Carlos Mora Sardiña

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Education

Ph.D. in Computational Science and Engineering — Irvine, California
University of California, Irvine — *Sep. 2021 – Present*

- Thesis: *Hybrid Gaussian Process and Deep Learning Frameworks for Computational Science and Engineering*

B.S. + M.S. in Aerospace Engineering — Barcelona, Spain
Polytechnic University of Catalonia — *Sep. 2016 – June 2022*

Skills

Programming & ML Libraries: Python, Matlab, C++, PyTorch, TensorFlow, scikit-learn, NumPy, Pandas
Modeling & Applied ML: Deep Learning, Scientific ML, Gaussian Processes, Data Fusion, Uncertainty Quantification
MLOps & Infrastructure: Git, HPC, MLflow, Spark, Databricks, Airflow, A/B testing

Experience

Graduate Student Researcher — Irvine, California
University of California, Irvine — *Sep. 2021 – Present*

- Developed an operator learning framework based on Gaussian processes that outperforms other neural operators while using fewer parameters. It is the first zero-shot learning mechanism for operator learning in the literature.
- Built NN-CoRes, a physics-informed machine learning approach that integrates neural networks with kernel methods for solving PDEs. NN-CoRes achieves enhanced accuracy and robustness over state-of-the-art methods.
- Designed Pro-NDF, a probabilistic machine learning method for data fusion based on Bayesian neural networks. Pro-NDF enables the integration of an arbitrary number of data sources to enhance the prediction accuracy and reliability at a lower data acquisition cost.
- Contributed to GP+, an open-source Python library built on PyTorch for machine learning and statistical modeling via Gaussian processes. GP+ systematically integrates multi-fidelity emulation and Bayesian optimization.

Machine Learning Engineering Intern — San Francisco, California
Patreon — *June 2025 – Sep. 2025*

- Built and optimized an end-to-end machine learning pipeline for improving creator discovery surfaces, resulting in improved recommendation relevance and user engagement.
- Performed exploratory data analysis and trained, validated, and iterated on machine learning models to evaluate new recommendation ideas.
- Deployed machine learning models to production and developed observability tools to monitor model performance.

Software Engineer Intern — Barcelona, Spain
Applus+ Laboratories — *March 2019 – July 2019*

- Developed the software components in C++ and MATLAB for a test bench aimed at evaluating the performance of the main gearbox in helicopters.
- Automated processes using programmable logic controllers, ensuring a smooth and efficient test bench operation.

Awards and Honors

Full scholarship, Balsells fellowship — *Sep. 2021*
Given to students with high academic performance to pursue graduate studies in the United States.

Honorable mention, Catalan Government — *June 2016*
Top 0.3% students in the university entrance exam in Catalonia.

Selected Publications

- **Mora, C.**, Yousefpour, A., Hosseinmardi, S., Bostanabad, R. (2024). "Integrating Kernel Methods and Deep Neural Networks for Solving PDEs" *ICLR 2024 Workshop on AI4DifferentialEquations In Science.*
- **Mora, C.**, Eweis-Labolle, J. T., Johnson, T., Gadde, L., Bostanabad, R. (2023). "Probabilistic Neural Data Fusion for Learning from an Arbitrary Number of Multi-fidelity Data Sets" *Computer Methods in Applied Mechanics and Engineering.*