

Mini-Symposium on:

Data-driven & Physics-informed machine learning for digital twin, surrogate modeling, and model discovery

This mini symposium focuses on the innovative convergence of data-driven and physics-informed machine learning approaches, with applications in digital twin technology, surrogate modeling, and model discovery. As industries increasingly rely on advanced simulations and real-time data to drive decision-making, integrating machine learning with physical models is essential for developing accurate and efficient computational tools.

The symposium will bring together experts from academia and industry to discuss recent advancements, challenges, and opportunities in the field. Key topics include the development of digital twins that enhance monitoring and predictive maintenance of complex physical systems, surrogate modeling techniques that provide fast and reliable approximations of computationally intensive simulations, and model discovery methods that combine physical laws and data to automatically uncover new models. Model discovery plays a crucial role in deepening our understanding of complex systems and identifying new patterns and relationships to propose innovative solutions.

Attendees will gain insights into cutting-edge research and practical applications that demonstrate the transformative potential of these technologies across various domains, including engineering, healthcare, and environmental science. By fostering collaboration and knowledge exchange, this symposium aims to accelerate the adoption of data-driven and physics-informed methodologies, paving the way for more intelligent and resilient systems.

❖ Mini-Symposium Developers:

- Prof. Jae Hyuk Lim, Jeonbuk National University (Korea)
- Prof. Hyunseok Oh, Gwangju Institute of Science and Technology (Korea)
- Prof. Seungchul Lee, Korea Institute of Science and Technology (Korea)
- Prof. Ki-Yong Oh, Hanyang University (Korea)



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❖ Mini-Symposium Chair:

- Prof. Jae Hyuk Lim

❖ Paper List (Tentative):

- To be updated

Selected presentations and papers will be recommended for publication in the international journal *Computer Modeling in Engineering & Sciences (CMES)*, which has an impact factor of 2.2 and is ranked in Q2. These will be featured in special issues entitled "Data-driven and Physics-informed Machine Learning for Digital Twin, Surrogate Modeling, and Model Discovery."