages like Pytorch and Tensorflow and HPC using FORTRAN. Recently I have started working with Langchain and LLM related packages (Ragas, DsPy).