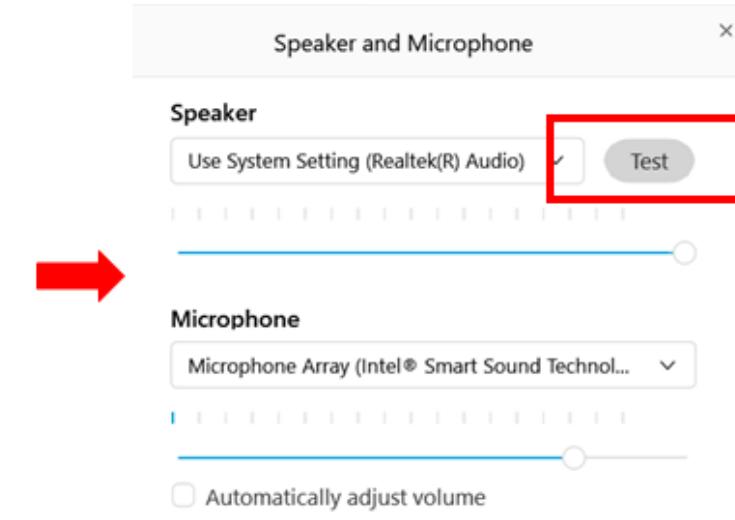
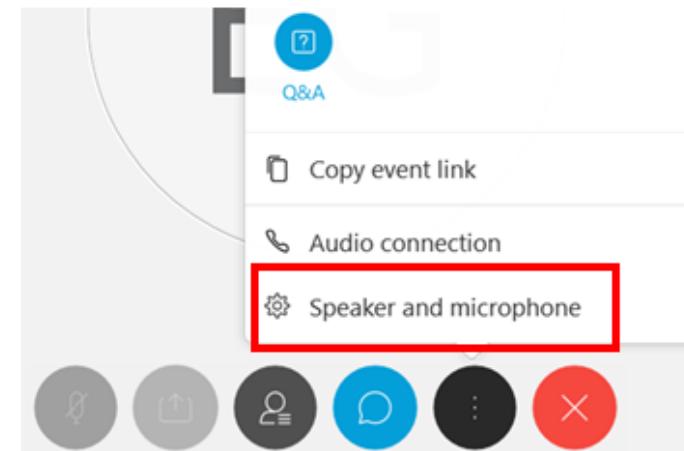


If you are having audio issues, please check your audio configurations or join by phone

To join by phone:

Event number (access code): 711 901 821

Event password: Uiqitmrw268



Join the audio conference only

To receive a call back, provide your phone number when you join the event, or call the number below and enter the access code.

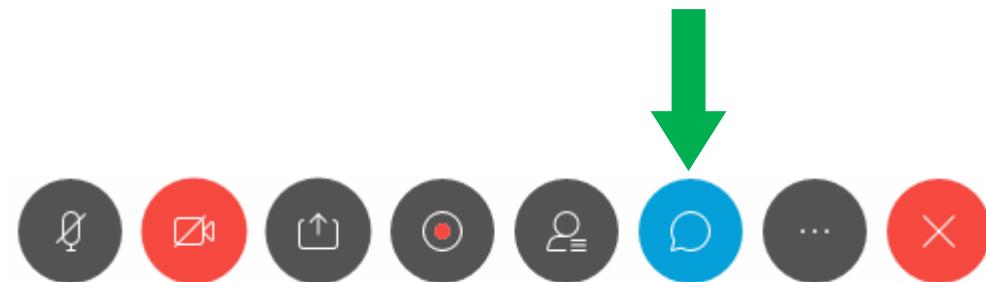
+14043971516 US Toll

8773093457 US Toll Free

[Global call-in numbers](#) | [Toll-free dialing restrictions](#)

If you have questions/participation to the polls

- Please use “ “Q&A” or “Chat” and direct your questions to “Panelists”
- Please **participate in the polls**, presenter will adjust the presentation to the responses





