Introduction to MATLAB

Ram Krishnamurthy

MathWorks®

Agenda

I. Introduction
II. MATLAB Desktop and Scripts
III. Data Visualization
IV. Arrays and Matrices
V. Logical Indexing
VI. Resources

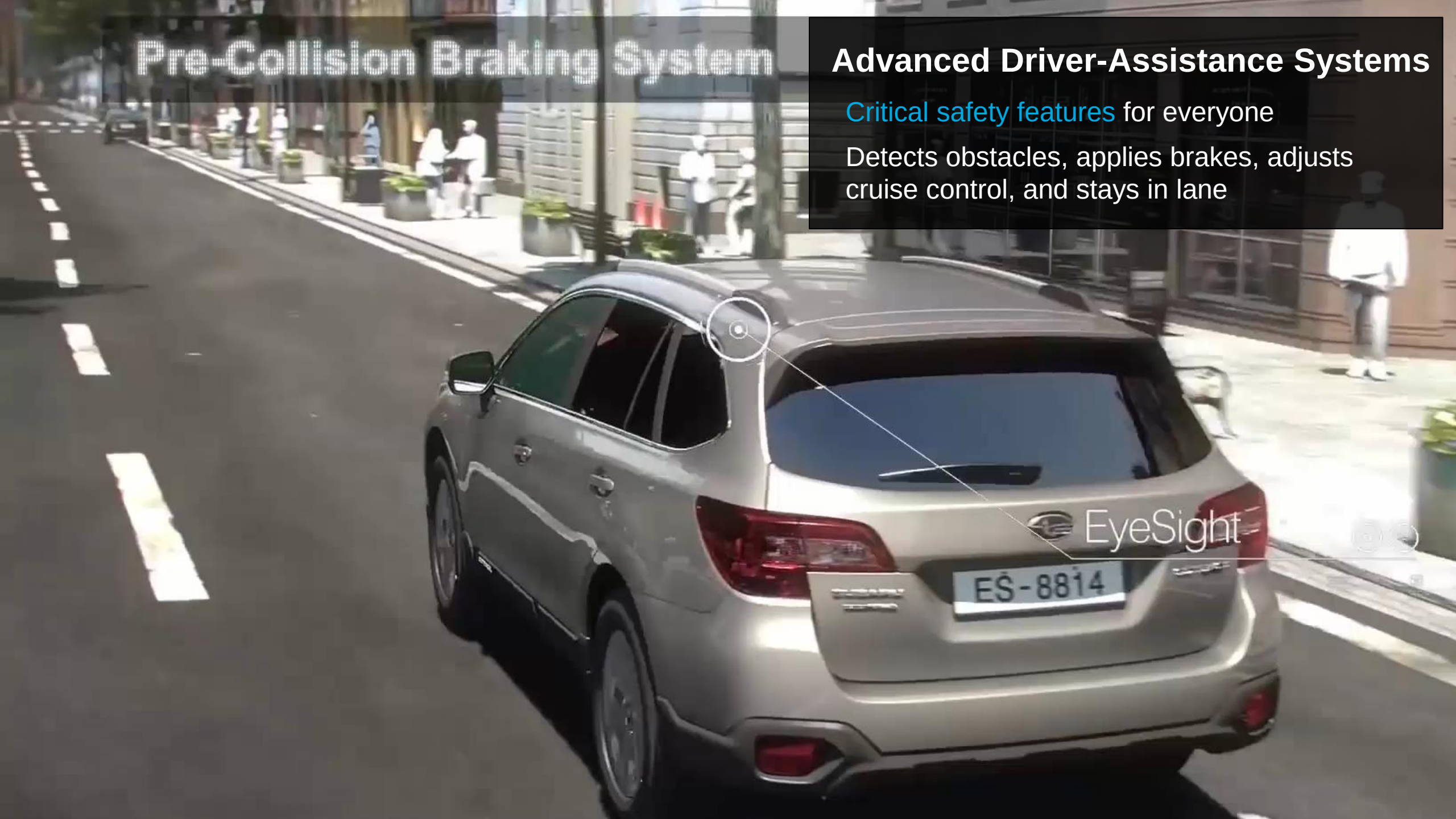
MathWorks®

Our software is used to design the products we rely on every day

And the breakthroughs transforming how we live, learn, and work

Airbus

Saved three months of development time on the A380, the world’s largest passenger jet



Advanced Driver-Assistance Systems

Critical safety features for everyone

Detects obstacles, applies brakes, adjusts cruise control, and stays in lane

Robotic Prosthetics

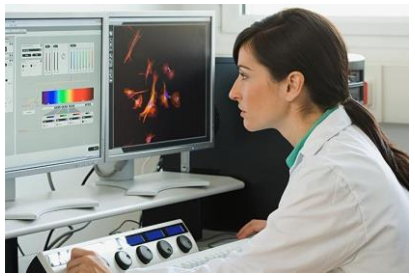
Drumsticks controlled by flexing muscles and artificial intelligence

