# The Hong Kong University of Science and Technology

# Department of Mathematics

# <u>Seminar in Financial Mathematics</u>

# Delta Hedging via Machine Learning (without parametric models)

## *by*

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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:*　　　　　*Wednesday, 16 May 2018*

*Time:*　　　　　*10:30am – 11:30am*

*Venue:*　　　　　*Room 4504, Academic Building*
　　　　　　　　　*(near Lifts 25-26),HKUST*

## *All are welcome!*