Learning MATLAB and Career Paths

Aycan Hacioglu, Ph.D. - Customer Success Engineer

6/18/2020

Agenda

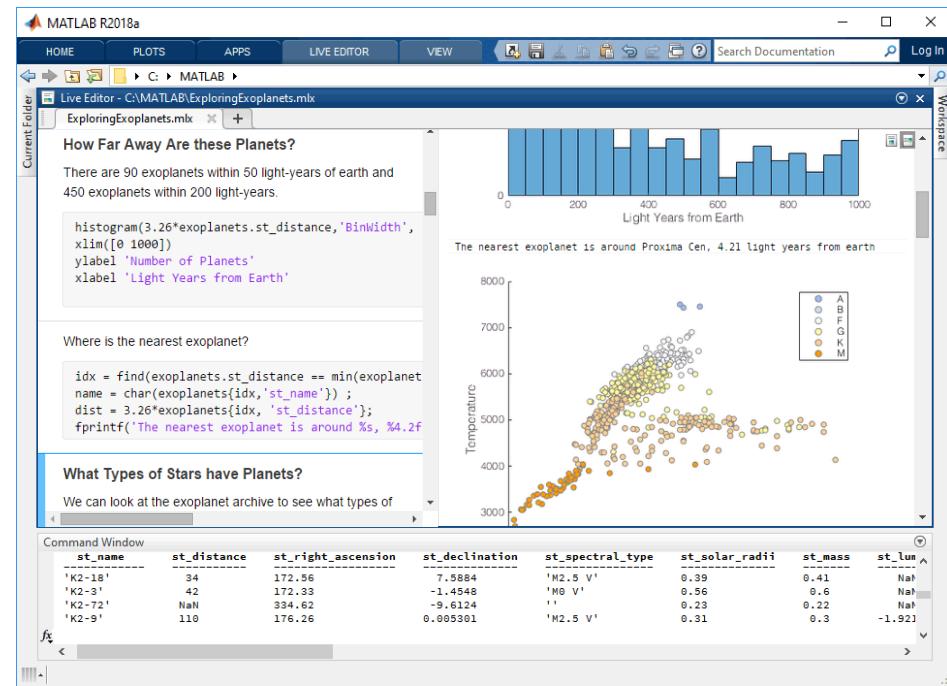
- Where can MATLAB skills take you?
- How to get there?

Core MathWorks Products

MATLAB®

Math. Graphics. Programming.

- Designed for engineers and scientists
- Professionally developed, tested, and documented
- Toolboxes for:
 - Machine learning, data analytics, deep learning, image processing and computer vision, signal processing and communications, computational finance, robotics and control systems
- Interactive apps that automatically generate programs
- Easily scales to clusters, GPUs, and clouds
- Direct deployment to production enterprise applications
- Automatic conversion to embeddable C and CUDA code
- Integrates with Simulink to support Model-Based Design



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Simulation and Model-Based Design

Model and simulate your system

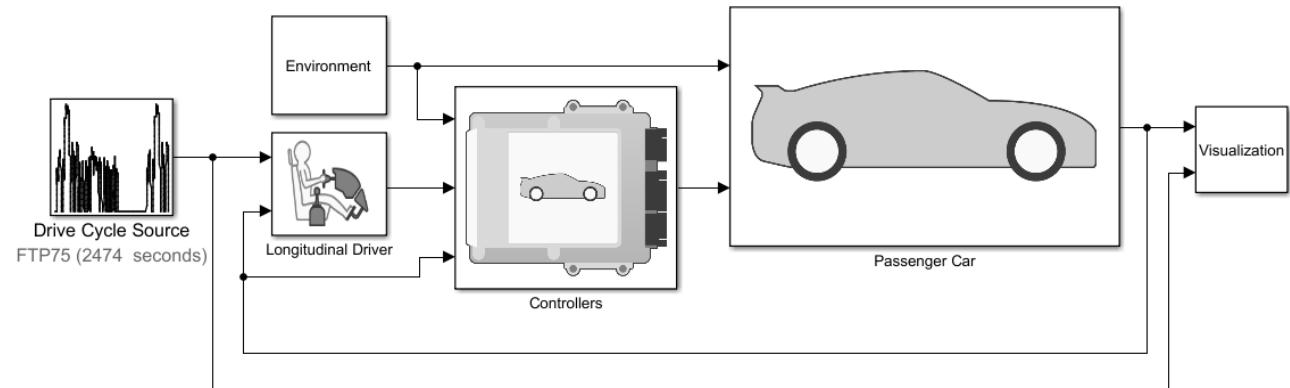
- Use one multi-domain environment
- Model the system under test and the plant
- Simulate closed-loop system behavior

Test early and often

- Test your system under all conditions
- Validate your design with real-time testing
- Trace from requirements to design to code

Automatically generate code

- Generate production-quality C and HDL code
- Deploy directly to embedded processors or FPGA's/ASIC's



Just a sample of Industry usage:



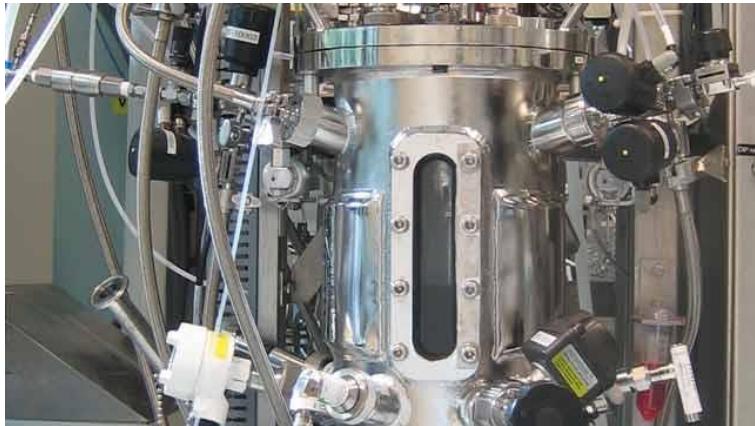
Underwater imaging to survey the ocean floor



