Introduction

- course topics
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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