Monte Carlo Method in Financial Engineering

Many financial engineering problems involve estimation, sensitivity analysis and optimization of expectations (or other summary statistics) of a complicated stochastic process. They are natural for stochastic simulation to solve. My group’s work in this area primarily focused on two problems, i.e., risk measurement and sensitivity analysis. Here is the list of publications that we have in this area, including a review paper on Monte Carlo methods for value-at-risks and conditional value-at-risks.

We are currently working on the estimation and sensitivity analysis of systemic risk measures, such as CoVaR and MES. We are also interested in bringing deep learning tools into the field of financial engineering. The following are some examples of our current work in this area.

Figure, title, abstract (CoVaR)

Figure, title, abstract (NSDE)