Next-gen, fuel-efficient cars



GNC system for a Mars Orbiter

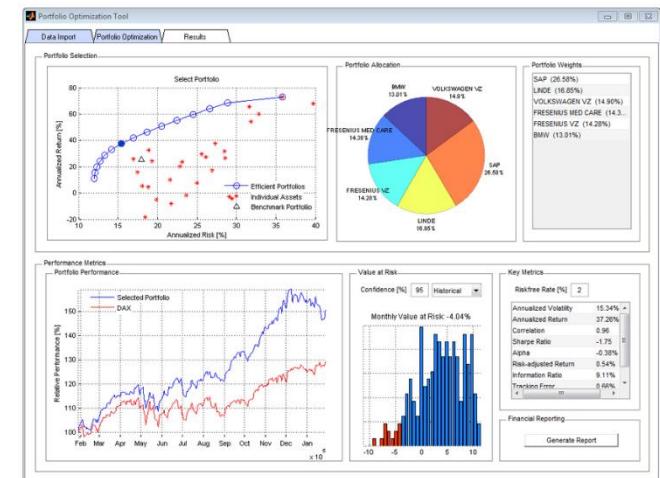


Microbial pilot plant bioreactor

<https://www.mathworks.com/solutions.html>



Pneumatic robotic arm development



Portfolio management system

Covid-19 Research

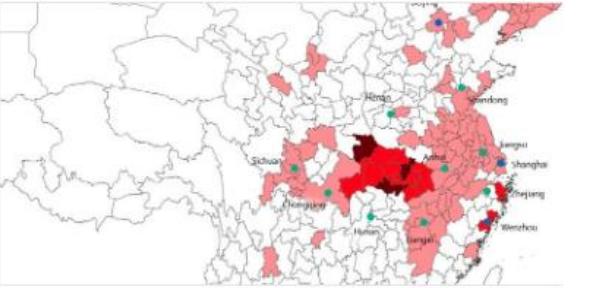
Research:

- [Overview](#)
- [Data Science](#)
- [Computational Biology](#)
- [Medical Devices](#)
- [FDA Software Validation](#)

COVID-19 Research and Development with MATLAB and Simulink

First-wave COVID-19 transmissability and severity in China outside Hubei after control measures, and second-wave scenario planning: a modelling impact assessment

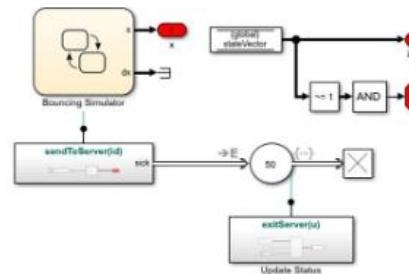
Kathy Leung et al, *The Lancet*, April 8, 2020
paper



Understanding COVID-19 Research Articles using Text Analytics in MATLAB

Sohini Sarkar, COVID-19 Open Research Dataset Challenge (CORD-19), April 10, 2020
Kaggle blog post with links to MATLAB code





COVID-19: Simulating exponential spread in Simulink

Guy Rouleau, Guy on Simulink, March 23, 2020
blog post with downloadable Simulink model

Where can graduates expect to use MATLAB & Simulink?

**AIRBUS****Honeywell**

Capgemini

NOVARTIS



Museum of Science.

Continental
The Future in Motion**mondi**

Alcatel-Lucent

**docomo****EATON**

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**BAE SYSTEMS****Gulfstream****MERRIMACK**
PHARMACEUTICALS

FARADAY

KOREAN AIR**xerox** The Hydro Quebec logo, featuring a red "Q" with a lightning bolt and the word "Hydro Quebec" in blue.

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Careers at MathWorks

Careers Overview | Teams & Roles | Job Search | New Graduates & Students | Resources | Careers Account

Contact sales

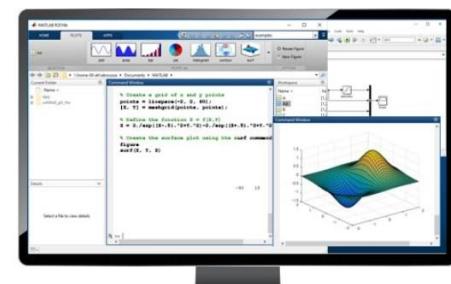


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MathWorks develops MATLAB® and Simulink®—software that transforms the way engineers and scientists think and work.

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[Find jobs](#)



What do Customer Success Engineers do?

