

Optimisation Simulation for Stochastic Programming

Tahir Ekin¹, NICHOLAS G. POLSON², Refik Soyer³

¹*McCoy College of Business, Texas State University*

²*Booth School of Business, University of Chicago*

³*School of Business, The George Washington University*

Abstract

We develop a simulation-based approaches for stochastic optimisation. Using augmented probability models and nested sampling, we provide methods for solving complex decision problems with stochastic shocks. Our methods apply to two-stage stochastic programming with recourse, semi-Markov decision processes and deep Q-learning. We illustrate our methodology with a two stage newsvendor model with unimodal and bimodal continuous uncertainty. Finally, conclude with directions for future research.