Dr. J. Cole Smith

Dean of the College of Engineering and CS

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Syracuse, NY

Date: Friday, Dec. 1, 2023

Time: 1:00 -- 1:50 pm

Location: Melcher 180

Asymmetric Stochastic Shortest-Path Interdiction Favoring the Evader

Abstract: We discuss a two-stage shortest-path interdiction problem between an interdictor and an evader, in which the cost for an evader to use each arc is given by the arc's base cost plus an additional cost if the arc is attacked by the interdictor. The interdictor acts first to attack a subset of arcs, and then the evader traverses the network using a shortest path. In the problem we study, the interdictor does not know the exact value of each base cost, but instead only knows the (nonnegative uniform) distributions of each arc's base cost. The evader observes both the subset of arcs attacked by the interdictor and the true base cost values before traversing the network, and is thus at an advantage. The interdictor seeks to maximize evader's shortest-path costs, but the choice of objective is a key consideration. We examine ideas underscoring how the interdictor could maximize the expected objective that an evader will incur, and then more generally explore the maximization of the evader's conditional value-at-risk, given some specified risk parameter.

Biography: Dr. J. Cole Smith is Dean of the College of Engineering and Computer Science at Syracuse University. His research regards mathematical optimization models and algorithms, especially those arising in combinatorial optimization. Dr. Smith's awards include the Young Investigator Award from the ONR, the Hamid K. Elden Outstanding Young Industrial Engineer in Education award, the Operations Research Division Teaching Award, the 2014 Glover-Klingman prize for best paper in Networks, and the best paper award from IIE Transactions in 2007. He became a Fellow of IISE in 2018, a Fellow of INFORMS in 2023, and has served on the Boards of IISE and INFORMS.