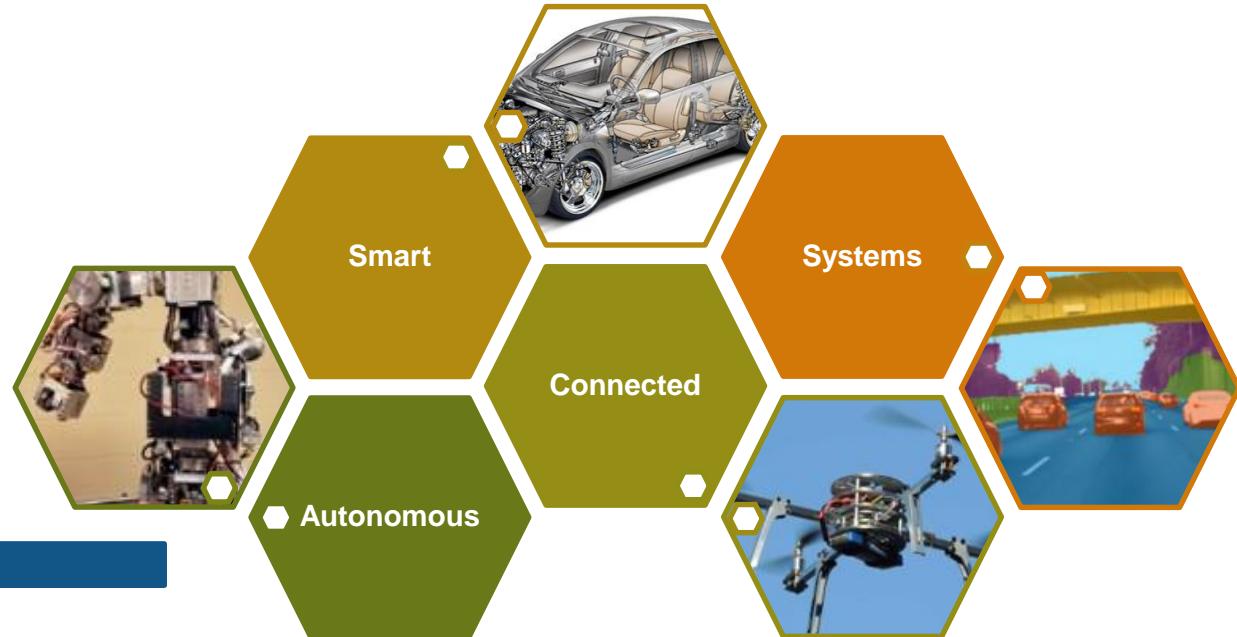
- Support teaching, learning and research with MathWorks tools
- TA/Instructor trainings on teaching tools
- Offer seminars, webinars, workshops, guest lectures
- Partner with student organizations and student ambassadors to host events

MATLAB Student Ambassador Program

- Utilize your passion for MATLAB and social media skills to become the ambassador of MathWorks at your university
- Explore and implement creative ideas for spreading awareness for MathWorks products
- Identify and engage with prominent student organizations
- Plan and organize events on campus
- What to expect from this position:
 - Fun!
 - Learning
 - Professional networking
 - Resume booster
 - \$\$\$



How can you get there?



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Student Competitions

DATA SCIENCE CHALLENGE FOR ALZHEIMER'S RESEARCH

Are you ready for a Video Classification Challenge?

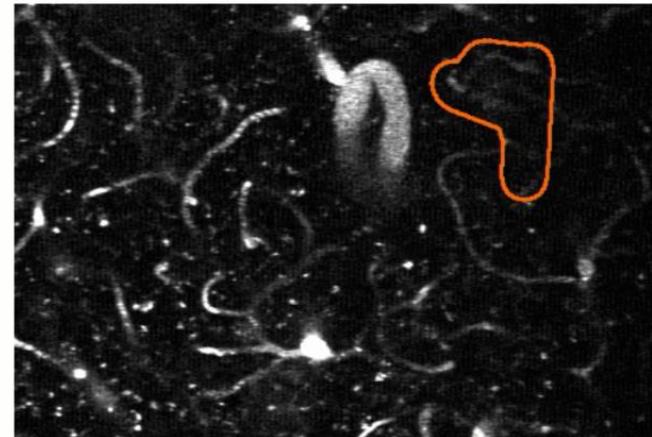
Preparation Guide for Video Classification



Neha Goel

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Apr 25 · 6 min read ★



<https://www.mathworks.com/academia/student-competitions/advance-alzheimers-research.html>