Patient can play faster, more complex rhythms than a typical human drummer

Our Customers / Key Industries


Aerospace and Defense


Automotive

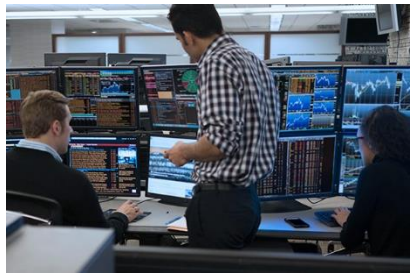

Biological Sciences


Biotech and Pharmaceutical


Communications


Electronics


Energy Production


Financial Services

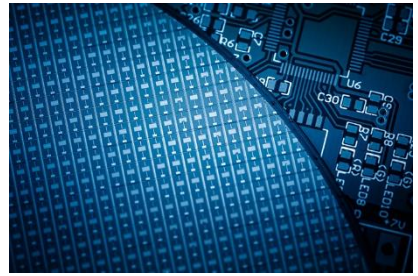

Industrial Machinery


Medical Devices


Process Industries


Neuroscience

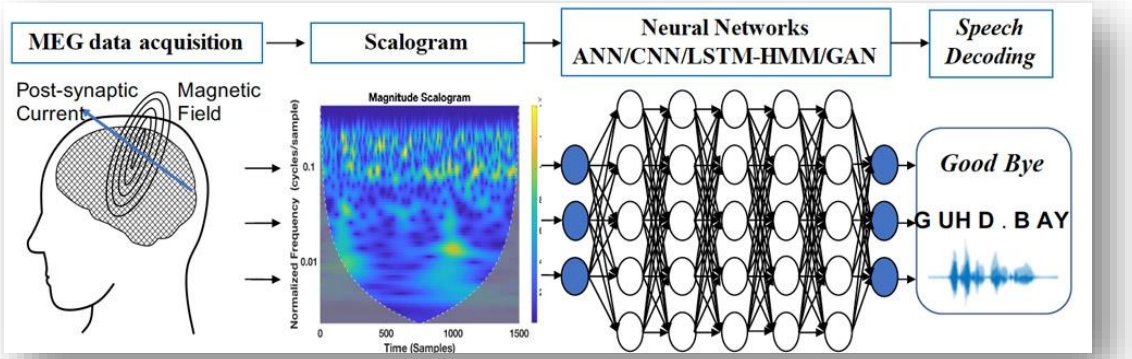

Railway Systems


Semiconductors

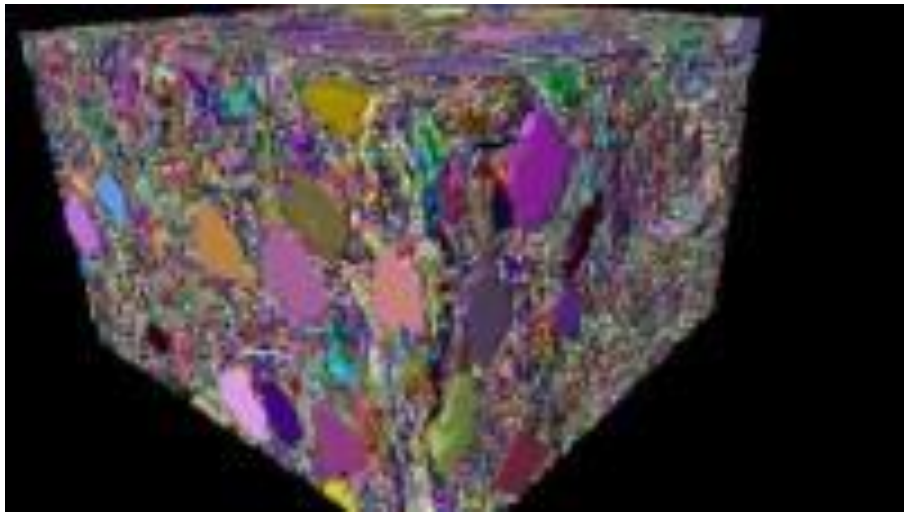

Software and Internet

Neuroscience

UT Austin



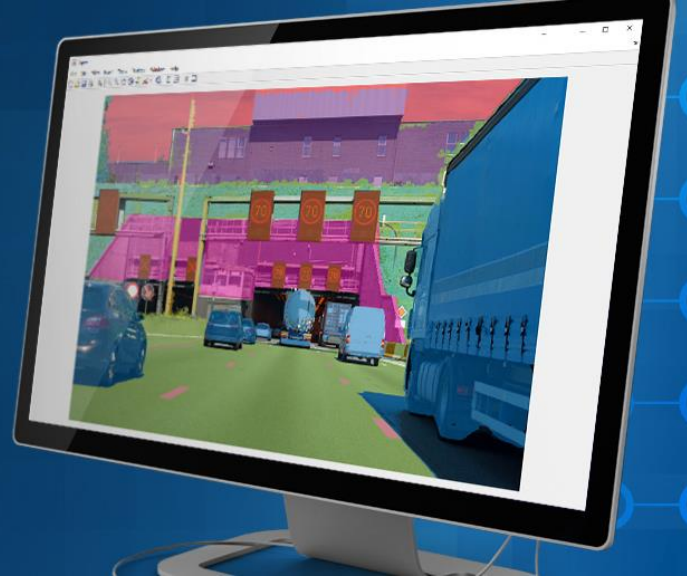
Max Planck Institute for Brain Research



University of Washington

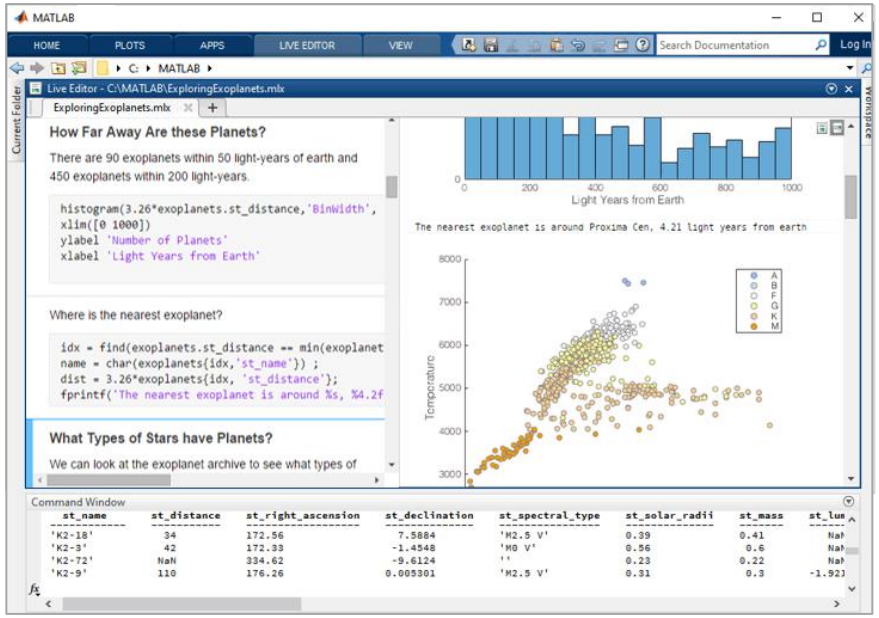
Our Products

MATLAB® & SIMULINK®



