Friday August 31, 09:30 – 10:30
(Demetra, Amathus Beach Hotel)

"Matrix Completion and Large-Scale SVD Computations"

by

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Abstract

The Singular Value Decomposition (SVD) is a fundamental tool in all branches of data analysis - arguably one of the most widely used numerical tools. Over the last few years, partly inspired by the Netflix problem, the SVD has again come into focus as a solution to the matrix completion problem. One partially observes a very large matrix, and would like to impute the values not observed. By assuming a low-rank structure, the SVD is one approach to the problem - a SVD with large amounts of missing data. We discuss an approach for building a path of solutions of increasing rank via nuclear-norm regularization. An integral part of this algorithm involves repeatedly computing low-rank SVDs of imputed matrices. We show how these tasks can be efficiently handled by parallel computational algorithms, allowing the method to scale to very high-dimensional problems.

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