Special Issue

New Insights into Fluid Mechanics: Modeling and Computing

Message from the Guest Editors

A significant focus of this Special Issue is on the integration of machine learning in fluid mechanics. This emerging field leverages AI-driven models to predict fluid behavior. Of particular interest are data-driven turbulent models.

The Issue also seeks contributions to innovations in turbulence modeling, particularly in the development and application of Large Eddy Simulations (LES) and Direct Numerical Simulations (DNS), which are crucial for improving our understanding of turbulent flows in a variety of contexts.

Multiphase flow and fluid–structure interaction (FSI) form other critical areas of focus. Fluid–structure interaction (FSI) deals with the coupling between fluid flows and structural responses, where improved algorithms and high-performance computing can lead to more efficient modeling.

Finally, the Special Issue will cover advanced flow control simulations. Furthermore, machine learning-driven flow control strategies are of great interest, which explore how computational techniques and AI can be harnessed to manipulate and optimize fluid flows for performance enhancement.

Guest Editors

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Message from the Editor-in-Chief

As the world of science becomes ever more specialized, researchers may lose themselves in the deep forest of the ever increasing number of subfields being created. This open access journal Applied Sciences has been started to link these subfields, so researchers can cut through the forest and see the surrounding, or quite distant fields and subfields to help develop his/her own research even further with the aid of this multi-dimensional network.

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