Carlos Mora Sardiña

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Education

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

M.S. in Aerospace Engineering — Barcelona, Spain
Polytechnic University of Catalonia — *Sep. 2020 – June 2022*

B.S. in Aerospace Engineering — Barcelona, Spain
Polytechnic University of Catalonia — *Sep. 2016 – June 2020*

Experience

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

- Research topics: machine learning, data fusion and uncertainty quantification.
- 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.
- Developer of NN-CoRes, a physics-informed machine learning approach that integrates neural networks with kernel methods for solving PDEs. NN-CoRes achieves an advanced performance in terms of accuracy, robustness and development time over state-of-the-art methods.
- Developer of 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.
- Developer of GP+, a Python open-source library built on PyTorch for machine learning and statistical modeling via Gaussian processes. GP+ systematically integrates multi-fidelity emulation, computer model calibration and Bayesian optimization.

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.
- Demonstrated strong problem-solving and communication skills within a professional environment, as I consistently delivered exceptional results to the team in a timely manner.

Awards and Honors

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

Honors, Polytechnic University of Catalonia — *June 2016*
Graduated with honors in Physics II, Physics III, Aerodynamics and Automatic Control.

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

Skills

Programming: Python, PyTorch, TensorFlow, NumPy, scikit-learn, MATLAB, C++, Git, LaTeX

Languages: Spanish (Native), Catalan (Native), English (Fluent), French (Intermediate), Italian (Intermediate)

Selected Publications

- **Mora, C.**, Yousefpour, A., Hosseinmardi, S., Bostanabad, R., Bostanabad, R. (2024). "Integrating Kernel Methods and Deep Neural Networks for Solving PDEs" *ICLR 2024.*
- **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.*