Monte Carlo Methods for Financial Engineering: Recommended Pre-course Reading

This is a short annotated list of some reading materials that you might be interested to take a look at before the course. Live links to the resources (or to amazon.ca listings) are provided.

Background and history

For background information on the subject of Monte Carlo methods. The Wikipedia page is not a bad place to start. Also, RiskGlossary.com has a very nice account of the history and basic concepts of the Monte Carlo method. Paul Wilmott recently gave a talk on the history of Monte Carlo methods that you can listen to.

If you want to hear it from the horse's mouth, Metropolis [1987] has reminiscenses about the origins of Monte Carlo methods from one of the authors of the first paper to use the term (Metropolis and Ulam [1949]). This article is one of several articles related to early Monte Carlo methods from a 1987 special issue of *Los Alamos Science* that was dedicated to the other author of that original paper, Stanislaw Ulam.

Mathematical Preparation

Probability and randomness

If you want to brush up on your understanding of the mathematics of randomness, the Virtual Laboratories in Probability and Statistics from the University of Alabama in Huntsville are a remarkable resource for learning everything you might want to know about the subject.

Financial engineering

Forsyth [2008] is a relatively gentle but authoritative introduction to computational derivative pricing and risk management. There is more here than you will need for this course, but chapters 1-4 and 8 contain relevant material. The RiskGlossary.com site also has a wealth of information on financial options and many other relevant topics.

Books

Jäckel [2002] is a comprehensive text by an accomplished practitioner with a wealth of useful information about implementing Monte Carlo methods.

Glasserman [2004] has a wealth of information aimed at graduate students, academics and practitioners; this well-written book is by one of the leading researchers in the subject.

Dagpunar [2007] is a more recent and slightly less technical book that includes material on Markov Chain Monte Carlo methods.

Hammersley and Handscomb [1964] is an old but classic text on Monte Carlo methods.

Online course materials

Some good online course materials are: Giles [2008] - Professor Mike Giles' Oxford course on Monte Carlo methods, Mascagni [2008] - Dr. Michael Mascagni's course from ETH Zürich, with lecture notes, and Dias [2008] - an introduction to quasi-Monte Carlo methods, with some demonstrations.

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