Algorithmic Development for Computing B-Stationary Points of a Class of Nonsmooth DC Programs

ABSTRACT – In the first part of this talk, we study a convex-constrained nonsmooth DC program in which the concave summand of the objective is an infimum of possibly infinitely many smooth concave functions. We propose some algorithms by using nonmonotone linear search and extrapolation techniques for possible acceleration for this problem, and analyze their global convergence, sequence convergence and also iteration complexity. We also propose randomized counterparts for them and discuss their convergence.

In the second part we consider a class of DC constrained nonsmooth DC programs. We propose penalty and augmented Lagrangian methods for solving them and show that they converge to a B-stationary point under much weaker assumptions than those imposed in the literature.

This is joint work with Zhe Sun and Zirui Zhou.

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SPEAKER BIO – Dr. Zhaosong Lu is a full Professor of Mathematics and an associate faculty member in Statistics and Actuarial Science at Simon Fraser University. He received PhD in Operations Research from the School of Industrial and Systems Engineering of Georgia Tech in 2005 under the supervision of Dr. Renato Monteiro and Dr. Arkadi Nemirovski. He was a Visiting Assistant Professor of Mathematical Sciences at Carnegie Mellon University during 2005-2006. He was also a Visiting Associate Professor at Texas A&M University and Arizona State University, and a Visiting Researcher at Microsoft Research, Redmond during 2012-2013. His research interests include theory and algorithms for continuous optimization, and applications in data analytics, finance, statistics, machine learning, image processing, engineering design, and decision-making under uncertainty. He was a finalist of INFORMS George Nicholson Prize.

He has published numerous papers in major journals of his research areas. He also served on INFORMS George Nicholson Prize Committee in 2014 and 2015. Currently, he is an Associate Editor for SIAM Journal on Optimization, Computational Optimization and Applications, and Big Data and Information Analytics.

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