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INTEGRATING SCIENTIFIC MACHINE LEARNING WITH PHYSICS-BASED SIMULATION FOR INDUSTRIAL MULTIPHYSICS APPLICATIONS

F. DE VUYST[*], T. DAIRAY[†‡],
I. MORTAZAVI[°] AND J.P. BERRO RAMIREZ[+]

[*] Université de Technologie de Compiègne, CNRS,
CS 60319 - 60203 Compiègne cedex, France, Email fdevuyst@utc.fr

[†] Manufacture Française des Pneumatiques Michelin
Place des Carmes-Dechaux, Clermont-Ferrand – 63000 France
[‡] Centre Borelli, CNRS, Université Paris Saclay, ENS Paris Saclay
4, Avenue des Sciences, Gif-sur-Yvette, 91190, France
E-mail thibault.dairay@michelin.com

[°] Laboratoire M2N
Conservatoire National des Arts et Métiers
2, Rue Conté, 75003 France, E-mail iraj.mortazavi@cnam.fr

[+] Altair Engineering France,
5 rue de la Renaissance, 92160 Antony, France, E-mail jpbramirez@altair.com

ABSTRACT

Scientific Machine Learning (SML) has emerged as a powerful new tool for enhancing the numerical simulation of physics-based nonlinear problems. Despite the remarkable advancements achieved over the past decade, several unresolved questions and challenges persist, particularly in the context of real-world applications and industrial deployment [2]. This mini-symposium is dedicated to exploring the application of SML to Multiphysics problems encountered in industrial settings. A notable area of interest is fluid-structure interaction (e.g. [1]), but the symposium welcomes contributions from both academic and industrial researchers on all types of coupling and physical phenomena arising from engineering, environmental or health issues. Key topics of interest include methodology, data and experimental design, coupling methods, monolithic and partitioned approaches, domain decomposition, preconditioning, convergence and fixed-point acceleration, accuracy, stability, active learning, evolution problems, parametric problems for design optimization, model confidence level/uncertainty, and software environments.

REFERENCES

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