

Householder reflections are used by SVD code to "zero out" columns & rows of A .

For instance, the matrix Q_1 mentioned on p.21 of the linear algebra notes is given by

$$Q_1 = I - 2 \frac{u_1 u_1^T}{|u_1|^2}$$

with $u_1 = a_1 + |a_1|e_1$,

$a_1 =$ first column of A ,

$$\& e_1 = \begin{pmatrix} 1 \\ 0 \\ \vdots \\ 0 \end{pmatrix}.$$

Intuitive Picture

Consider the 2D subspace of $\mathbb{R}^m$ spanned by e_1 & a_1 :

