

Introducing MATLAB

Dmitri Nesteruk

@dnesteruk



Course Outline

- **Introducing MATLAB (this module)**
- **User Interface**
- **Data Types**
- **Basic Syntax**
- **Arrays and Matrices**
- **Scripts**
- **Data Visualization**
- **Object-Oriented Principles**

Hello, MATLAB

- **MATrix LABoratory**
- **Numerical computing environment**
- **Programming language**
- **Standalone product**
 - Matrix manipulation
 - Data visualization
- **Modular ecosystem (toolboxes)**

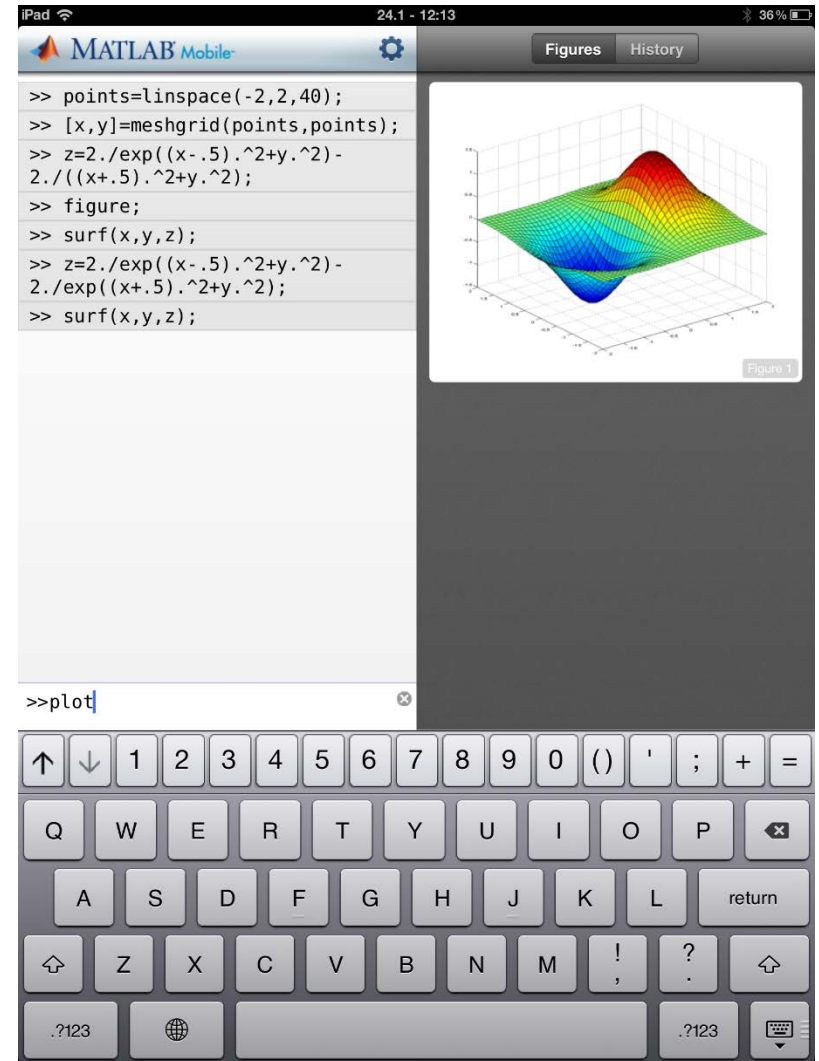
Platforms and Versions

- **This course uses MATLAB R2012b**
 - 2012 – year of release
 - Bi-annual (a – start of year, b – end)
 - Applicable to earlier versions except for UI

- **Available on many platforms**
 - Desktop
 - Windows, Mac, Linux
 - Mobile
 - Android, iOS

Matlab Mobile

- Free apps for iOS and Android
- Connect to
 - Desktop installation via MATLAB Connector (free)
 - MathWorks Cloud via your account
- Not standalone!
- Features
 - Command window only (no file editor)
 - Can plot & store graphs



Toolboxes

- **MATLAB is modular**
 - Extended by toolboxes (some come with apps)
 - Manufactured by MathWorks or 3rd parties
- **Mathematics, Statistics, Optimization**
 - Symbolic Math
 - Statistics
- **Problem domains/industries**
 - Aerospace
 - Econometrics
- **Computation**
 - Parallel computing
 - MATLAB Compiler
- **SIMULINK**

Parallel Computing

- **Parallel Computing Toolbox**
 - Support multicore CPUs, GPUs
 - Supported implicitly by MATLAB's algorithms
- **MATLAB Distributed Computing Server (MDCS)**
 - Required to run algorithms on clusters
 - Requires the Parallel Computing Toolbox

Integration

- **MATLAB Compiler**
 - Lets you compile standalone apps from MATLAB
- **MATLAB Builder NE/JA/EX**
 - Deploy MATLAB code as .NET/COM/Java components or Excel add-ins
- **Spreadsheet Link EX**
 - Link Excel to MATLAB
- **MATLAB Coder**
 - Generates C/C++ from MATLAB

Conclusion

- More info on MATLAB & Toolboxes at <http://www.mathworks.com>
- Use ver command to find out what you have
- To access an app, see the Apps tab:

