# Operations Research and Engineering Management
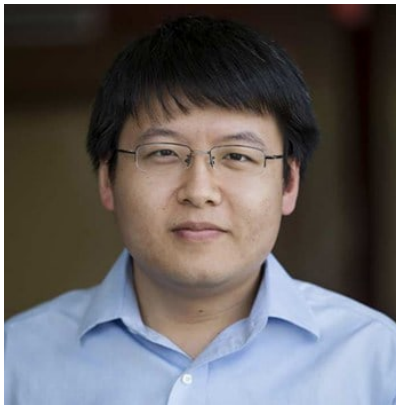# Seminar Series

**Research Seminar**

**Convex Chance-Constrained Programs with
Wasserstein Ambiguity**



**Dr. Ruiwei Jiang
Associate Professor
University of Michigan
Friday, October 1, 2021
11:00 a.m. – 12:15 p.m.**
https://smu.zoom.us/j/97906267193

**Abstract**
Chance constraints yield non-convex feasible regions in general. In particular, when the uncertain parameters are modeled by a Wasserstein ball, prior studies showed that the distributionally robust (pessimistic) chance constraint admits a mixed-integer representation. This study identifies sufficient conditions that lead to convex feasible regions of chance constraints with Wasserstein ambiguity. First, when uncertainty arises from the right-hand side of a pessimistic joint chance constraint, we show that the ensuing feasible region is convex if the Wasserstein ball is centered around a log-concave distribution. Second, when uncertainty

arises from the left-hand side of a pessimistic individual chance constraint, we derive a convex and conic representation if the Wasserstein ball is centered around a radial and symmetric distribution (e.g., Gaussian). Third, we extend these convexity results and conic representation to optimistic chance constraints. This is a joint work with Haoming Shen.

## Biography
Ruiwei Jiang is an Associate Professor of Industrial & Operations Engineering at the University of Michigan. He conducts research on the theory of stochastic and robust optimization, integer programming, and their applications on power systems and healthcare operations. Ruiwei's research has been recognized with an NSF Career Award, two INFORMS Junior Faculty Interest Group paper prizes, and an INFORMS George Nicholson student paper award.