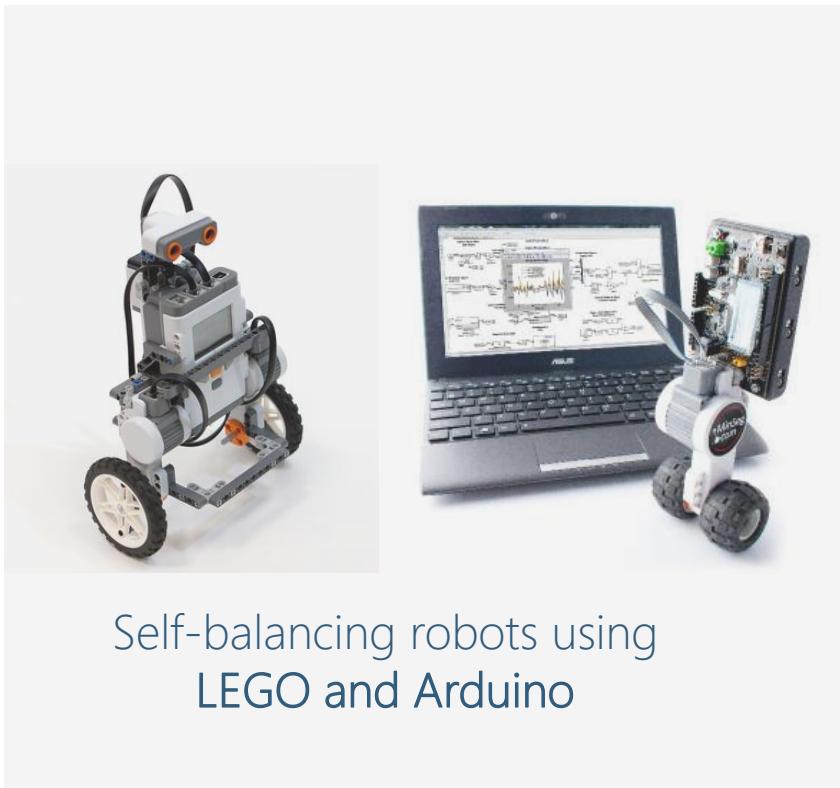
<https://www.mathworks.com/academia/student-competitions.html>

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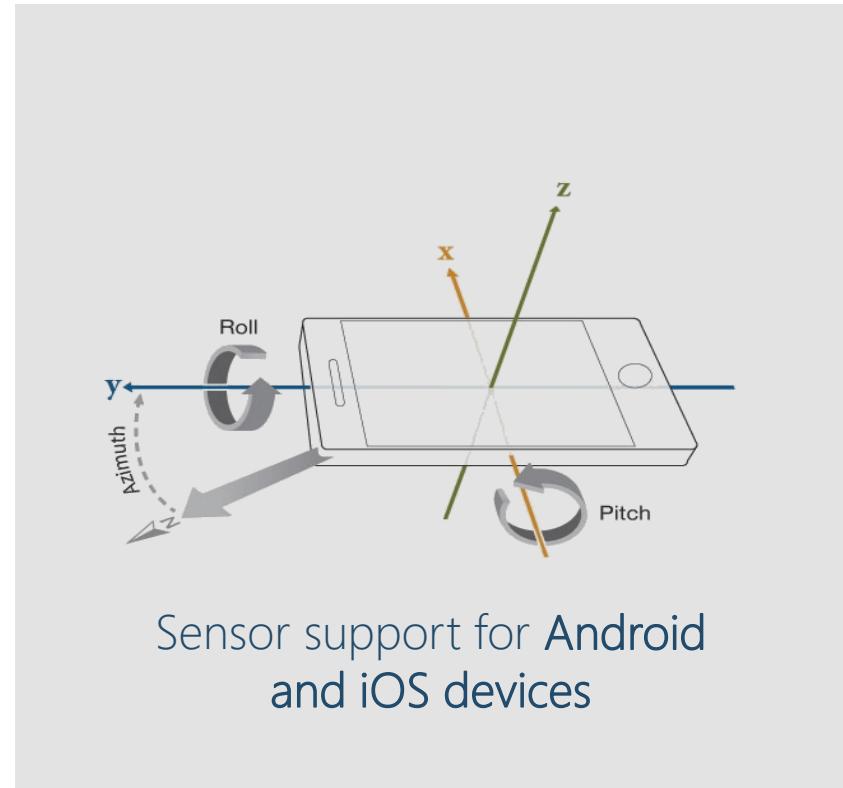
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Project-based learning with hardware



