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STATISTICS COLLOQUIUM

MONDAY, NOVEMBER 16, 2015
TALK: 4:15 PM — SCIENCE CENTER 300H
RECEPTION: 3:50 PM

“Multiresolution Matrix Factorization for Learning and Fast Computation”

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ABSTRACT

The sheer size of today's datasets dictates that learning algorithms compress or reduce their input data and/or make use of parallelism. In this work we make a connection between such computational strategies and some classical themes in Applied Mathematics, namely Multiresolution Analysis and Multigrid Methods. In particular, we make the point that similarity matrices appearing in data often have multiresolution structure, which can be exploited both to facilitate computation, and to inform the statistical analysis.

Multiresolution Matrix Factorization (MMF) is a specific fast algorithm to extract this structure. Applications of MMF to matrix compression and discovering structure in large graphs/networks are of particular interest. We demonstrate MMF with experiments on a variety of datasets. This work is joint with Nedelina Teneva, Pramod Mudrakarta and Vikas Garg.