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TATA INSTITUTE OF FUNDAMENTAL RESEARCH

ICTS SPECIAL COLLOQUIUM

Deep Learning and Computations of PDEs (ONLINE)

Partial Differential Equations (PDEs) are ubiquitous in the sciences and engineering. Although very successful, traditional numerical methods can be very expensive, even infeasible, for a variety of problems. In this context, we present machine learning techniques that can accelerate and enable efficient computations of PDEs. We consider supervised deep learning, unsupervised learning in the form of physics informed neural networks (PINNs) and operator learning and describe how these frameworks are used to approximate PDEs. Both theoretical results as well as extensive numerical experiments will be presented.



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Siddhartha Mishra is Professor of Applied Mathematics in the Department of Mathematics at ETH Zürich. He is also the director of Computational Science Zurich and a core faculty member of the ETH AI Center. Mishra's research interests are in numerical analysis, scientific computing, computational fluid dynamics, computational astrophysics, computational climate science, machine learning and modeling and simulation of complex systems. His research has been recognized with various prizes such as ICIAM Collatz Prize, Infosys Prize, Richard vonMises prize, Jacques Louis Lions Medal, and the starting and consolidator grants of the European Research Council. He has been invited speaker at leading conferences including the International Congress of Mathematicians in Rio 2018.

03:30 PM, 27 June 2022

Zoom link: <https://biturl.top/bAjQ7r>

Meeting ID: 840 3585 8997

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