

On 26/2, we went through SVD in detail and discussed the content of the SVD matrices U , W and V . We also discussed how to estimate errors for least squares problems and linear equations solutions in general including a discussion (page 793 (from Section 15.4.2 --- page 794 bottom) and why SVD is more robust to near singular least squares problems than Cholesky (or LU) using the Normal Equations. With Jens, you went through the exercises from last week's presentation and Pontius and Filip using SVD.

On 5/3, we will start on root finding (solving non-linear equations). We start with one equation in one variable and motivate the importance of the problem. Then we go through the Newton's method (section 9.4) and the methods Secant, Bisection, False position (Regula falsi) and Ridder (sec. 9.1 and 9.2). For each method, we discuss three topics: Rate of convergence, error estimates/stop criterion (next lecture), robustness.

You will then work on the simple problem $x - \cos(x) = 0$ and be asked to find the solution X between zero and $\pi/2$ with each of the presented methods (see last slide in the presentation).
