CS 383C
CAM 383C/M 383E Numerical Analysis: Linear Algebra Fall 2008

Homework 7

Instructor: Inderjit Dhillon Date Due: Nov 5, 2008

Keywords: *Gaussian Elimination, Cholesky Decomposition, Eigenvalue Decomposition*

1. Problem 24.1

2. Let $\hat{\boldsymbol{x}}$ be the solution of hermitian positive definite system $A\boldsymbol{x} = \boldsymbol{b}$ via Cholesky Factorization (Algorithm 23.1, Trefethen and Bau). Let $\hat{\boldsymbol{x}}$ be the *exact* solution to the following perturbed system: $(A + \delta A)\hat{\boldsymbol{x}} = \boldsymbol{b}$. Show that $\frac{\|\delta A\|_\infty}{\|A\|_\infty} \leq 3n^2\epsilon_{machine}$. You can use the error analysis for LU factorization discussed in the class.