EPSTEIN DEPARTMENT SEMINAR

Convex Approximations For Mixed-Integer Recourse Models

ABSTRACT – Two-stage mixed-integer recourse models are a class of problems dealing with decision making under uncertainty. They have a wide range of applications in e.g., finance, energy, logistics and healthcare. However, in general these problems are extremely difficult to solve.

In this talk, Dr. Romeijnders will discuss convex approximations of these two-stage mixed-integer recourse models. The rationale of using these approximations is that they can be solved much more efficiently using techniques from convex optimization. Moreover, if the approximations are close they will yield good or (near-)optimal first-stage solutions. To guarantee the performance of these approximating first-stage solutions he will derive error bounds on the convex approximations that depend on the total variations of the probability density functions of the random variables in the model. He will use an example in healthcare to illustrate the convex approximations and their error bounds.

In the final part of the talk, he will discuss initial results for combining convex approximations with other solution approaches for solving mixed-integer recourse models. In particular, he proposes an inexact cutting plane technique.

Dr. Ward Romeijnders
Assistant Professor
Department of Operations
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SPEAKER BIO – Dr. Ward Romeijnders is assistant professor within the Department of Operations at the University of Groningen. His research is focused on stochastic mixed-integer optimization problems, a class of problems that can be used to support decision making under uncertainty for a wide range of applications in, e.g., engineering, logistics, energy, and finance.

In 2011 Ward Romeijnders completed both the master programme Econometrics, Operations Research & Actuarial Studies and the Research Master (summa cum laude) at the University of Groningen. In 2015 he was awarded his PhD (cum laude) at the same university. His PhD project was funded by an NWO Talent Grant, titled "Approximating mixed-integer recourse models by modifying the recourse data", which also allowed him to spend a semester at the University of Texas at Austin in 2013.

As of 1 September 2015, Ward Romeijnders has been appointed as assistant professor at the Faculty of Economics and Business of the University of Groningen. In 2017 he received a prestigious NWO VENI grant for his project "Planning for the unknown. Towards optimal decisions under uncertainty".

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TUESDAY, DECEMBER 5, 2017
3:30PM – 4:50PM
USC ANDRUS GERONTOLOGY CENTER (GER), ROOM 206