

Endowed Lecture Series 2017/2018



Dr. David M. Goldman

Professor

**School of Industrial & Systems Engineering
Georgia Tech**

Friday, February 2, 2018

10:00 a.m. – 11:00 a.m., 260 Durham Hall

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A New Look at Two Classical Problems in Simulation Analysis: Steady-State Confidence Intervals and Selection of the Most-Probable Alternative

We discuss recent advances in two bellwether problem areas in computer simulation. We first study confidence intervals (CIs) for the mean of steady-state simulation output – a difficult problem since such data (e.g., consecutive customer waiting times) are never independent nor normally distributed, so that analysis is not amenable to standard statistical methods. To this end, we discuss new CIs based on the methods of batch means, overlapping batch means, and standardized time series that incorporate various jackknifing and bootstrapping tricks; and we show that the CIs are shorter and more stable than their predecessors.

We next consider the related problem of selecting the best alternative among a set of competitors, e.g., which simulation scenario is most likely to yield the best outcome? To do so, we propose linear and mixed-integer linear programming formulations of the selection problem that minimize the expected number of simulation runs that need to be performed in order to achieve a certain probability of correct selection. Moreover, we present generalizations of the formulations that take into account different cost structures for the observations.

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David M. Goldman is a Professor in the School of Industrial and Systems Engineering at Georgia Tech. He received his Ph.D. in 1984 from Cornell University, and has held visiting positions at Cornell, Northwestern, Oklahoma, Boğaziçi, Özyeğin, and Sabancı Universities. His research interests include simulation output analysis, statistical ranking and selection methods, and medical and humanitarian applications of operations research. Dave received the INFORMS Simulation Society's Distinguished Service Award in 2002, and has held a variety of INFORMS elected and volunteer offices. Dave has held a number of editorial positions with the top journals in Operations Research and Statistics. He was also awarded a Fulbright fellowship in 2006 to lecture at Boğaziçi and Sabancı Universities in Istanbul, Turkey. Dave is a Fellow of the Institute of Industrial and Systems Engineering.

*Light reception to follow seminar
in 260 Durham from 11:00 a.m. – 11:30 a.m.*