



# Numerical Analysis Seminar

## When Finance Meets AI: From Option Pricing to Optimal Trade Execution and More

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### Abstract

The use of AI and Machine Learning technology in financial institutions has increased tremendously in the past decades. Many of the financial problems that were deemed challenging, if not impossible, were being solved by new AI/ML techniques. In this talk, we will journey through a few recent research projects of my team, including option pricing, volatility estimation, optimal trade execution and others. We will discuss how we adopt robust and efficient neural network methods, reinforcement learning, together with partial differential equation techniques to tackle various computational finance problems. In particular, we will present novel machine learning and AI approaches for pricing options with many assets, estimating volatility surfaces, and computing optimal strategies for trade execution. Our numerical results show that machine learning with carefully designed neural networks combined with appropriate mathematical frameworks can be a powerful tool for solving complex financial problems.

Date: February 26, 2025 (Wednesday)
Time: 3:00 pm – 4:00 pm
Venue: Room 210, Run Run Shaw Building, HKU

