SCHOOL OF DATA SCIENCE

SEMINAR SERIES

Smooth Constraint Convex Minimization via Conditional Gradients

Date: 19 March 2019 (Tuesday)
Time: 2:30pm to 3:30pm
Venue: P7510, 7/F, Yeung Kin Man Academic Building (YEUNG), City University of Hong Kong

Dr Pokutta, Sebastian
David M. McKenney Family Early Career Professor,
Associate Professor, and Associate Director Machine Learning
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Guest Speaker's profile

Sebastian Pokutta is the David M. McKenney Family Associate Professor in the School of Industrial and Systems Engineering and an Associate Director of the Machine Learning @ GT Center at the Georgia Insitute of Technology. Having received both his diploma and Ph.D. in mathematics from the University of Duisburg-Essen in Germany, Pokutta was a postdoctoral researcher and visiting lecturer at MIT, worked for IBM ILOG, and Krall Demmel Baumgarten. Prior to joining the Georgia Institute of Technology, he was a Professor at the University of Erlangen-N ü rnberg. Sebastian received the David M. McKenney Family Early Career Professorship in 2016, an NSF CAREER Award in 2015, the Coca-Cola Early Career Professorship in 2014, the outstanding thesis award of the University of Duisburg-Essen in 2006, as well as various Best Paper awards. Pokutta's primary research interests are in optimization, machine learning, and complexity in the context of extended formulations and continuous optimization techniques as well as analytics with a focus on real-world applications in, e.g., supply chain management, finance, cyber-physical systems, and predictive analytics. Pokutta is also interested in questions around the societal impact, fairness, transparency, and security of AI and machine learning.

Abstract

Conditional Gradients (aka Frank-Wolfe Methods) are an important class of algorithms for smooth constraint convex minimization, in particular when projection onto the feasible region is non-trivial or sparse representation of iterates via extreme points is desired. Due to their simplicity, conditional gradient methods have become the methods of choice for many applications despite often suboptimal theoretical convergence rates. In fact, often the empirically observed rates are significantly better than the worst-case rates and recent refinements of the basic conditional gradients methods achieve, e.g., linear convergence in the strongly convex case or allow for variance-reduced stochastic variants. In this talk I will discuss some of these recent developments and discuss further extensions as well as open problems.

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All are welcome