

Hong Kong - Singapore joint Seminar Series in Financial Mathematics/Engineering

Optimal Stopping in High-dimensions Professor Mete Soner Princeton University, USA

Abstract

A method based on deep artificial neural networks and empirical risk minimization is developed to calculate the boundary separating the stopping and continuation regions in optimal stopping. The algorithm parameterizes the stopping boundary as the graph of a function and introduces relaxed stopping rules based on fuzzy boundaries to facilitate efficient optimization. Several examples related to financial instruments, some in high dimensions, are analyzed through this method, demonstrating its effectiveness. The existence of the stopping boundary is also proved under natural structural assumptions.

About the speaker

H. Mete Soner is a Professor of Operations Research and Financial Engineering at Princeton University. He is also affiliated with the Bendheim Center of Finance and with the Program in Applied & Computation Mathematics. Prior to joining Princeton, he was a Professor of Mathematics and the Chair of Department of Mathematics at ETH Zürich. Prof. Soner's research focuses on decisions under uncertainty, stochastic optimal control, Markov decision processes, nonlinear partial differential equations, probability theory, mathematical finance, and financial economics. His book *Controlled Markov Processes and Viscosity Solutions* (Coauthored with Wendell Fleming, Springer-Verlag 1993, 2nd Edition in 2006) has become one classical reference book in the area. Currently, he is Editor-in-Chief of *SIAM Journal of Financial Mathematics* (SIFIN), a Co-Editor of *Mathematics and Financial Economics* (MAFE), and an associate editor for *Finance and Stochastics*, *Interfaces and Free Boundaries*, *Mathematics of Operations Research*. During 2011-2016, he has been the Executive Secretary of the Bachelier Finance Society. In 2014, he received Alexander von Humboldt Foundation Research Award. In 2015, he was elected as a SIAM Fellow.

Date

14 July 2022(Thursday)
(HK Time)

Time

8:30pm – 9:30pm (HK
Time)

Zoom

<https://cityu.zoom.us/j/9711163505?pwd=bVVRbm5UV0NKT2tETEcxbHRtcXRZQT09>

Meeting ID:

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Passcode:

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