

The CUR approximation: computation and applications

Thursday, September 4, 2025 4:30 PM (30 minutes)

The CUR approximation of a matrix is attractive in that once the column and row indices are chosen, one can obtain a low-rank approximation without even looking at the whole matrix.

Its computation had previously been unattractive, often starting with the SVD to get reliable pivots. A remarkable paper by Osinsky shows that this is unnecessary, rendering CUR a practical tool in terms of computational efficiency and near-optimal accuracy.

In this talk I will first discuss the computational aspects of CUR, then highlight its power in practical applications, hopefully including parameter-dependent matrices, approximation of functions, model order reduction, and PCA.

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