Numerical Fluid Flow Simulation Using Artificial Intelligence and Machine Learning

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Message from the Guest Editor

Dear Colleagues,

The massive computational footprint of numerical simulation models limits their practical use for objectives such as detail analyses, uncertainty quantification, and process optimization. To overcome such limitations, proxy models have been developed in the past several decades. The traditional approaches to developing proxy models include reduced order models (ROM) and statistical response surfaces.

Utilizing the pattern recognition capabilities of artificial intelligence and machine learning introduces a paradigm shift on how proxy models are developed. These smart proxy models accurately mimic the performance of highly complex numerical simulation models at speeds that are multiple orders of magnitude faster. Modelling fluid flow that is of high interest in many industries can immensely benefit from smart proxy modelling. The focus of this Special Issue is on the application of smart proxy modelling in computational fluid dynamics (CFD) and numerical reservoir simulation.

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Special Issue

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Message from the Editor-in-Chief

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