

How and how not to compute the Moore-Penrose inverse

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Abstract

A number of fast algorithms for computing the Moore-Penrose inverse of structured and block matrices have been designed. However, very often they are not accurate up to the limitations of data and conditioning of the problem. Thus procedures of improving the accuracy and stability of algorithms are necessary. We consider some ways in which iterative refinement may be used to improve the computed results. Extensive numerical testing was done in Matlab to compare the performance of some direct and iterative methods for computing the Moore-Penrose inverse of special matrices.

Keywords

Block matrix, Moore-Penrose inverse, Singular values, Least squares solutions, Condition numbers, Stability of algorithms, Iterative methods.

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