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)
- ...

Introduction
Course material and requirements

Course material

- textbook available online at web.stanford.edu/~boyd/vmls
- additional notes, slides, homework assignments: 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, November 2, 8:00am–9:50pm)
- closed-book final exam (Friday, December 15, 11:30am–2:30pm)

Software

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