Self-balancing robots using
LEGO and Arduino



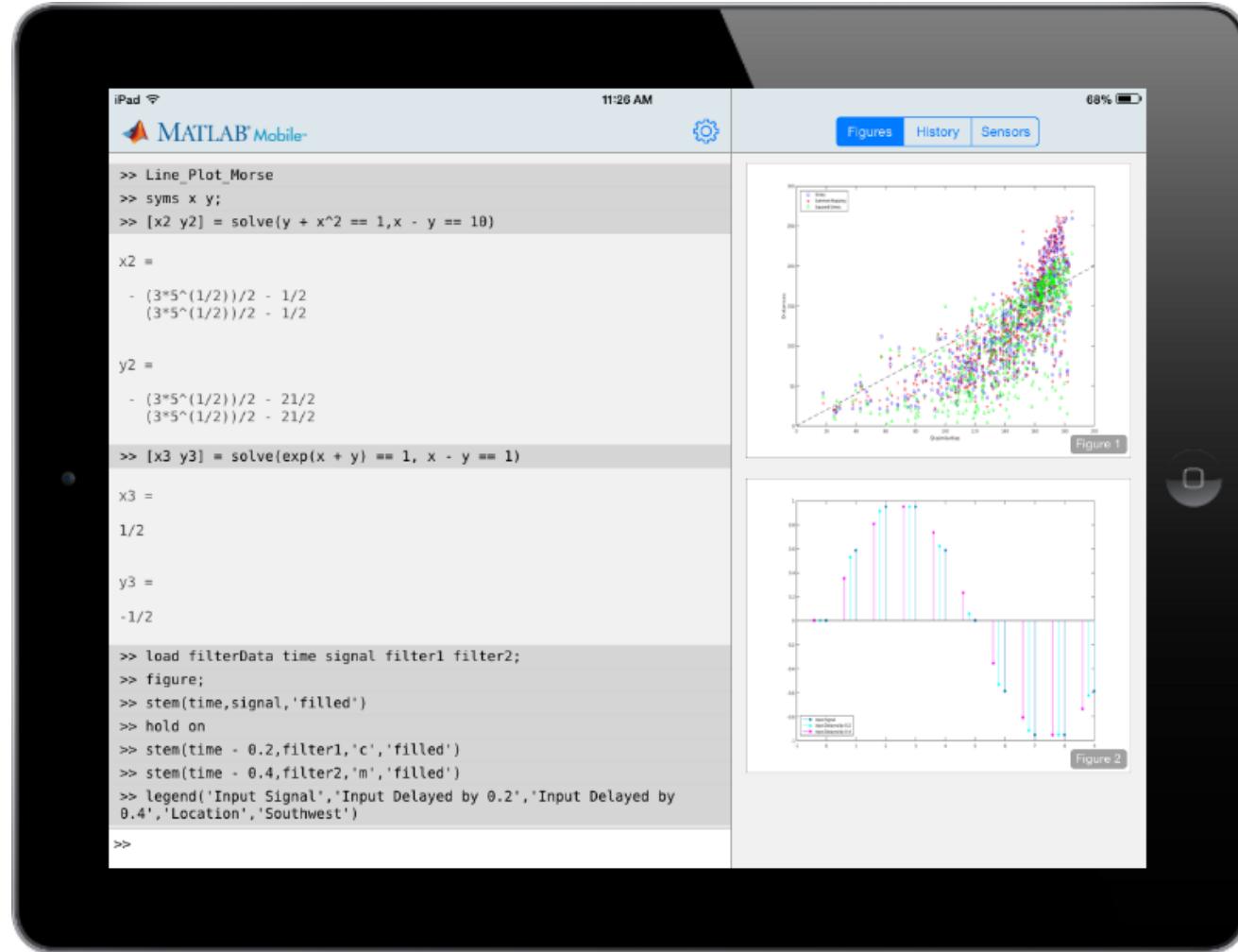
Sensor support for Android
and iOS devices

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MATLAB Mobile



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ThingSpeak

IoT analytics platform



Collect

Send sensor data privately to the cloud.

Analyze

Analyze and visualize your data with MATLAB.

Act

Trigger a reaction.

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Help Center

CONTENTS

« Documentation Home
« Examples

Category

ThingSpeak

Write Data to Channel	13
Read Data from Channel	7
Prepare and Analyze Data	10
Visualize Data	8
Act on Data	9
Specialized Analysis with MATLAB	31
API Reference	13

Trading Toolbox

Vehicle Dynamics Blockset

Vehicle Network Toolbox

Vision HDL Toolbox

Wavelet Toolbox

Wireless HDL Toolbox

Documentation Examples Functions Videos Answers

ThingSpeak — Examples

Write Data to Channel



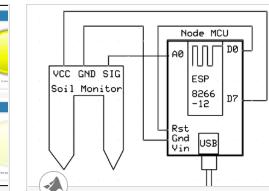
Prototyping with Sonar Proximity Sensor

Prototype with ThingSpeak™ using a Wi-Fi connected Arduino® board. You read and write channel data with the ThingSpeak Communication



Use Google Assistant to Turn a Light On and Off

Use your voice to set a channel value on ThingSpeak™. IFTTT interfaces directly with Google® Assistant to understand your speech



Moisture Sensor using HTTP POST Requests to Channel

Post multiple fields of data to a ThingSpeak™ channel from a device that wakes from deep sleep. You read a soil moisture sensor and



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MATLAB Online



No download or installation required

Access to the latest version

No minimum device specs other than that for your web browser

Ideal for teaching, learning, and convenient, lightweight access

Campus-Wide License

A screenshot of the MathWorks website. The header features the MathWorks logo and navigation links for 'Get Software', 'Learn MATLAB', 'Teach with MATLAB', and 'What's New'. Below the header, a banner reads 'MATLAB Access for Everyone at Your School Here' with the 'MATLAB & SIMULINK' logo. A blue-tinted image of three people working together is shown. To the right, a section titled 'Where will MATLAB and Simulink take you?' states '82% of Fortune 100 companies use MATLAB, which means that you'll take your ideas beyond the classroom to help drive new technology and advance your career.' Below this, a 'Get MATLAB and Simulink' section shows a screenshot of the software interface with code and plots, and a 'Sign in to get started' button. At the bottom, a 'Need installation help? Contact MathWorks Support' link is shown with a wrench icon.

