



Online
seminar

Wednesday **November 04, 2020** at 14:00

Hosted on: [Zoom](#)

Weinan E

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Director of Beijing Institute of Big Data Research

A Mathematical Perspective of Machine Learning

Prof. Zanella introduces the seminar.

Abstract

The heart of modern machine learning (ML) is the approximation of high dimensional functions. Traditional approaches, such as approximation by piecewise polynomials, wavelets, or other linear combinations of fixed basis functions, suffer from the curse of dimensionality (CoD). This does not seem to be the case for the neural network-based ML models. To quantify this, we need to develop the corresponding mathematical framework.

In this talk, we will report the progress made so far and the main remaining issues within the scope of supervised learning. We will discuss three major issues: approximation theory and error analysis of modern ML models, qualitative behavior of gradient descent algorithms, and ML from a continuous viewpoint.

Biography

Weinan E received his Ph.D. from UCLA in 1989. After being a visiting member at the Courant Institute of NYU and the Institute for Advanced Study at Princeton, he joined the faculty at NYU in 1994. He is now a professor of mathematics at Princeton University, a position he has held since 1999.

Weinan E is the recipient of the Presidential Early Career Awards for Scientists and Engineers (PECASE), the Feng Kang Prize, the SIAM R. E. Kleinman Prize, SIAM von Karman Prize, the Peter Henrici Prize and the ICIAM Collatz Prize. He is a member of the Chinese Academy of Sciences, a fellow of the American Mathematical Society, a SIAM fellow and a fellow of the Institute of Physics.

Weinan E's current work centers on machine learning.