Introduction

- topics
- course material and requirements
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 material and requirements

Course material

• textbook available online at web.stanford.edu/~boyd/vmls
• additional notes, slides, homework assignments at the 133A Bruin Learn website
• lecture slides from previous years: www.seas.ucla.edu/~vandenbe/ee133a

Course requirements (see syllabus on Bruin Learn course website)

• weekly homework, most assignments include programming exercises
• closed-book midterm exam (Thursday, October 27, 2pm–3:50pm)
• closed-book final exam (Wednesday, December 7, 11:30am–2:30pm)

Software

• you can use MATLAB/Octave or Julia
• for an introduction to Julia, see the Julia Language Companion to the textbook at web.stanford.edu/~boyd/vmls