



Operations Research Seminar

Model Uncertainty in Operations Management

J. George Shanthikumar

Industrial Engineering and Operations Research
University of California at Berkeley

Classical modeling approaches in Operations Management under uncertainty assume a full probabilistic characterization. The learning needed to implement the policies derived from these models is accomplished either through (i) classical statistical estimation procedures or (ii) subjective Bayesian priors. When the data available for learning is limited, or the underlying uncertainty is non-stationary, the error induced by these approaches can be significant and the effectiveness of the policies derived will be reduced. In this presentation we discuss how we may incorporate these errors in the model (that is, model *model uncertainty*) and use robust optimization to derive efficient policies. Different models of model uncertainty will be discussed and different approaches to robust optimization with and without bench-marking will be presented. Two alternative learning approaches Objective Bayesian Learning and Operational Learning will be discussed. These approaches could be used to calibrate the models of model uncertainty and to calibrate the optimal policies. Throughout this talk we will consider classical inventory control, portfolio optimization, and pricing and revenue management problems as examples to illustrate these ideas.

Date: Thursday, February 7, 2008

Time: 15:00-16:00

Location: Glasgow 115