EPSTEIN INSTITUTE SEMINAR ▪ ISE 651

On Beyond LP: Optimization of Complex Systems

ABSTRACT – Many engineers designing a complex system would like to optimize its performance, and perform trade-off studies to better understand the impact of decisions. The complex systems are often modeled with black-box functions that are non-linear, non-convex, multi-modal, discontinuous and available only through computer programs. They may involve continuous and integer variables. I will discuss a new algorithm called Probabilistic Branch and Bound (PBnB) for level set approximation that can be applied to general mixed-integer problems, with noisy functions, and summarize some theoretical results regarding finite-time performance. I will mention several applications of complex systems that I have worked on, with numerical examples.

Dr. Zelda B. Zabinsky
Professor
Department of Industrial and Systems Engineering
University of Washington

SPEAKER BIO – Dr. Zelda B. Zabinsky is a Professor in Industrial and Systems Engineering (ISE) at the University of Washington, with adjunct appointments in the departments of Electrical Engineering, Mechanical Engineering, and Civil and Environmental Engineering. She is an IIE Fellow and has published numerous journal articles. Her book, *Stochastic Adaptive Search in Global Optimization*, describes research on theory and practice of algorithms useful for solving problems with multi-modal objective functions in high dimension. The National Science Foundation (NSF), Department of Homeland Security, NASA-Langley, Federal Aviation Administration (FAA), Boeing Commercial Airplane Company, Microsoft and the Port of Tacoma have funded her research. Professor Zabinsky is currently on the editorial board of the *Journal of Global Optimization*. She teaches courses in Operations Research and has received the annual teaching award in ISE at the University of Washington several times.

USC Viterbi
School of Engineering
Daniel J. Epstein Department of Industrial and Systems Engineering

TUESDAY, FEBRUARY 6, 2018
3:30PM – 4:50PM
USC ANDRUS GERONTOLOGY CENTER (GER), ROOM 206