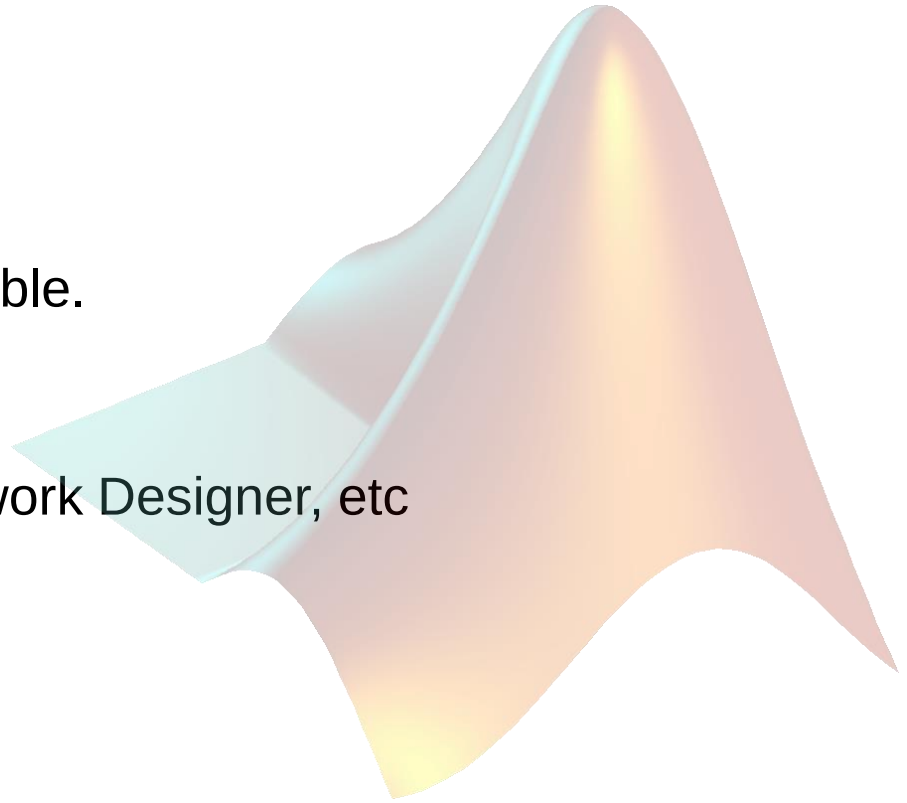
- MATLAB is a programming environment for algorithm development, data analysis, visualization, and numeric computation.
- Simulink is a block diagram environment for designing, simulating, and testing systems.
- More than 120 add-on products for specialized tasks.

Computer Vision Toolbox



Why MATLAB?

- Extremely easy to code
  - Can be used for rapid prototyping and trying out ideas before production
- MATLAB speaks Math
  - Solve equations like you do on your book.
- Specially designed for scientists and engineers
  - Function names and signatures are familiar and memorable.
- Inbuilt apps
  - Filter designer, Signal analysis, Curve Fitting, Deep Network Designer, etc
- Interoperability with other programming languages
  - Python, C++ and many others



