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Seminar

Speaker: **Professor Anand N. Vidyashankar**
Department of Statistics
George Mason University

Title**:** **Data driven Distributionally Robust Stochastic Optimization: Uncertainty Quantication and Model Misspecification**

Time: **3:20 – 4:20pm, *Wednesday*, October 22, 2014**

Place: **552 Hill Center**

Abstract

Stochastic optimization problems arise in several areas of engineering and science wherein the focus is on optimizing an expectation subject to constraints. In typical applications, this expectation cannot be computed but can frequently be simulated. The classical approach to address this problem consists in postulating a probability model and developing appropriate optimization methods. While a vast literature for the study of such algorithms is available, the importance of data-driven strategy and model misspecication are emerging. In this presentation, we provide a new approach to robust stochastic optimization, namely data driven distributionally robust stochastic optimization (DD-DRSO), using disparities. We describe the properties of the estimated optimizers and investigate the impact of model misspecication. Towards this, we investigate the asymptotic properties of the optimizers and show that appropriately centered and scaled optimizers converge in distribution to necessarily a non-Gaussian random variable. Using this, we deduce the role of intrisic and extrinsic uncertainty in the stochastic optimization problems. We illustrate the ideas using examples from a variety of areas including finance, biology, and healthcare.

***** Refreshments will be served @2:50pm in Room 502 Hill Center *****