REVISED

DEPARTMENT OF MATHEMATICS
THE CHINESE UNIVERSITY OF HONG KONG

Center for Mathematical Artificial Intelligence
CMAI

MATH-IMS Joint Applied Mathematics Colloquium Series
The Chinese University of Hong Kong

This MATH-IMS Joint Colloquium Series is organized by Center for Mathematical Artificial Intelligence (CMAI), under Department of Mathematics and Institute of Mathematical Sciences (IMS) at The Chinese University of Hong Kong. The colloquium series focuses on mathematics and applications of artificial intelligence, big data and related topics.

Date: June 25 & July 2 & ~~July 9, 2021~~ (Fridays)
Time: 16:00-17:00 (Hong Kong Time)
Zoom Link: https://cuhk.zoom.us/j/92775210812

Analysis of Neural Network
I: Finite Element Connection and Approximation
II: Multigrid and Image Classification
III: Neural Network and Numerical PDEs

Speaker: Professor Xu Jinchao
Pennsylvania State University

POSTPONED
No talk on July 9, 2021

Abstract: This lecture series will provide some mathematical understanding of neural networks and machine learning by studying their close relationship with classic numerical methods such as finite element and multigrid methods. Applications will be given to image classification and numerical partial differential equations. The lecture series will be composed of three parts: i) finite element connection and approximation theory; ii) multigrid and image classification and iii) neural network and numerical PDEs.

Bio: Prof. Jinchao Xu holds the titles of Verne M. Willaman Professor of Mathematics, Director of the Center for Computational Mathematics and Applications at the Pennsylvania State University. Prof. Xu earned his doctoral degree at Cornell University in 1989. He joined the Pennsylvania State University in 1989 as an assistant professor of mathematics, was promoted to professor in 1995 and named a Distinguished Professor of Mathematics in 2007. Prof. Xu's research specialty is numerical methods for partial differential equations that arise from modeling scientific and engineering problems. His Hiptmair-Xu preconditioner was featured in 2008 by the U.S. Department of Energy as one of the top 10 breakthroughs in computational science in recent years. Prof. Xu was a plenary speaker at ICIAM in 2007 and an invited speaker at ICM in 2010. He is a fellow of SIAM and inaugural fellow of AMS. In 2019, Prof. Xu was elected as the American Association for the Advancement of Science (AAAS) Fellow.