Campus Wide License

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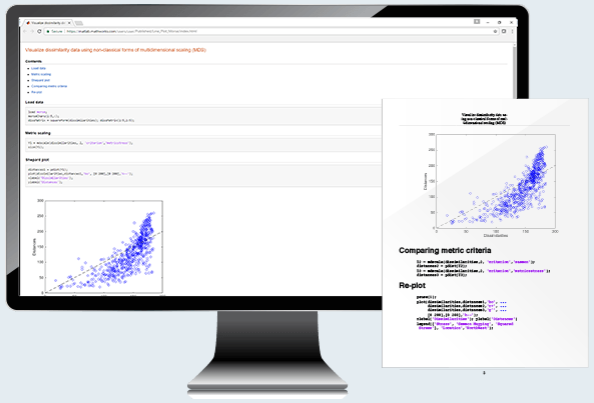
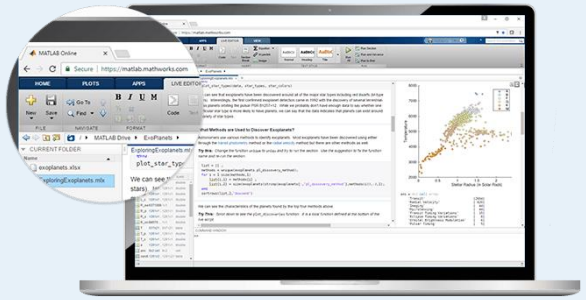


MATLAB for Desktops

Access MATLAB on personal and university-owned machines

Visit your university MATLAB portal



MATLAB Online

Access MATLAB with a web browser

Visit matlab.mathworks.com

MATLAB Mobile

Access MATLAB on iOS/Android devices

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Download on the App Store

Columbia University

MATLAB Access for Columbia University

MATLAB and Simulink are:

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- referenced in 4 million+ research citations

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https://www.mathworks.com/academia/tah-portal/columbia-university-650045.html

Build MATLAB Proficiency

LEARNING PATH

Develop a broad set of MATLAB skills, enabling you to tackle more complex problems.

Topics covered:

- Creating informative scripts
- Analysis of data in vectors, matrices, and tables
- Techniques for extracting subsets of data
- Programming constructs and functions

Recommended prerequisite:

