

EPSTEIN INSTITUTE SEMINAR • ISE 651 SEMINAR

***Quantifying Input Uncertainty in
Stochastic Simulation***

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ABSTRACT

Stochastic simulations consist of input models and logic. The input models are often probability distributions fit to real-world data, in which case the simulation results are conditional on the chosen distributions. Standard practice in simulation output analysis neither quantifies nor even acknowledges that uncertainty about the input models may dominate everything else. We present a framework for producing confidence intervals that account for uncertainty about the input models. To achieve this goal we introduce metamodel-assisted bootstrapping, and illustrate its performance relative to other proposals for dealing with input uncertainty.

**TUESDAY, AUGUST 23, 2011
ELECTRICAL ENGINEERING BLDG ROOM 248
4:00 – 5:20 PM**

BIOGRAPHICAL SKETCH:

Barry Nelson currently serves as the Chair of the Department of Industrial Engineering and Management Sciences at Northwestern, as well as past Editor in Chief of Naval Research Logistics. He has also received an award for the Charles Deering McCormick Professor of Teaching Excellence.

Barry Nelson's research is involved with the design and analysis of computer simulation experiments on models of stochastic systems, focusing particularly on issues related to statistical efficiency of simulation experiments. His research includes modeling and analysis of networks of nonstationary queues. The applications of this include computer-performance modeling, manufacturing systems, financial engineering and transportation.

Education:

PhD Industrial Engineering, Purdue University

MS Industrial Engineering, Purdue University

BA Mathematics and Computer Science, DePauw University

Professional Experience:

2005 On Time Systems, Inc., Consultant

2002 – 2004 Chas. Levy Company, Consultant

2000 – 2002 J.B. Collins Associates, Consultant

Publications:

Barry Nelson has been published in numerous books and journals. His own book, Stochastic Modeling: Analysis and Simulation, was published in 1995. He has also written segments of the following books, Container Terminals and Cargo Systems: Design, Operations Management and Logistics Control Issues, Elsevier Handbooks in Operations Research and Management Science: Simulation, Discrete-Event System Simulation, Handbook of Industrial Engineering, and The Handbook of Simulation.