Lecture 22

Instructor Lecture and Matlab Demonstration:

Dot product (requires 2n operations):  x’*y, dot(x,y), sum(x.*y), for-loop

Cross product: cross(x,y)

Matrix-vector product (requires 2n^2 operations): six versions

Best is A*x when A is “full” and i-loop when A is “sparse”

matvec1.m (get this off the www site)

>> matvec1
The matrix is nxn where n is 5000
Matlab intrinsic time = 0.0848
ij (dotproduct) time = 2.5566
ij with vector time = 2.1023
ji (column) time = 0.4106
ji with vector time = 0.1553

matvecs.m (get this off the www site)

>> matvecs
The matrix is nxn where n is 5000
Matlab intrinsic time = 0.8264
Sparse time = 0.1139

Matrix-matrix product (requires 2n^3 operations): A*B, A^n and inv(A)

Determinants: det(A)

Student Matlab Computations:

Exercise 9.1

Exercise 9.2, 1 and 2

Exercise 9.3, 1a and 2

Student Multiple Choice Questions:

Go to moodle, login, choose ma116 and answer the multiple choice questions.