

Carlos Mora Sardiña

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EDUCATION

Ph.D. in Computational Science and Engineering

University of California, Irvine

Irvine, California

Sep. 2021 – Present

M.S. in Aerospace Engineering

Polytechnic University of Catalonia

Barcelona, Spain

Sep. 2020 – June 2022

B.S. in Aerospace Engineering

Polytechnic University of Catalonia

Barcelona, Spain

Sep. 2016 – June 2020

EXPERIENCE

Graduate Student Researcher

University of California, Irvine

Irvine, California

Sep. 2021 – Present

- Research topics: scientific machine learning, data fusion and uncertainty quantification.
- 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.
- Developed a data-driven approach to calibrate computer models based on latent map Gaussian processes for multi-fidelity data sets with an engineering application on materials design.

Software Engineer Intern

Applus+ Laboratories

Barcelona, Spain

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

Given to students with high academic performance to pursue graduate studies in the United States.

Sep. 2021

Honors, Polytechnic University of Catalonia

Graduated with honors in Physics II, Physics III, Aerodynamics and Automatic Control.

June 2016

Honorable mention, Catalan Government

Top 0.3% students in the university entrance exam in Catalonia.

June 2016

SKILLS

Programming: Python, PyTorch, TensorFlow, NumPy, scikit-learn, MATLAB, C++, Git, L^AT_EX

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

SELECTED PUBLICATIONS

- **Mora, C.**, Yousefpour, A., Hosseinmardi, S., Bostanabad, R., Bostanabad, R. (2024). “Neural Networks with Kernel-Weighted Corrective Residuals for Solving Partial Differential Equations” *arXiv preprint*.
- **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*.