MATLAB Onramp
2 hours

MATLAB Desktop Tools and Troubleshooting Scripts
1 hour

Explore Data with MATLAB Plots
2 hours

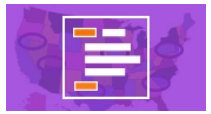
Make and Manipulate Matrices
1 hour

Calculations with Vectors and Matrices
1.5 hours

Tables
2 hours

Find and Extract Subsets of Data
1.5 hours

Programming Constructs
2 hours

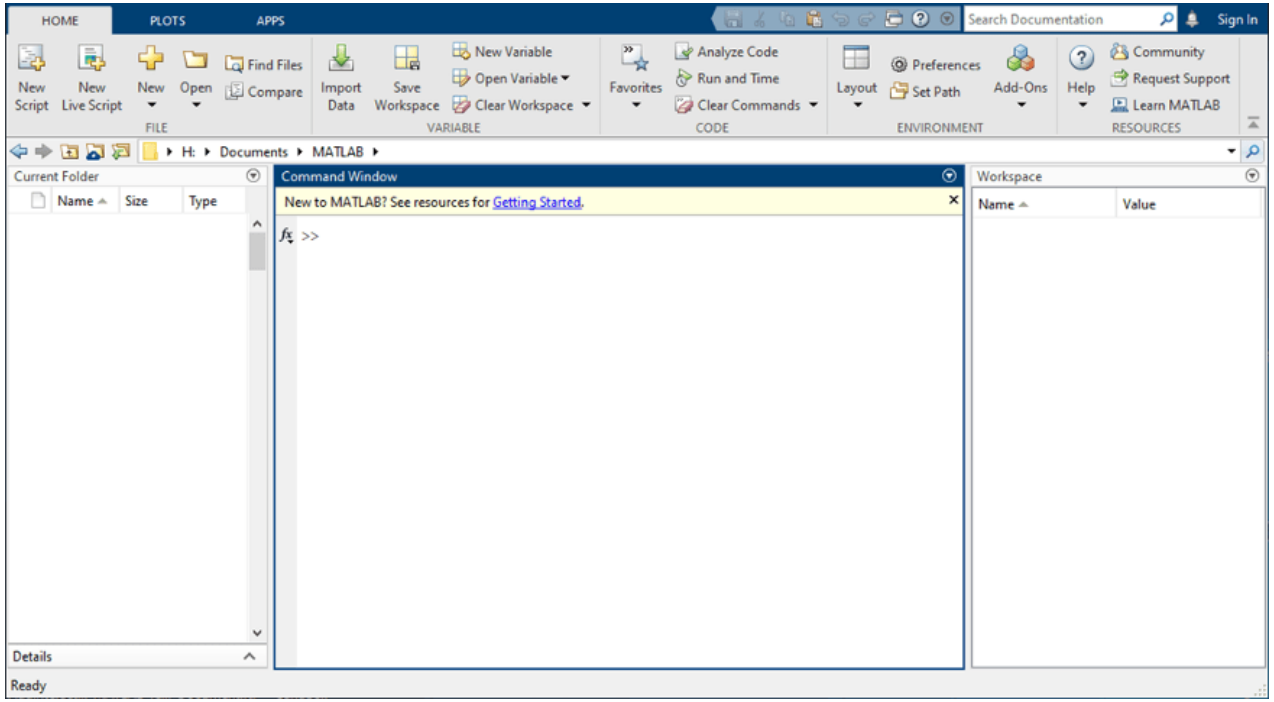


The How and Why of Writing Functions
1 hour

Exercise 1: Using the MATLAB Desktop

MATLAB Desktop Tools and Troubleshooting Scripts
1 hour

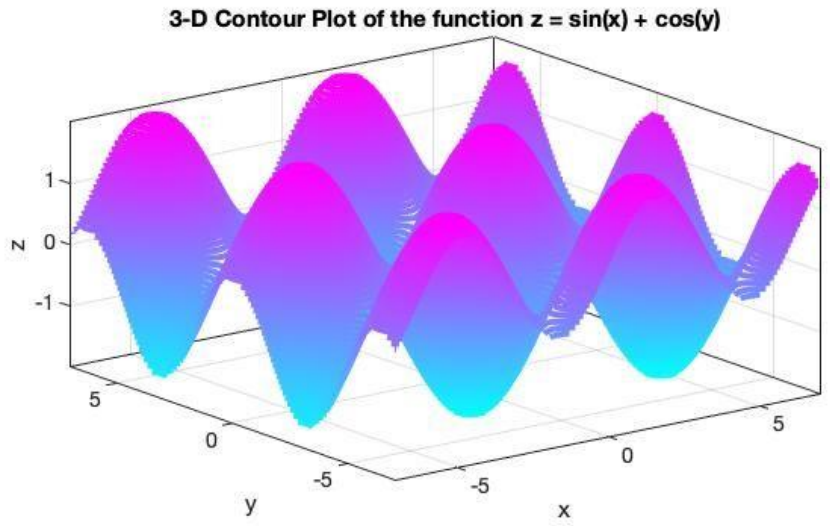
- MATLAB Desktop Editor
- Storytelling with Scripts
- Debugging MATLAB Code

