

Lab 1, February 8th, 2016
Numerical Linear Algebra, Spring 2016

1. Can you think of a (very simple) Matlab code for checking if a matrix is positive definite and symmetric (SPD)?

2. Write a Matlab code for Cholesky factorization of an SPD matrix A using the following sketch:

input: matrix A

Set L to be a zero matrix of size n (n is the size of A)

for $i = 1, 2, \dots, n$ do:

$$l_{i,i} = \sqrt{a_{i,i} - l_{(i,:)}l_{(i,:)}^T};$$

for $j = i + 1, i + 2, \dots, n$ do

$$l_{j,i} = (a_{j,i} - l_{(i,:)}l_{(j,:)}^T)/l_{i,i};$$

end

end

output: matrix L .