

MACHINE AND DEEP LEARNING TECHNIQUES APPLIED TO COMPUTATIONAL MECHANICS

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ABSTRACT

Presently, the literature offers some relevant works applying artificial intelligence technology in the field of computational mechanics [1]. Nevertheless, this is still a novel field that has not been properly shared and discussed among the computational mechanic's community [2]. Thus, the aim of this symposium is to present and discuss how to apply artificial intelligence methodologies, such as machine and deep learning, to computational mechanics. Thus, we welcome research works related to computational mechanics combined with artificial intelligence, aiming to deal with experimental data, to increase the simulation's computational efficiency, by increasing its accuracy and reducing its computational cost, enabling more comprehensive computational models and digital twins.

REFERENCES

- [1] Ribeiro JP, Tavares SM, Parente M. Stress-strain evaluation of structural parts using artificial neural networks. Proceedings of the Institution of Mechanical Engineers, Part L: Journal of Materials: Design and Applications. 2021;235(6):1271-1286. doi:10.1177/1464420721992445.
- [2] Jorge Belinha. (2021). Artificial Intelligence in Computational Mechanics and Biomechanics. Journal of Computation and Artificial Intelligence in Mechanics and Biomechanics, 1(1), 1–6. <https://doi.org/10.5281/zenodo.4669522>