Introduction

- course topics
- basic course information

Course topics

Motivation

- computers are inexpensive, fast, have lots of memory
- it is easy to collect, store, transmit large amounts of data
- numerical software makes advanced algorithms simple to use

Main topics

- numerical linear algebra, focusing on least squares and extensions
- nonlinear least squares and nonlinear equations
- introduction to floating point numbers and rounding error
- applications in signal and image processing, control, machine learning, . . .

High-level languages for numerical computing

- MATLAB (how to get MATLAB)
- GNU Octave (www.octave.org)
- Julia (www.julialang.org)
- Python (via the libraries NumPy, SciPy, matplotlib, . . .)
- R (www.r-project.org)
- . . .

Course information

Course material

- textbook available online at web.stanford.edu/~boyd/vmls
- additional notes, slides, homework assignments at the CCLE course website
- lecture slides from previous years: www.seas.ucla.edu/~vandenbe/ee133a

Course requirements (see syllabus on CCLE website)

- weekly homework, most assignments include programming exercises
- a small project or extended last homework
- open-book midterm exam (Tuesday, May 4, 4pm–5:50pm)
- open-book final exam (Monday, June 7, 6:30pm–9:30pm)

Software

- you can use MATLAB/Octave or Julia
- for an introduction to Julia, see the *Julia Language Companion* to the textbook

  web.stanford.edu/~boyd/vmls