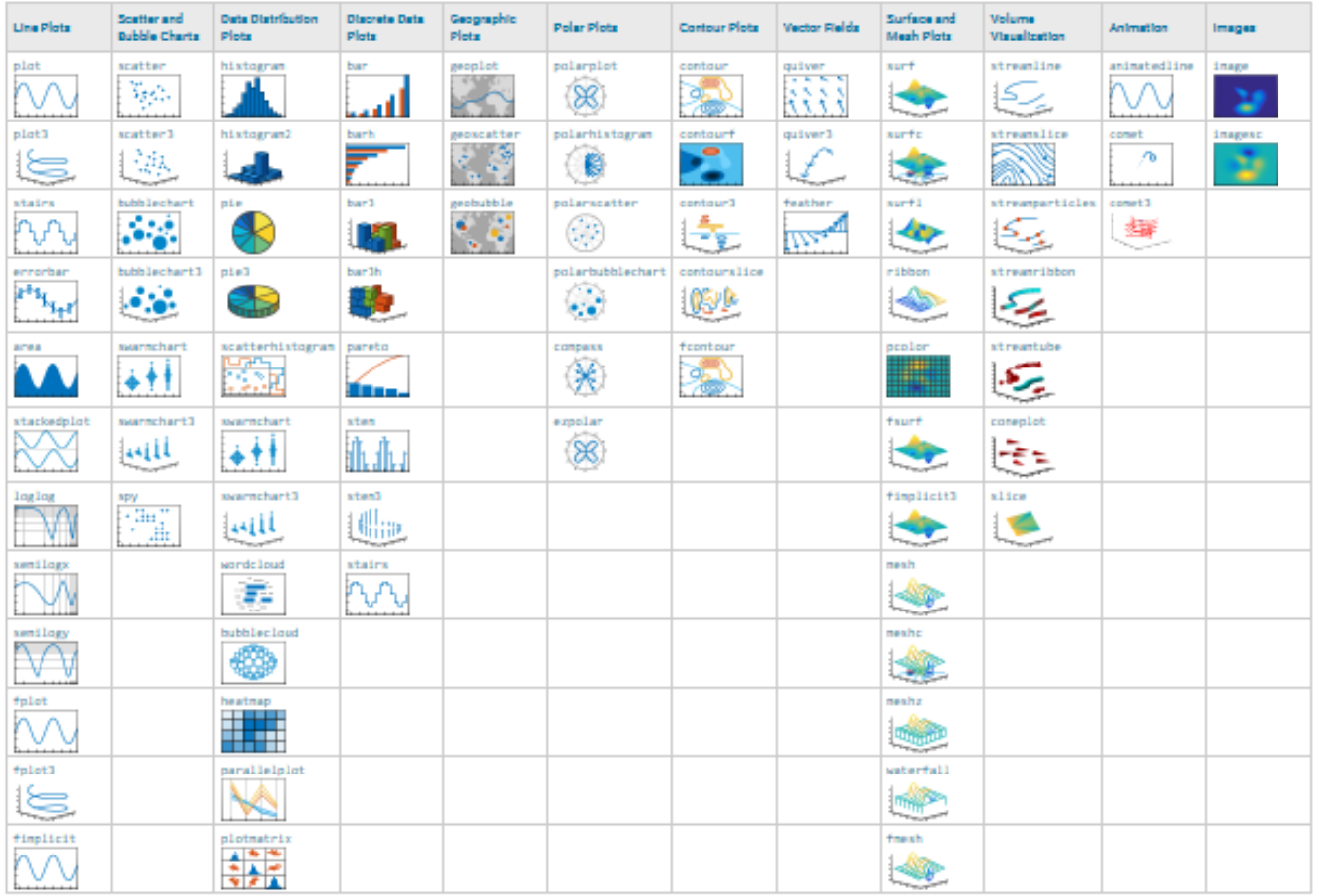


Exercise 2: Visualizing your Data

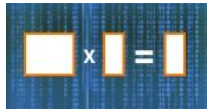
Explore Data with MATLAB Plots
2 hours

- Visualize Vectors
- Plot Data for Comparison



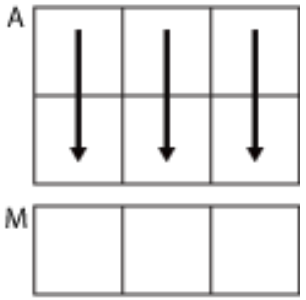


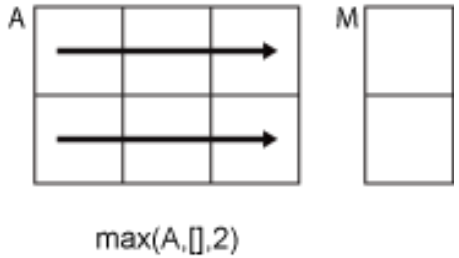
Exercise 3: Statistical Operations

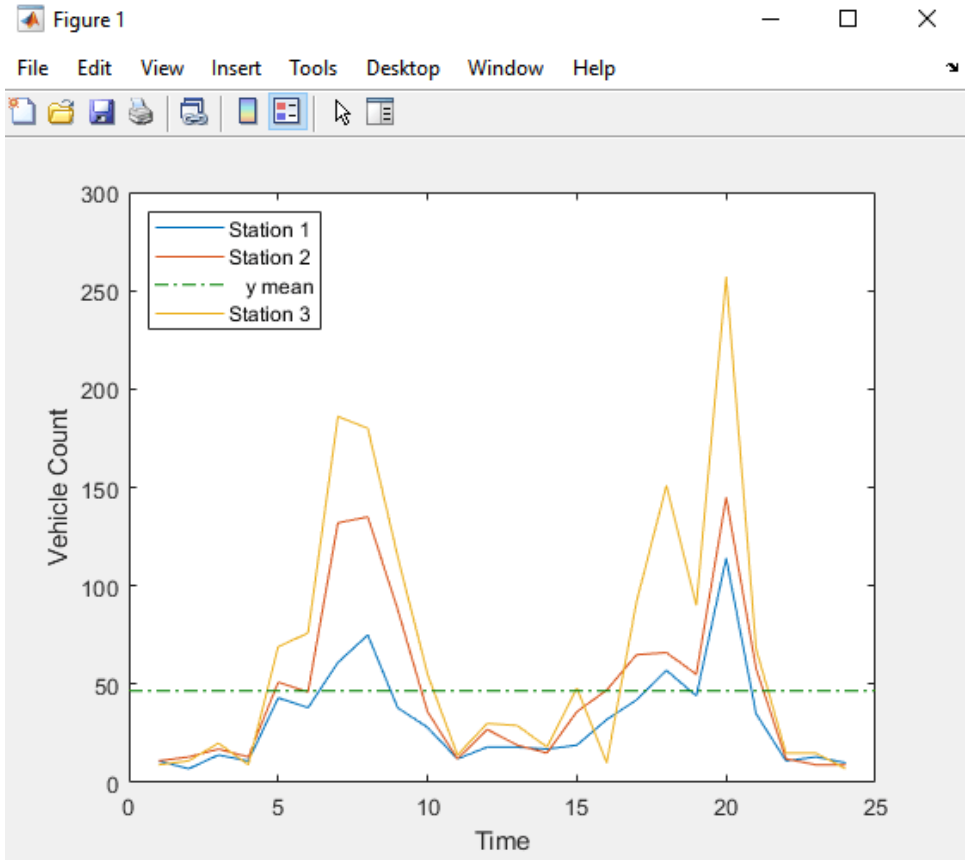


Calculations with Vectors and Matrices
1.5 hours

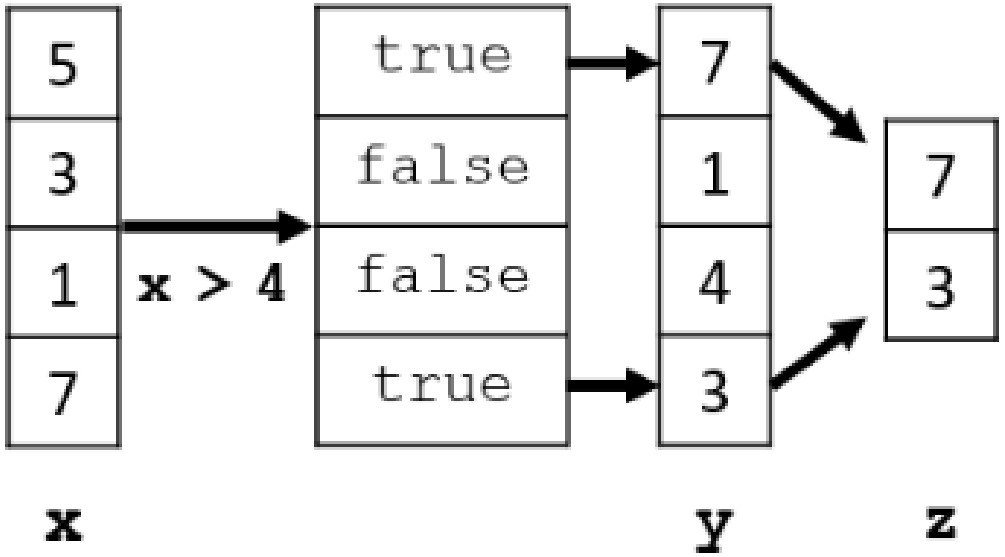
- Operations on Arrays
- Statistical Operations on Matrices







