Matrix Computations and Scientific Computing Seminar

Organizer: J. Demmel and M. Gu

Wednesday, 12:00–1:00 pm, 380 Soda Hall

Nov 9 **Yang You**, UC Berkeley

Asynchronous Parallel Greedy Coordinate Descent

In this work, we propose and study an Asynchronous parallel Greedy Coordinate Descent (Asy-GCD) algorithm for minimizing a smooth function with bounded constraints. At each iteration, workers asynchronously conduct greedy coordinate descent updates on a block of variables. In the first part of the paper, we analyze the theoretical behavior of Asy-GCD and prove a linear convergence rate. In the second part, we develop an efficient kernel SVM solver based on Asy-GCD in the shared memory multi-core setting. Since our algorithm is fully asynchronous—each core does not need to idle and wait for the other cores—the resulting algorithm enjoys good speedup and outperforms existing multi-core kernel SVM solvers including asynchronous stochastic coordinate descent and multi-core LIBSVM.