The Hong Kong Polytechnic University
Department of Applied Mathematics

Colloquium

Delta Hedging via Machine Learning (w/o parametric models)

by

Professor Thomas F. Coleman

University of Waterloo

Abstract

Option hedging is an important risk management operation in financial risk management. Typically it is done by using first derivatives of a parametric option model, e.g., Black-Scholes or generalized Black-Scholes. This parametric option model, in preparation for this task, must be calibrated (to current option prices) to estimate parameters, especially volatility. However, the corresponding implied volatility depends on the underlying and it is this dependence that is difficult to capture, thus resulting in hedging methods that do not minimize variance of the hedge risk, even instantaneously. We propose a data driven approach to directly learn a hedging function from market data by minimizing variance of the local hedge risk. Computational results on S&P 500 index daily option data show this new nonparametric method significantly outperforming the best parametric alternatives.

Date :   17 May, 2018 (Thursday)
Time :   11:00a.m. – 12:00noon
Venue : TU801, The Hong Kong Polytechnic University

* * *   ALL ARE WELCOME   * * *