Industrial Engineering & Operations Research
UNIVERSITY OF CALIFORNIA, BERKELEY

Lee Schruben
UC Berkeley, CA

Title: "**Modeling Discrete-Event System Dynamics as the Solutions to Optimization Models**"

Abstract:

Discrete-event dynamic models are used to study a wide variety of stochastic systems in production, healthcare, supply chains, transportation, security, communication, etc. Such systems are typically studied in using simulations. This talk will introduce a new way of modeling general discrete-event system dynamics as the solutions to optimization models. This allows us to use the rich theory and algorithms from mathematical programming in analyzing discrete-event stochastic systems.

Several applications and theoretical results are presented including response gradient estimation using shadow prices, scheduling (where the concept of a virtual resource is introduced), new proofs and types of reversibility for tandem queues, and sample-path duality (e.g., the dual of a G/G/1 queue is a lot-sizing problem). The motivation of this paper is to develop and demonstrate explicit synergies between major branches in Operations Research in queueing, simulation, and mathematical programming.

This paper (OPERATIONS RESEARCH, 56.5, September-October 2008, pp.1218-1237) is co-authored with Prof. Victor Chan at RPI.

Monday, November 16, 2009

3108 Etcheverry Hall

3:30pm-5:00pm

COME EARLY REFRESHMENTS WILL BE SERVED AT 3:00PM

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