

IMPROVING THE EFFICIENCY AND ACCURACY OF COMPUTATIONAL METHODS THROUGH MACHINE LEARNING

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MINISYMPOSIUM

This mini-symposium (MS) explores the intersection of machine learning and complex simulations. The MS comprises four distinct sections, each addressing critical aspects of enhancing computational methods through the application of machine learning techniques. This symposium provides a comprehensive view of the exciting possibilities that emerge when machine learning and complex simulations converge. Attendees can expect to gain practical knowledge, explore innovative approaches, and connect with experts in the field, ultimately advancing the efficiency and accuracy of computational methods in the context of large-scale simulations for multiphase flows, flow in porous media, turbulent flows, etc.

Some of the potential topics are, but not limited to, the following

- Leveraging machine learning (ML) techniques for large scale multiphase flow simulations
- Improving computational efficiency in multiphase flow simulations through ML
- Machine Learning models for enhancing grid generation
- Efficient grid generation is fundamental to accurate simulations.
- Using ML in multiphase flows
- Using ML for replacing sub-grid-scale eddy viscosities in turbulent flows
- Prediction of fluid flow and heat transfer in porous media
- Practical insights and case studies showcasing the real-world application of machine learning techniques
- How to integrate machine learning into the simulation workflows for tangible performance enhancements
- Data mining in complex simulations