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THE CONCORDIA INSTITUTE FOR INFORMATION SYSTEMS ENGINEERING IS PLEASED TO PRESENT THE FOLLOWING GUEST LECTURE IN OUR CIISE DISTINGUISHED SEMINAR SERIES

Dr. Pierre L'Ecuyer, Canada Research Chair

Université de Montréal
Département d'Informatique et de Recherche Operationnelle

Rare-Event Simulation: Challenges, Ideas, and Effective Tools

We first provide an overview of the difficulties encountered in rare-event simulation. Without special techniques, the required amount of simulation time for the rare events to be observed sufficiently to provide a meaningful estimator is often prohibitive. We summarize the main ideas and methods that can substantially reduce the computing time to obtain a reliable estimate. They are based primarily on importance sampling and splitting, which we will explain. Implementing these techniques is not always easy and we will provide insight on how this should be done, together with some concrete examples.

Biography: Pierre L'Ecuyer holds the Canada Research Chair in Stochastic Simulation and Optimization, in the Département d'Informatique et de Recherche Operationnelle at the Université de Montreal. He obtained the E. W. R. Steacie Fellowship in 1995-97,the INFORMS College on Simulation Outstanding Research Publication Award twice, in 1999 and 2009, the Jacob Wolfowitz Prize for Theoretical Advances in the Mathematical and Management Sciences in 2000, a Killam Research Fellowship in 2001-03, the Urgel-Archambault Prize from ACFAS in 2002, and was elected INFORMS Fellow in 2006. He has published more than 200 scientic articles and book chapters in various areas, including random number generation, quasi-Monte Carlo methods, efficiency improvement in simulation, sensitivity analysis and optimization for discrete-event simulation models, simulation software, stochastic dynamic programming, and applications in finance, manufacturing, telecommunications, reliability, and service center management. He also developed software libraries and systems for the theoretical and empirical analysis of random number generators and quasi-Monte Carlo point sets, and for general discrete-event simulation. His work impinges on the areas of mathematics, statistics, operations research, economics, and computer science. He is currently Editor-in-Chief for the ACM Transactions on Modeling and Computer Simulation, and Associate Editor for ACM Transactions on Mathematical Software, Statistics and Computing, Management Science, Cryptography and Communications, and International Transactions in Operational Research. He has been a referee for 110 different scientific journals over the past 25 years. He was a professor in the Département d'Informatique at Université Laval (Quebec) from 1983 to 1990 and is at the Université de Montreal since then. He has been a visiting scholar (for several months) at Stanford University (USA), INRIA {Rocquencourt (France), École des Mines (France), Waseda University (Tokyo), University of Salzburg (Austria), North Carolina State University (USA), and INRIA{Rennes (France). He is a member of the CIRRELT and GERAD research centers, in Montreal.

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