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Martin Brown* (martinebrown@berkeley.edu), **Mary Broadbent** and **Kevin Penner**. *A COMPARISON OF ALGORITHMS FOR SUBSET SELECTION*. Preliminary report.

Subset selection is a method for selecting a subset of columns from a real matrix, so that the subset represents the entire matrix well and is far from being rank deficient.

We investigate a two-stage algorithm for subset selection that utilizes a randomized stage to improve computing speed for large problems and achieves asymptotic bounds that are superior to the best existing deterministic algorithm. After experimentation on test matrices of dimension up to 500, we find that the randomized algorithm, when run 40 times, differs from the deterministic algorithm by less than an order of magnitude with respect to our two criteria of matrix approximation and linear independence.

We also propose a new two stage deterministic algorithm that performs as well as the other algorithms. We conclude that, due to the difficulties of implementing the randomized algorithm efficiently, deterministic methods should remain the algorithms of choice for matrices of moderate size. (Received September 19, 2009)