Introducing ... Matlab!

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Outline
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What is Matlab?
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- What is Matlab?
- Why Matlab?
Outline

- What is Matlab?
- Why Matlab?
- Getting Started
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- What is Matlab?
- Why Matlab?
- Getting Started
- Basic Matlab Programming
What is Matlab?

Matlab is a problem-solving environment designed for convenient numerical computations, esp. matrix manipulation, but also DEs, stats, and graphics. Developed by Cleve Moler in the 1970s as a teaching tool, it is now ubiquitous in education and industry.
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- interpreted
- customized graphical-user-interface building
- has many specialized functions (Toolboxes)
What is Matlab not?

Free! Unless...
...your school has a license...
...you buy the Student Edition...
...you use contributed packages (e.g., finite element solver, linear matrix inequality solver, etc.)
...you use a free clone (e.g., octave, scilab, etc.)
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- Fast!

Introducing ... Matlab! – p.6/9
What else is Matlab not?

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- ... you use a Matlab compiler
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- Fast! Unless
- ... you use a Matlab compiler
- ... you code things in an “optimized” fashion
Why Matlab?

- ease of use
- rapid prototyping/debugging of sophisticated code
- can be used interactively (“scratchpad”) or from scripts
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Consider the “old” way to solve a linear system $Ax = b$:

CALL DECOMP (NX, NX, A, IP, WORK, IPSD)
CALL SOLVE (NX, NX, A, B, X, 1, IP, WORK)
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- In Matlab, this is as simple as

  ```matlab
  >> x = A \ b;
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- *Sensible numerical algorithms!*
Getting Started

- other tutorials
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- other books (Mastering Matlab 6)