Emerging Areas in Stochastic Simulation

The landscape of stochastic simulation research is constantly changing, due to either new problems or new tools. In recent years, the fast development of machine learning, artificial intelligence and computing brought new opportunities to traditional research areas of stochastic simulation, allowing simulation to solve larger-scale and higher-dimensional problems faster, and allowing simulation to transform from an offline tool to an online tool.

Our research in these emerging areas significantly overlaps with and strongly enhances our research in simulation optimization, ranking and selection and financial engineering. We have proposed the offline simulation for online application (OSOA) framework (the paper) and, in recent years, focused on real-time or personalized decision makings using simulation. Here is the list of publications and preprints that we have in this area.

The following are two examples of our research work combining machine learning with classical simulation problems.

Figure, title, abstract (R&S with covariates)

Figure, title, abstract (NSDE)