Matlab and Image Processing with MATLAB

1 Beginnings (Jan. 21/28; Feb. 4/11))

General references:

MATLAB Primer (Sixth Edition)
Kermit Sigmon/Timothy A. Davis
Chapman & Hall/CRC, 2002

Mastering MATLAB6
(A Comprehensive Tutorial and Reference)
Duane Hanselman/Bruce Littlefield
Prentice Hall, 2001

Matlab Guide
Desmond J. Higham/Nicholas J. Higham
SIAM, 2000

Graphics and GUIs with MATLAB (Third Edition)
Patrick Marchand/O. Thomas Holland
Chapman & Hall/CRC, 2003

Training from the Mathworks:
MATLAB Fundamentals and Programming Techniques

Matlab Programming for Engineers (2nd Edition)
Stephen J. Chapman
Brooks/Cole, 2002

Scientific Computing with MATLAB
Alfio Quarteroni/Fausto Saleri
Springer, 2003

MATLAB for Engineers Explained
Fredrik Gustafsson/Niclas Bergman
Springer, 2003

Essential MATLAB for Scientists and Engineers
(2nd Edition)
Brian D. Hahn
Elsevier, 2003

(a) Getting Started (getstart.pdf; handed out as hard copy in class)

1) Introduction
2) Matrices and Arrays
6) Desktoptools and Development Environment
Webinar: MATLAB Overview

Matlab pdfs:

matlab_env.pdf (desktoptools and development environment)
math.pdf
refbook.pdf
refbook2.pdf
refbook3.pdf

(b) Programming

4) Getting Started: Programming
Webinar: Accelerating MATLAB

Matlab pdfs:

matlab_prog.pdf
programming_tips.pdf
apiext.pdf
apiref.pdf

(c) Graphics

3) Getting Started: Graphics

Matlab pdf:

graphg.pdf

(d) Guis

5) Getting Started: Creating Graphical User Interfaces

Matlab pdf:

buildgui.pdf

2 Statistics/Curve Fitting (Feb. 18/25; March 4)

References:

Computational Statistics Handbook with MATLAB
Wendy L. Martinez/Angel R. Martinez
Chapman & Hall/CRC, 2002

Training from the Mathworks:
Statistical Methods in MATLAB

(a) Webinar: Data Analysis with Curve Fitting and Statistics Toolboxes

Matlab pdfs:

stats.pdf (Matlab Statistics Toolbox Manual)
curvefit.pdf (Matlab Curve-Fitting Toolbox Manual)

(b) Webinar: Biomedical Statistics and Curve Fitting with MATLAB

(c) Webinar: MATLAB for Bioinformatics

Matlab pdfs:

bioinfo_ug.pdf
gads_tb.pdf (genetic algorithm)

3 Optimization (March 11/18)

References:

Applied Optimization with MATLAB Programming
P. Venkataraman
Wiley, 2002

Training from the Mathworks:
MATLAB Based Optimization Techniques

(a) Webinar: Applied Optimization Using Matlab
Matlab pdf:
optim_tb.pdf (Matlab Optimization Toolbox Manual)

(b) Case study in changing a Fortran Subroutine to Matlab:
The Dykstra-Karzmarz Fortran routine to MATLAB — (linear inequality constrained least-squares)

Case study in producing and calling Fortran dlls with MATLAB:
A dynamic programming approach to unidimensional scaling

4 Image Processing (April 1/8/15)

References:

Introduction to Digital Image Processing with MATLAB
Alasdair McAndrew
Thomson, 2004

Digital Image Processing Using Matlab
Rafael C. Gonzalez/Richard E. Woods/Steven L. Eddins
Pearson/Prentice Hall, 2004

Training from the Mathworks:
MATLAB for Image Processing

(a) Webinar: Image Processing Using MATLAB
Matlab pdf:
images_tb.pdf (Matlab Image Processing Toolbox Manual)

(b) Webinar: Biomedical Image Processing with MATLAB

(c) Webinar: Geospatial Data Analysis Using MATLAB
Matlab pdf:
map_ug.pdf (Matlab Mapping Toolbox Manual)

5 Other Things (April 22/29)

(a) fMRI-type Packages
SPM2
Lyngby
Brainstorm

(b) Various Related Toolboxes:
Neural Net (nnet.pdf)
Wavelet (wavelet_ug.pdf)
Spline (splines.pdf)
Virtual Reality (vr.pdf)
Symbolic (symbolic_tb.pdf)