Minisymposium Proposal SIAM FME 2016
"Machine Learning for Finance"

Organizers: Justin Sirignano and Kay Giesecke

Abstract: Machine learning has had a significant impact on many areas of the sciences and engineering such as imaging, advertising, genetics, robotics, and speech recognition. This minisymposium discusses several important applications of machine learning in financial mathematics and engineering. Topics include mortgage risk, systematic trading via large-scale data mining, optimal stopping, foreign exchange trading, cross-sectional stock returns, volatility modeling, and limit order books. The talks explore a variety of machine learning approaches from deep learning, trees, semantic analysis, Gaussian process regression, low-rank/sparse approximations, and other areas. The minisymposium has a total of 12 talks, divided into three sessions: Machine Learning for Finance I, Machine Learning for Finance II, and Machine Learning for Finance III.

Speakers:
- Session I:
  - Justin Sirignano (Imperial College London): Deep Learning for Limit Order Books
  - Paul Glasserman (Columbia): Does Unusual News Forecast Market Stress?
  - Mike Ludkovski (UCSB): Gaussian Process Regression for Optimal Stopping
  - Carlos Carvalho (University of Texas at Austin): Heterogeneous Treatment Effects Estimation in Finance via Tree-based Models
- Session II:
  - Kay Giesecke (Stanford): Securitization and Subprime Mortgage Risk
  - Alex Papanicolaou (UC Berkeley): Background Subtraction for Pattern Recognition in High Frequency Financial Data
  - Jack Kim (Data Capital Management): Deep Autoregressive Networks for Economic Regime Dependent Asset Allocation
  - Adam Clark-Joseph (UIUC): Sparse Signals in the Cross-Section of Returns
- Session III:
  - Rama Cont (Imperial College London): Algorithmic trade execution and market dynamics
  - Apaar Sadhwani (Stanford): Deep Learning for Mortgage Risk
  - Matthew Dixon (IIT): Deep learning for financial market prediction
  - Andrei Kirilenko (Imperial College London): TBD