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MATLAB Apps

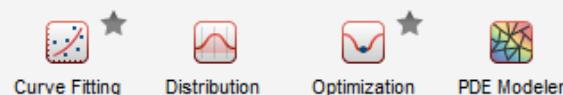
MACHINE LEARNING AND DEEP LEARNING



IMAGE PROCESSING AND COMPUTER VISION



MATH, STATISTICS AND OPTIMIZATION



CONTROL SYSTEM DESIGN AND ANALYSIS



Documentation

[Documentation](#) [Examples](#) [Functions](#) [Videos](#) [Answers](#)

Graphics

Two- and three-dimensional plots, images, animation

Graphics functions include 2-D and 3-D plotting functions to visualize data and communicate results. Customize plots either interactively or programmatically.

Plotting Basics

- [Create 2-D Line Plot](#)
- [Add Title and Axis Labels to Chart](#)
- [Combine Multiple Plots](#)

2-D and 3-D Plots

Plot continuous, discrete, surface, and volume data

Formatting and Annotation

Add labels, adjust colors, define axis limits, apply lighting or transparency, set camera view

Images

Read, write, display, and modify images

Printing and Saving

Print and export to standard file formats

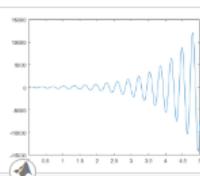
Graphics Objects

Customize graphics by setting properties of the underlying objects

Graphics Performance

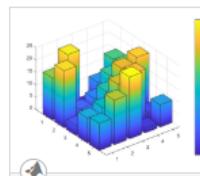
Optimize code for improved performance

Featured Examples



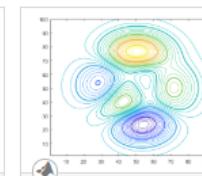
Specify Axis Tick Values and Labels

Customize the tick values and labels along an axis, such as editing the tick value placement or modifying the tick label text and formatting.



Color 3-D Bars by Height

Modify a 3-D bar plot by coloring each bar according to its height.



Highlight Specific Contour Levels

Highlight contours at particular levels.

<https://www.mathworks.com/products/matlab/app-designer.html>

<https://www.mathworks.com/help/matlab/>

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AH

MATLAB and Simulink Seminars

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Racing Lounge Webex Series

Join us for some live Webex sessions from the team that brings you the MATLAB and Simulink Racing Lounge! These Webex sessions will cover topics relevant to automotive student teams. In each session, we will start with the basics and then do a deep dive into relevant automotive reference examples.



Register below for your preferred sessions. Please note that seats are limited and therefore registration is required.

Date	Event Topic	
May 4th & 11th	Introduction to MATLAB and Simulink	Register
May 27th & June 1st	Introduction to Simscape	Register
June 22nd & 26th	Introduction to Simscape Multibody	Register



with MATLAB

20 May 2020	Deep Learning for Radar and Wireless Communications	5:00 PM
21 May 2020	Developing Safe and Secure Embedded Code	2:30 AM

<https://www.mathworks.com/company/events/seminars/uk-racing-lounge-webex-series-2020.html>

<https://www.mathworks.com/videos.html> <https://www.mathworks.com/company/events/webinars/upcoming.html>

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[Launch MATLAB Onramp now](#)

<https://matlabacademy.mathworks.com/>

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★ [Simulink Onramp](#)

[Stateflow Onramp](#)

[Deep Learning Onramp](#)

[Machine Learning Onramp](#)

FOCUSED COURSES (17-21 hours)

FOUNDATIONAL COURSES

[MATLAB Fundamentals](#)

[MATLAB Programming Techniques](#)

[MATLAB for Financial Applications](#)

[MATLAB for Data Processing and Viz](#)

[Machine Learning with MATLAB](#)

[Deep Learning with MATLAB](#)

COMPUTATIONAL MATH COURSES

[Introduction to Linear Algebra](#)

[Solving Ordinary Differential Equations](#)

[Introduction to Statistical Methods](#)

[Solving Non-Linear Equations](#)

[Introduction to Symbolic Math](#)

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Challenge your skills with a community coding game

The screenshot shows the Cody interface on the MathWorks website. At the top, there's a navigation bar with links for Products, Solutions, Academia, Support, Community (which is highlighted in blue), and Events. To the right of the navigation are buttons for 'Get MATLAB', a phone icon, and a user profile icon. Below the navigation is a search bar labeled 'Search Cody Problems' and a dropdown menu set to 'Cody'. A trial software link is also visible.

