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Applied and Numerical Analysis Seminar

Two approaches using Deep Learning to solve partial differential equations

by

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Abstract :

Many differential equations and partial differential equations (PDEs) are being studied to model physical phenomena in nature with mathematical expressions. Recently, new numerical approaches using machine learning and deep learning have been actively studied. There are two mainstream deep learning approaches to approximate solutions to the PDEs, i.e., using neural networks directly to parametrize the solution to the PDE and learning operators from the parameters of the PDEs to their solutions. As the first direction, Physics-Informed Neural Network was introduced in (Raissi, Perdikaris, and Karniadakis 2019), which learns the neural network parameters to minimize the PDE residuals in the least-squares sense. On the other side, operator learning using neural networks has been studied to approximate a PDE solution operator, which is nonlinear and complex in general. In this talk, I will introduce these two ways to approximate the solution of PDE and my research related to them.

Date :	April 25, 2024 (Thursday)
Time :	3:00pm – 4:00pm (Hong Kong SAR)
Zoom Link:	https://cuhk.zoom.us/j/9792985952
Passcode:	202266

All are Welcome