

# RandNLA: Randomization in Numerical Linear Algebra

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## Abstract

The introduction of randomization in the design and analysis of algorithms for matrix computations (such as matrix multiplication, least-squares regression, the Singular Value Decomposition (SVD), etc.) over the past 15 years provided a new paradigm and a complementary perspective to traditional numerical linear algebra approaches. These novel approaches were motivated by technological developments in many areas of scientific research that permit the automatic generation of large data sets, which are often modeled as matrices.

In this talk, we will outline how such approaches can be used to approximately solve problems such as least-squares and ridge-regression problems or approximate the Singular Value Decomposition (SVD) of matrices. Applications of the proposed algorithms to data analysis tasks (with a particular focus in population genetics) will also be discussed.

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