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Risk-Averse Dynamic Programming

Monday, November 16, 2009

4:00 pm
Peirce 120

Abstract:

We introduce the concept of a Markov risk measure and we use it to formulate risk-averse control problems for two Markov decision models: a finite horizon model and a discounted infinite horizon model. For both models we derive risk-averse dynamic programming equations and a value iteration method. For the infinite horizon problem we also develop a risk-averse policy iteration method and we prove its convergence. Finally, we propose a special version of the Newton method to solve a nonsmooth equation arising in the policy iteration method and we prove its convergence.

Andrzej Ruszczyński received his PhD degree in control engineering from Warsaw University of Technology. He was affiliated with the University of Zurich (Switzerland), Princeton University, University of Wisconsin-Madison. He was the project leader of *Optimization under Uncertainty* project at the International Institute of Applied Systems Analysis in Laxenburg (Austria). Andrzej Ruszczyński is currently a professor at Rutgers University. He is associate editor of *SIAM Journal on Optimization*, *Optimization Methods and Software*, and *Annals of Operations Research*. His interests are in the area of optimization under uncertainty and risk. He is the author and coauthor of several books and many papers on optimization.

Refreshments will be provided.

For more information contact Darinka Dentcheva or call 201-216-5449.