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THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON STATISTICS

Simultaneous Feature- and Sample-Splitting ADMM for Penalized Rank and Quantile Regression

By

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Abstract

This work is concerned with computational issues related to penalized rank regression, which has been proposed for variable selection in rank regression. Although rank regression is an effective analytic tool to deal with heavy-tailed error and outlier contamination due to its robustness and efficiency properties, the rank regression and penalized rank regression are not scalable because the rank regression typically is carried out by median regression of the pairwise difference of responses on pairwise difference of covariate vectors. To address computational challenge in penalized rank regression, we proposed simultaneous feature- and sample-splitting ADMM algorithms for high-dimensional penalized rank regression with a large sample size. The proposed algorithm may deal with the memory limitations associated with single-machine algorithms under a parallel computing framework. We systematically study the theoretical property of the proposed algorithms, and shows that under certain conditions, the proposed algorithm reaches a linear convergence rate towards the optimal solution. We conduct Monte Carlo simulation studies to compare the proposed algorithms with existing ones. The numerical comparison implies that the proposed algorithms outperform existing ones in terms of estimation accuracy and capacity to deal with memory limitations.

Date : 29 April 2024 (Monday)

Time : 4:00pm-5:00pm

Venue : Room 4475 (near Lifts 25/26)

All are Welcome!