VirginiaTech
VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Computer Science Seminar Series

National Capital Region

Blessing of Nonconvexity: Nonconvex Statistical Machine Learning Methods

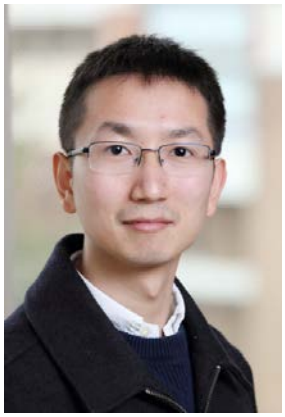
Speaker: Prof. Quanquan Gu
University of Virginia

Friday, Oct 28, 2016
1:00PM- 2:00PM, NVC 324

Abstract

Nonconvex optimization arises in many machine learning problems such as sparse learning, high dimensional graphical models, and low-rank matrix estimation. However, unlike convex optimization based machine learning methods, the nonconvex optimization based approaches are often heuristic and lack of theoretical guarantees. To tackle this problem, we propose a new generation of nonconvex statistical machine learning methods with provable guarantee, which exploit various nonconvex formulations to gain statistical efficiency as well as computational scalability. The proposed methods have been successfully applied to text mining, recommendation systems, and image/video denoising, and outperform the state-of-the-art methods both theoretically and empirically.

Biography



Quanquan Gu is an Assistant Professor at the University of Virginia, with a joint appointment in Department of Systems and Information Engineering, and Department of Computer Science. Prior to joining the University of Virginia, Dr. Gu was a Postdoctoral Research Associate in the Department of Operations Research and Financial Engineering at Princeton University. He received his Ph.D. degree in Computer Science from the University of Illinois at Urbana-Champaign. His current research focuses on Machine Learning, Data Mining and Optimization. He has published more than 30 papers in premium venues of machine learning and data mining, including NIPS, ICML, KDD, AISTATS and UAI. He is on the editorial board of Information Processing and Management.