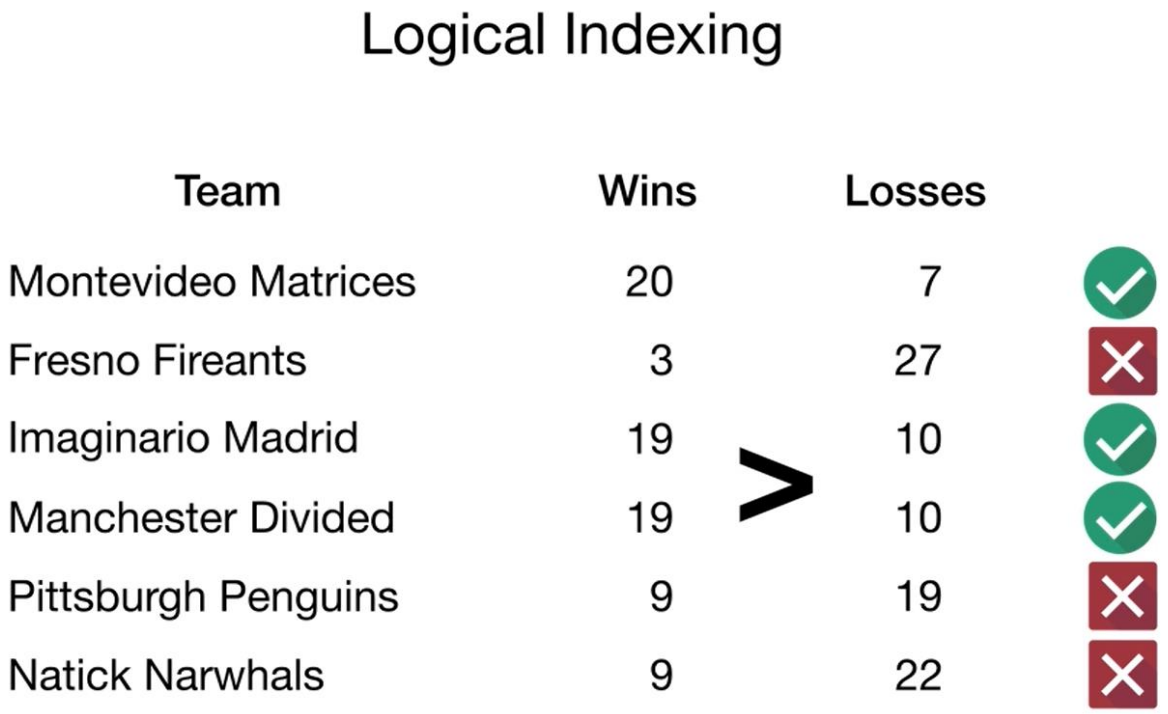
Logical Indexing



Exercise 4: Logical Indexing

Find and Extract Subsets of Data
1.5 hours

- Logical Operations
- Logical Vectors
- Conditional Data Selection



MathWorks

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Course Completion Certificate

