

Matrix Computations & Scientific Computing Seminar

Organizer(s): James Demmel & Ming Gu

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| Wednesday, 11:00am–12:00pm, 380 Soda |
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April 28 **Ewout van den Berg**, Stanford University

Sparse optimization with least-squares constraints

The use of l_1 regularization in optimization to obtain sparse solutions has become common practice over the past few years. Its success has motivated the introduction of a variety of other types of regularization, each suitable for a particular type of sparsity. However, despite all theoretical advances, there are still only a very few specialized codes that can successfully deal with the large-scale problem instances arising in practice.

In this talk we present an algorithm that can efficiently solve large-scale instances of a variety of sparse recovery problems, including l_1 , sign-constrained l_1 , and joint-sparse recovery. We explore possible generalizations, and discuss how the algorithm applies to the more recent problems of matrix completion and robust principal component analysis. Finally, we compare the performance of our algorithm to existing solvers.

This is joint work with Michael Friedlander, University of British Columbia, Vancouver.