THE UNIVERSITY OF TEXAS AT AUSTIN
McCOMBS SCHOOL OF BUSINESS

Fall 2013 RADM Guest Lecturer Series

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Large Scale Portfolio Selection with Spectral Risk Measures

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Abstract

We propose an iterative algorithm to efficiently solve the portfolio selection problem with multiple spectral risk constraints. Since the conditional value at risk (CVaR) is a special case of the spectral risk function, our algorithm solves portfolio selection problems with multiple CVaR constraints. In each step, the algorithm solves a very simple separable convex quadratic program. The algorithm extends to the case where the objective is a utility function with mean return and a weighted combination of a set of spectral risk constraints, or maximum of a set of spectral risk functions. We report numerical results that show that our proposed algorithm is very efficient, and is at least two orders of magnitude faster than the state of the art general purpose solver for all practical instances.

(This is joint work with Carlos Abad.)

Bio

Garud Iyengar is a Professor in the Industrial Engineering and Operations Research Department in the School of Engineering and Applied Science at Columbia University. He received his B. Tech. in Electrical Engineering from IIT Kanpur, and an MS and PhD in Electrical Engineering from Stanford University. His research interests are broadly in information theory, control and optimization. His published works span a diverse range of fields, including information theory, applied mathematics, computer science, operations research, economics and financing engineering. His current projects focus on the areas of large scale portfolio selection, systemic risk management, quantitative marketing, smart grids, public health and systems biology.