

Total least squares and the secular equation

Nicola Mastronardi
IAC, CNR, Bari

Abstract

The "Total Least Squares" problem was introduced by Gene Golub and Charly Van Loan in a well-known paper published in 1980. It occurs when one has to solve a linear system in which both the right- and the left-hand-side are corrupted by noise. In that paper, the authors also propose a solution of the problem based on the singular value decomposition. The computation of the roots of the secular equation is a problem in which Gene Golub was very interested. It arises in divide and conquer algorithms for computing the eigenvalues of symmetric tridiagonal and semiseparable matrices, updating and downdating eigenvalue and singular value problems.

In this talk the contribution by Gene Golub on these topics will be described.