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Miguel Ángel Sánchez Cortés

BSc. in Physics | MSc. Data Science

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Miguel Ángel Sánchez Cortés (27 years old) is a high performance Physics Bachelor and Data Scientist from Mexico with experience and interest on several areas of research including Complex Systems, Computational Social Science, Network Science and Machine Learning. Top student with data-handling and programming skills with great interest on the frontiers of Interdisciplinary Science and Complexity Science for the Social Good.

Education

Master of Science in Data Science 2023-Present
Sapienza Università di Roma (Sapienza University of Rome)
Rome, Italy. 52.5% completed
GPA: 28.75/30

Bachelor of Science in Physics 2016-2021
Universidad Nacional Autónoma de México (National Autonomous University of Mexico)
Mexico City, Mexico. 100% completed. Thesis abstract here.
GPA: 9.51/10, *cum laude*

Academic Experience

Master Thesis Internship **July 2024 — Present**
CENTAI Institute *Turin, Italy (Hybrid)*

- Research internship focused on analyzing the dynamics of interactions between users in social media platforms such as Reddit, with a special focus on studying the demographic characteristics of influential users using Network Science and Machine Learning tools.
- Main topic of the project: Analyzing data from Reddit to identify gateways in subreddit clusters related to phenomena like U.S. elections 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

- 3 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 of the Eurovision Song Contest and building the voting network to perform community analysis and to simulate the voting mechanism using a Weighted Multilayer Network model.

Professional Practices **August 2020 — June 2021**
Dept. of Quantum Physics & Photonics, Institute of Physics *Mexico City, Mexico (Remote)*
National Autonomous University of Mexico

- Undergraduate professional practices focused in obtaining research experience on concepts like Rank Diversity, Power Laws, Probability Density Functions and Critical Phenomena on Natural & Social Sciences.
- Main topic of the project: Simulating the Rank Dynamics of an urn with n balls using a Random Walk-like 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 learning and obtaining research experience on the Theory of Complex Systems, Zipf-like Power Laws and the applications of Rank-Ordering Statistics in Natural Phenomena like earthquakes and hurricanes.
- Hands on experience on HTML and Machine Learning used for classification of signals.

Professional Experience

Data Scientist & Founding Team Member **March 2022 — Present**
Vivanta *Mexico City, Mexico (Remote)*

- Obtention, standardization and analysis of health and wellness data from wearable devices. Among my tasks are building AWS Lambdas to obtain health data from wearables, and developing Data Science and Machine Learning projects to gain insights from this data. For more information, please refer to Vivanta.
- Hands on experience retrieving data from API's, PostgreSQL for Databases, Object-Oriented programming with Python, Amazon Web Services (S3, EC2, SageMaker) and Machine Learning Tools.

Other Experience

Complexity72H Workshop **July 2024**
Carlos III University of Madrid *Madrid, Spain*

- Complexity72h is an interdisciplinary workshop for young researchers in complex systems. Participants form teams and carry out projects in a three days' time, i.e. 72 hours. My participation was funded 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 **July 2024**
Rey Juan Carlos University *Madrid, Spain*

- Fully-funded 2 weeks summer school studying different topics on the frontier of the Physics of Complex Systems research, including: Inequality on Networks, Dynamical Systems, Neuroscience, Sports Modeling, among others.

Skills

Advanced programming	**Python** for Data Science (Jupyter Notebooks, Pyspark, Pandas, Sklearn, Matplotlib, etc.), Machine Learning (Pytorch, Keras, Tensorflow), and Network Science (NetworkX, NetIn, graph-tool) & **R** for Statistics (Monte Carlo Bayesian Simulations, Data Visualization using Shiny & iGraph)
Basic programming	**Wolfram Mathematica** (Basic Simulations & Plotting) & **C++** (Basic Programming).
Languages	**English:** C1 level certified with TOEFL iBT (Score: 109/120), **Italian:** C1 level uncertified & **Spanish:** Mother tongue.
Other tools	LaTeX, Git, PostgreSQL, Shell, AWS, Gephi & Microsoft Office.