THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON APPLIED MATHEMATICS

Tackling high dimensional challenges in scientific computing (part 3)

By

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Abstract

In this mini-series of talks, we will survey some recent advances in utilizing advances in machine learning to help tackle challenging tasks in scientific computing, focusing on numerical methods for solving high dimensional partial differential equations and high dimensional sampling problems. In particular, we will discuss theoretical understandings and guarantees for such methods and new challenges arise from the perspective of numerical analysis.

In the third lecture, we will discuss solution theory and neural network approximations to high dimensional elliptic partial differential equations. To overcome the curse of dimensionality, we identity appropriate function spaces for the solutions to high dimensional PDEs, in particular in terms of Barron type space, suitable for neural network approximations. We will discuss solution theories for elliptic equations and eigenvalue problems.

Date   : **26 July 2023 (Wednesday)**
Time   : **11:00am – 12:00nn**
Venue : **Room 2464 (Lifts 25/26)**

All are Welcome!