

DEEP AND MACHINE LEARNING METHODOLOGY IN THE CONTEXT OF APPLICATION TO COMPUTATIONAL MECHANICS

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ABSTRACT

The application of artificial intelligence (AI) technologies in computational mechanics has a long and rich history. However, the integration of recent AI advances—particularly deep learning, physics-informed neural networks (PINNs), generative models, and multi-fidelity learning—into computational mechanics is still in its early stages and rapidly evolving. The objective of this mini-symposium is to explore how AI techniques, including deep learning and other machine learning approaches, can be effectively applied to address fundamental and applied problems in computational mechanics. We warmly welcome contributions that advance the synergy between these two fields, aiming to develop impactful and innovative methodologies. Of particular interest are studies where AI enables the simulation of previously intractable physical phenomena, accelerates large-scale or multi-physics simulations, supports data-driven scientific discovery, or significantly improves the accuracy and efficiency of existing computational models.