SEMINAR

Title: Two applications of distributionally robust optimization to traffic flow and newsvendor problems

Speaker: Associate Professor Karthik Natarajan
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Date: 16 March 2018 (Friday)
Start Time: 10.00 am  End Time: 11.15 am (including Q&A)
Venue: Executive class room at E1-07-21

Abstract:

Distributionally robust optimization is a popular paradigm to address optimization problems under uncertainty. In this talk, I will present two of our recent working papers on this topic applied to classical problems in traffic equilibrium and the newsvendor problem. In the first part of the talk, I will discuss a link-based Markovian choice model that is used to compute traffic flows. We propose a distributionally robust approach from the system planner’s view that generalizes this approach and propose a convex optimization formulation for the problem. In the second part of the talk, I will discuss Scarf's classic solution for the distributionally robust newsvendor problem that is characterized by two moment information and generalize it to show a "heavy tail optimality" property of the distributionally robust newsvendor when information on the first and the nth moment is known.

This is based on joint work with my colleagues Selin Damla Ahipasaoglu (SUTD), Bikramjit Das (SUTD) and postdocs Ugur Arikan and Anulekha Dhara.

Biography:

Karthik Natarajan is an Associate Professor and the Associate Head of the Engineering Systems and Design pillar at the Singapore University of Technology and Design (SUTD). Prior to joining SUTD, he has held faculty positions as the Department of Management Sciences, City University of Hong Kong from 2009 to 2011 and at the Department of Mathematics, National University of Singapore from 2004 to 2009. His primary research interest is in distributionally robust optimization with a broader focus on operations research and analytics with applications to domains such as marketing, finance and transportation.