Ulam Colloquium 2022

Mathematical Understanding of Deep Learning

Dr. Jinchao Xu, Pennsylvania State University

In this talk, I will give an elementary introduction of basic deep learning models and training algorithms from a mathematical viewpoint. Most of the talk will be accessible to an audience with a basic knowledge of calculus and linear algebra. I will also touch on some advanced topics to demonstrate the potential of new mathematical insight and analysis for improving the efficiency of deep learning technologies.

Wednesday, April 6, 2022
4:05 pm
Little Hall 101

Tea, preceding the talk, at 3:30 pm in Little Hall 339

Jinchao Xu is Verne M. Willaman Professor of Mathematics and Director of the Center for Computational Mathematics and Applications at Penn State. His main research interests are in the design, analysis, and application of numerical methods, especially multilevel and adaptive finite element methods, for systems of partial differential equations and problems with direct applications to science and engineering. His other research interests include the mathematical analysis, modeling and applications of deep neural networks. He was an invited speaker at the International Congress for Industrial and Applied Mathematics in 2007 as well as at the International Congress for Mathematicians in 2010. He is a Fellow of the Society for Industrial and Applied Mathematics (SIAM), the American Mathematical Society (AMS) and the American Association for the Advancement of Science (AAAS).

Stanislaw Ulam (1909-1984) was a Graduate Research Professor at the University of Florida from 1974-1984, and was one of the 20th Century's leading mathematicians. In 1998-99, under the leadership of chair Krishnaswami Alladi, the Department of Mathematics initiated the annual Ulam Colloquium Lecture Series in applied mathematics at the University of Florida.