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**Date:** Friday, March, 31, 2023

**Time:** 1 - 1:50 pm

**Location:** D2 LECT 2

***Adversarial Telerobotic Camera View-Frames Placement and Shortest Path Problems with Distributional Ambiguity***

**Abstract:** Interdiction problems are characterized as games played between two players: an interdicator/attacker and defender. The interdicator is a player who makes interdiction decisions using limited resources to degrade the defender's performance, and the defender makes decisions after observing the interdiction decision. Specifically, we consider two games: (a) Shortest Path Network Interdiction, where the defender finds a minimum cost path between a given pair of source and destination nodes of the interdicted network, and (b) Adversarial Camera View-Frame Placement, where the defender determines pan/tilt/zoom of multiple surveillance cameras to determine subregions of maximum priority based on input provided by a set of agents located in an adversarial environment. We introduce new algebraic modeling frameworks that allow uncertainty in the success and impact of the attacks by an interdicator, adjustments based on risk-appetite (risk-receptive or risk-averse) of the decision makers (both interdicator and defender), and incomplete information of probability distribution associated with uncertain data parameters. We develop computationally efficient solution approaches for solving these models and present conditions under which these approaches are finitely convergent along with our computational results.

**Biography:** Dr. Manish Bansal is an Associate Professor and a Grado Early Career Faculty Fellow with Grado Department of Industrial and Systems Engineering at Virginia Tech. He did Bachelors in Electrical Engineering from National Institute of Technology in India, and M.S. with thesis and Ph.D. from Department of Industrial and Systems Engineering at Texas A&M University. Prior to joining Virginia Tech, he was a postdoctoral fellow in Department of Industrial Engineering and Management Sciences at Northwestern University. His research is focused on the theory of mixed integer programming, stochastic and distributionally robust optimization, game theory, and location science along with their applications in homeland security, logistics, and supply chain management. He has received multiple grants from National Science Foundation and Department of Defense. He has served as president of INFORMS Junior Faculty Interest Group, and currently, he is serving as president-elect of Engineering Faculty Organization at Virginia Tech.