Ramnarayan Krishnamurthy

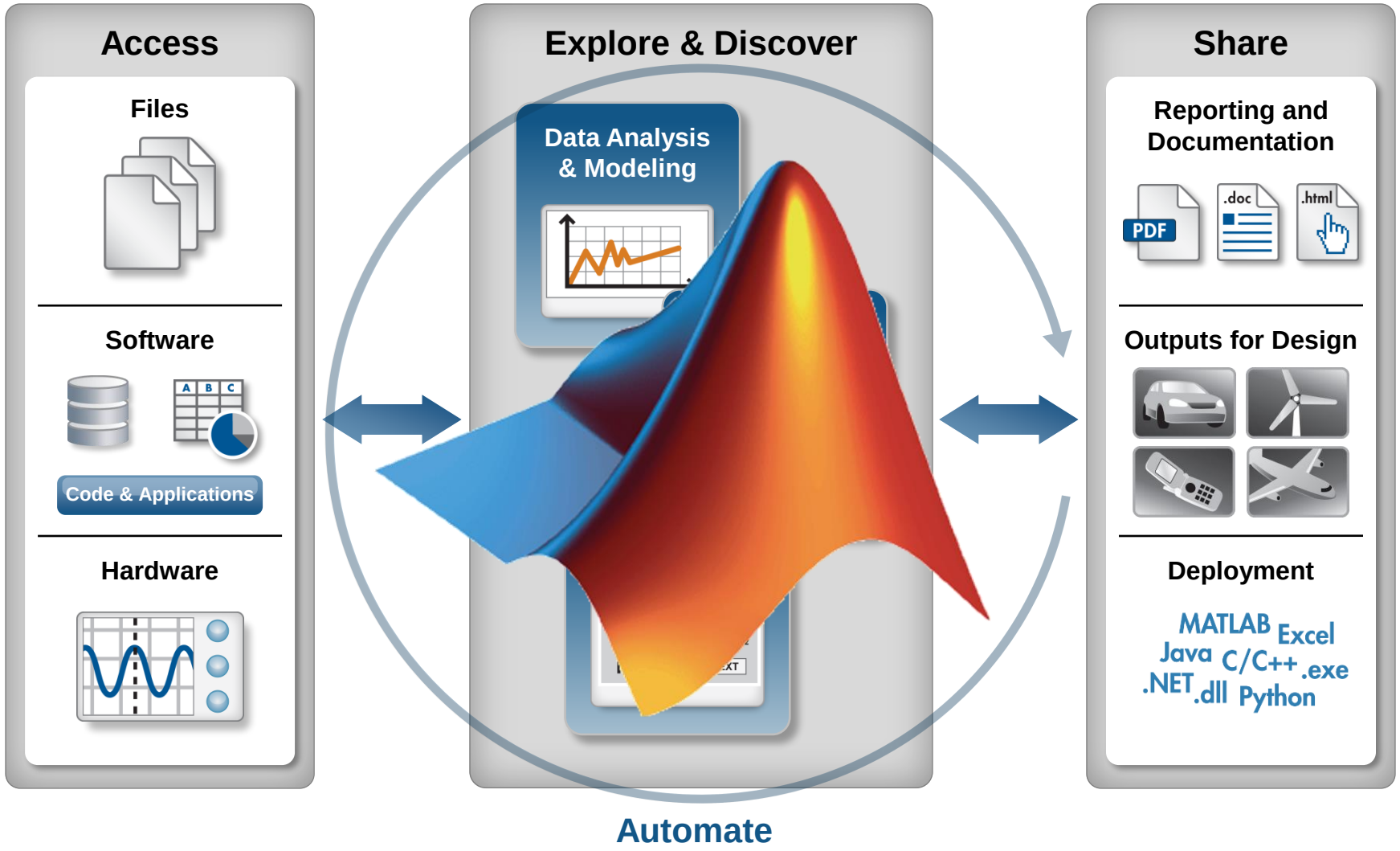
has successfully completed **100%** of the self-paced training course

MATLAB Fundamentals

DIRECTOR, TRAINING SERVICES

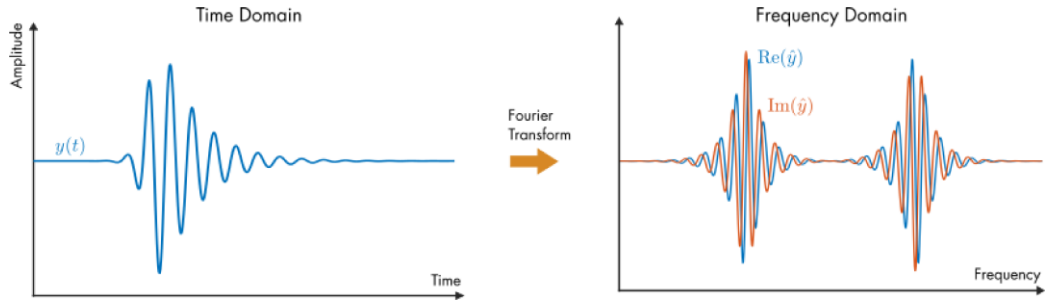
14 March 2017

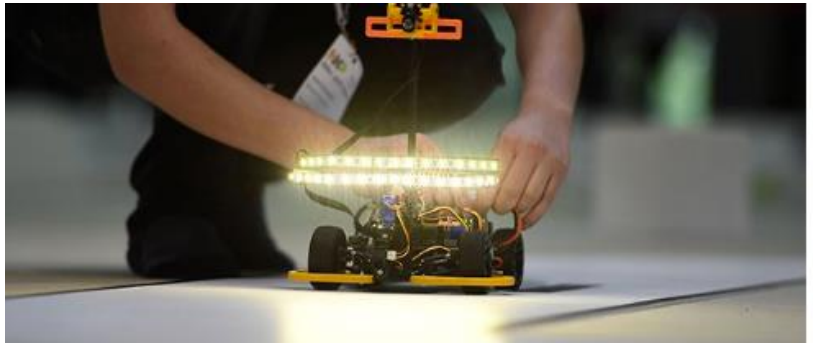
Data Analysis Workflow



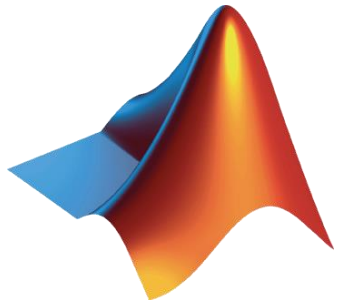
Resources

- Self-paced Trainings
  - Free, Online and Certificates
  - MATLAB
  - Image Processing
  - Signal Processing
  - Artificial Intelligence
- Teaching Resources
  - Curriculum Modules
  - Project ideas
- Code Examples
- Videos





Continue the Conversation.....



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(Customer Success Engineer)