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# Miguel Ángel Sánchez Cortés

BSc. in Physics | MSc. Data Science

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Miguel Ángel Sánchez Cortés is a high performance Physics Bachelor and Data Scientist from Mexico with both industrial and academic experience. A top student with data-handling and programming skills, with a great interest on the frontiers of Complexity Science, Network Science, and Computational Social Science. He is particularly interested in the data-driven modeling of social systems to study echo chamber behavior, polarization, inequality, and other effects of human-AI co-evolution on social media.

## EDUCATION

### Master's Degree in Data Science

September 2023-July 2025

*Sapienza Università di Roma (Sapienza University of Rome)*

Rome, Italy.

GPA: 110/110, with honors.

### Bachelor's Degree in Physics

August 2016-June 2021

*Universidad Nacional Autónoma de México (National Autonomous University of Mexico)*

Mexico City, Mexico.

GPA: 9.51/10.

## ACADEMIC EXPERIENCE

### Master Thesis Internship

July 2024 — Present

*CENTAI Institute*

*Turin, Italy (Hybrid)*

- Research internship focused on studying the dynamics of interactions between Reddit users, with a special focus on the demographic characteristics of influential political/fringe communities using Network Science and Machine Learning tools.
- Main topic of the project: Analyzing data from Reddit submissions to identify bridges and gateways in subreddit communities related to political discussion or conspiracy theories and characterize them by the users' socio-demographic attributes.

### Research Internship

September 2021 — December 2021

*Dept. of Economics & Dept. of Physics and Astronomy*

*Ghent, Belgium*

*Ghent University*

- Three-month research internship on Network Science focused on Social Networks, Community Analysis, and Multilayer Networks. The project was used as an undergraduate thesis.
- Main topic of the project: Analyzing data from the Eurovision Song Contest to identify non-random voting patterns and the formation of biased voting blocs by performing temporal community analysis on the voting networks, using a combined approach of hierarchical clustering and modularity optimization.

### Research Internship

August 2020 — June 2021

*Dept. of Quantum Physics & Photonics, Institute of Physics*

*Mexico City, Mexico (Remote)*

*National Autonomous University of Mexico*

- Mandatory undergraduate research internship focused on obtaining research experience in the Physics of Complex Systems, with a specific focus on studying critical phenomena in natural and social sciences.
- Main topic of the project: Simulating rank dynamics of an urn model and implementing a theoretical framework to further analyze and fit the model to real data.

### Research Internship

January 2019 — January 2020

*Dept. of Complex Systems, Institute of Physics*

*Mexico City, Mexico*

*National Autonomous University of Mexico*

- Undergraduate opportunity financed by the National Council of Science and Technology (CONACYT). The main objective of the internship was to learn and gain research experience in the Physics of Complex Systems.
- Hands-on experience in data handling and the applications of Rank-Ordering Statistics in natural phenomena such as earthquakes and hurricanes.

## INDUSTRIAL EXPERIENCE

### Lead Data Scientist

March 2022 — October 2024

*Vivanta*

*Mexico City, Mexico (Remote)*

- Main tasks: Building an API framework to obtain, handle, and standardize health and wellness data from wearable devices in order to further develop Data Science and Machine Learning projects to gain insights from this data.
- Founding Team Member & Data Science Lead. Hands-on experience in developing technical projects and presenting results to a non-technical audience.

## WORKSHOP/SUMMER SCHOOLS

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### Complexity72H Workshop

Carlos III University of Madrid

July 2024

Madrid, Spain

- [Complexity72h](#) is an interdisciplinary workshop for young researchers in complex systems. Participants form teams and carry out projects in a three-day period, i.e., 72 hours. Fully-funded participation by the Sicomoro Foundation.
- Main topic of the project: Exploring the co-evolution of international migration flows and food insecurity at the national scale, accounting for remittances, as well as for changes in the economic, conflict, and climate situation using data from several publicly available sources. The output of this workshop became an [arXiv preprint](#).

### Summer School on Statistical Physics of Complex Systems

Rey Juan Carlos University

July 2024

Madrid, Spain

- Fully funded 2-week summer school studying different topics at the frontier of the Physics of Complex Systems research, including inequality on networks, dynamical systems, neuroscience, sports modeling, among others.

## COMPUTATIONAL SKILLS

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Python Programming	Object-Oriented Programming, Python for Data Science (Jupyter Notebooks, Pyspark, Polars, Pandas, Numpy, Sklearn, Matplotlib, etc.), Artificial Intelligence (JAX, Pytorch, Keras, Tensorflow), and Network Science (NetworkX, iGraph NetIn, graph-tool).
R Programming	R for Data Science (RMarkdown, data.frame, data.tables, dplyr, ggplot, JAGS, etc.), and Network Science (iGraph, ggraph).
Basic programming	Wolfram Mathematica (Basic Simulations & Plotting), and C++ (Basic Simulations).
Other tools	$\LaTeX$ , Git, SQL, Shell, AWS, Gephi & Microsoft Office.

## LANGUAGES

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English	C1 level certified with TOEFL iBT (Score: 113/120).
Italian	C1 level uncertified.
Spanish	Mother-tongue.