Figure 1: Comparison of matrix multiplications

All results are obtained by running a Matlab implementation on a macintosh laptop with Intel i7 2.3 GHz processor, with no parallelization.

The slopes of linear fitting lines in figure 1 are 3.1538 and 3.3213 for 'matrix-vector' and 'matrix-matrix' respectively, which shows that both of them are of $O(n^3)$. The constant for 'matrix-vector' is $3.2261 \times 10^{-11}$, and the constant for 'matrix-matrix' is $9.4734 \times 10^{-12}$.

The slopes of the three linear fitting lines in figure 2 are 2.6202, 2.7455 and 2.9631 for LU, QR and SVD respectively. It shows that each of them is of $O(n^3)$. The constants for LU, QR and SVD decomposition are $4.5422 \times 10^{-10}$, $6.5493 \times 10^{-10}$ and $1.1280 \times 10^{-9}$ respectively.
Figure 2: Comparison of LU, QR and SVD