DEPARTMENT of INDUSTRIAL ENGINEERING
UNIVERSITY of HOUSTON

FRIDAY SEMINAR SERIES
BROADEN HORIZONS | EXTEND MINDS

Dr. Harsha Gangammanavar

Department of EMIS

Southern Methodist University

Date: Friday, March 05, 2021

Time: 1 - 1:50 pm

Zoom Meeting ID: 970 7656 5407

Password: 477211

SEQUENTIAL INTERNAL SAMPLING METHODS FOR STOCHASTIC PROGRAMMING

Abstract: The sequential internal sampling technique used in the stochastic decomposition algorithm is a computationally effective approach to solve large-scale two-stage stochastic linear programming problems rising in many practical applications. As opposed to a fixed sample average approximation of stochastic programs, the sequential internal sampling approach uses samples of increasing sizes. Such an approach, along with effective stopping criteria and carefully designed implementation, is attributed to the success of the stochastic decomposition algorithm. Building upon this success, the talk will present sequential internal sampling-based algorithms for two challenging classes of stochastic programming problems. The first algorithm is the stochastic dynamic linear programming designed for stage-wise independent multistage stochastic linear programs. The salient features of this algorithm include the use of quadratic regularization and a piecewise-affine solution discovery scheme. The second algorithm is the two-stage distributionally robust stochastic decomposition. This algorithm works with ambiguity sets defined in a data-driven manner. The presentation will include the convergence analyses of the algorithms and the computational results obtained on well-known test instances generated from the literature.

Biography: Harsha Gangammanavar is an Assistant Professor in the Department of Engineering Management, Information, and Systems at Southern Methodist University. Before that he was a postdoctoral fellow at Clemson University and a Visiting Assistant Professor at University of Southern California. His research focus is on developing large-scale computational optimization algorithms for stochastic programming. His research also involves application of the stochastic programming algorithms in planning and operations problems arising in power systems and healthcare logistics.