

Carlos Mora Sardiña

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EDUCATION

Ph.D. in Computational Science and Engineering <i>University of California, Irvine</i>	Irvine, California <i>Sep. 2021 – Present</i>
M.S. in Aerospace Engineering <i>Polytechnic University of Catalonia</i>	Barcelona, Spain <i>Sep. 2020 – June 2022</i>
B.S. in Aerospace Engineering <i>Polytechnic University of Catalonia</i>	Barcelona, Spain <i>Sep. 2016 – June 2020</i>

EXPERIENCE

Graduate Student Researcher <i>University of California, Irvine</i>	Irvine, California <i>Sep. 2021 – Present</i>
<ul style="list-style-type: none">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 <i>Applus+ Laboratories</i>	Barcelona, Spain <i>March 2019 – July 2019</i>
<ul style="list-style-type: none">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.	<i>Sep. 2021</i>
Honors, Polytechnic University of Catalonia Graduated with honors in Physics II, Physics III, Aerodynamics and Automatic Control.	<i>June 2016</i>
Honorable mention, Catalan Government Top 100 students in the university entrance exam in Catalonia.	<i>June 2016</i>

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*.