CMAI: Interface of Math and Artificial Intelligence Seminar
The Chinese University of Hong Kong

This CMAI Interface of Math and AI Seminar is organized by Centre for Mathematical Artificial Intelligence (CMAI), under Department of Mathematics at CUHK.

Date: May 8, 2024 (Wednesday)
Time: 3:30 pm-5:00 pm (Hong Kong Time)
Zoom Meeting: 905 330 9693

A Bregman Proximal Stochastic Gradient Method with Extrapolation for Nonconvex Nonsmooth Problems

Speaker: Prof. Chunfeng Cui
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Abstract: In this talk, we explore the matrix and tensor decomposition problem that involves the combination of a differentiable nonconvex function and a nonconvex nondifferentiable function. One main difficulty is that the differentiable component lacks a global Lipschitz continuous gradient. To handle this challenge, we propose a Bregman proximal stochastic gradient method with extrapolation, which only requires smooth adaptivity of the differentiable part. Under the variance reduction framework, we not only analyze the subsequential and global convergence of the proposed algorithm under certain conditions, but also analyze the sublinear convergence rate of the subsequence. Numerical experiments on real datasets demonstrate that our proposed algorithm is efficient and achieve better performance than the existing state-of-the-art methods.

Bio: Chunfeng Cui is currently a tenure-track professor at the School of Mathematical Sciences, Beihang University. Her research interests include optimization theory and algorithms, tensor calculations, dual quaternion and their applications. She has published more than 20 papers in journals and conferences such as the SIAM series and IEEE series. She received her B.S. and Ph.D. degrees from Jilin University and Chinese Academy of Sciences, respectively. After graduating with a Ph.D., she worked as a postdoctoral researcher at City University of Hong Kong and University of California, Santa Barbara. In 2019, she won the Zhongjiaqing Mathematics Award of the Chinese Mathematical Society.