The main content area features a large banner with the heading 'Welcome to Cody'. It lists three benefits: 'A fun community coding game to challenge your skills and learn MATLAB.', 'Coding problems for all skill levels, beginners to advanced.', and 'Learn from other players how to improve your code.' Below this is a button labeled 'How Cody Works'. To the right of the banner is a callout box titled 'Get Started with Cody' with the subtext 'EARN THIS SOLVER BADGE' and a green gear badge icon. A 'Solve Your First Problem Now >' button is at the bottom of the callout.

At the bottom of the main content area, there's a message: 'Already started using Cody? Sign in to see your progress.' Below this, there are links for 'Featured Problem Groups' (which is underlined in blue) and 'Popular Problems'. On the right, there's a link 'View All Problem Groups'. The 'MATLAB Basics' section contains four cards: 'MATLAB Onramp' (with subtext 'Get started quickly with the basics of MATLAB.' and 'MATLAB Onramp Practice'), 'Introduction to MATLAB' (with an image of a 3D surface plot), 'Basics on Vectors' (with an image of a matrix grid), and 'CUP Challenge' (with an image of a geometric polyhedron).

<https://www.mathworks.com/matlabcentral/cody/>

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Interoperability with other languages

With MATLAB®, you can reuse legacy code written in another programming language, create MATLAB powered responsive web sites, or program hardware using error-free embedded C-code generated directly from MATLAB. Teams that use different programming languages can work together, spending more time developing products and less time recoding in another language.

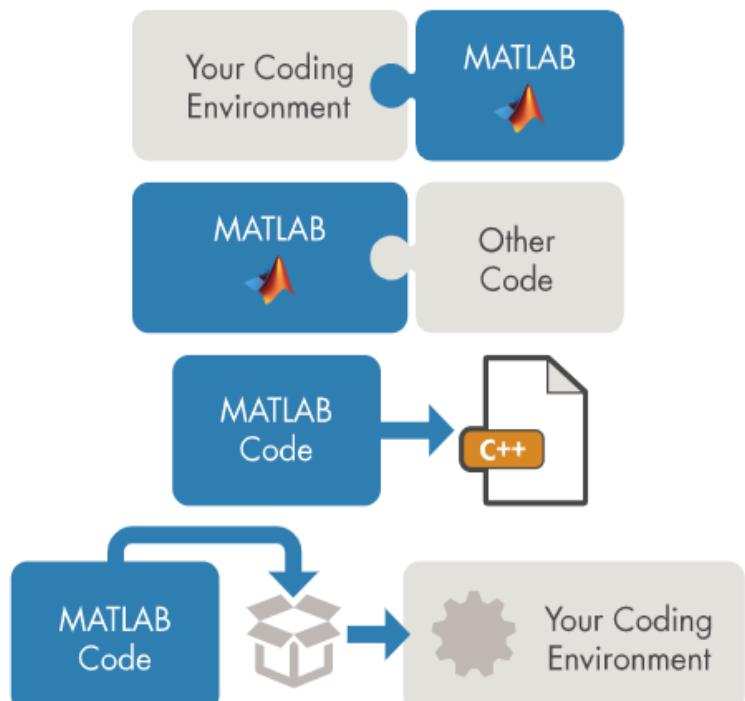
MATLAB provides a flexible, two-way integration with other programming languages including:

Calling MATLAB from another language

Calling libraries written in another language from MATLAB

Converting MATLAB code to C/C++ code

Packaging MATLAB programs



<https://www.mathworks.com/products/matlab/matlab-and-other-programming-languages.html>

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Sharing your training certificates

The screenshot shows the MATLAB Onramp dashboard with four courses listed:

- MATLAB Onramp**: Get started quickly with the basics of MATLAB. Progress: 100% Unlimited access. Buttons: Open, Start a project.
- Simulink Onramp**: Get started quickly with the basics of Simulink. Progress: 97% Unlimited access. Buttons: Details.
- Machine Learning Onramp**: Learn the basics of practical machine learning methods for classification problems. Progress: 53% Unlimited access. Buttons: Resume.
- Deep Learning Onramp**: Get started quickly using deep learning methods to perform image recognition. Progress: 100% Unlimited access. Buttons: Open.

Tools to boost your job search: Restart Premium Free Trial.

At the bottom, there are social sharing icons: Like, Comment, Share.

A modal window titled "View/Share Certificate" is open on the right side, containing:

- Course Certificate**: View/print certificate, Share certificate: LinkedIn, Facebook, shareable link.
- Progress Report (includes chapter details)**: View/print progress report, Share progress report: shareable link.
- Select a different language or release.
- Settings icon.

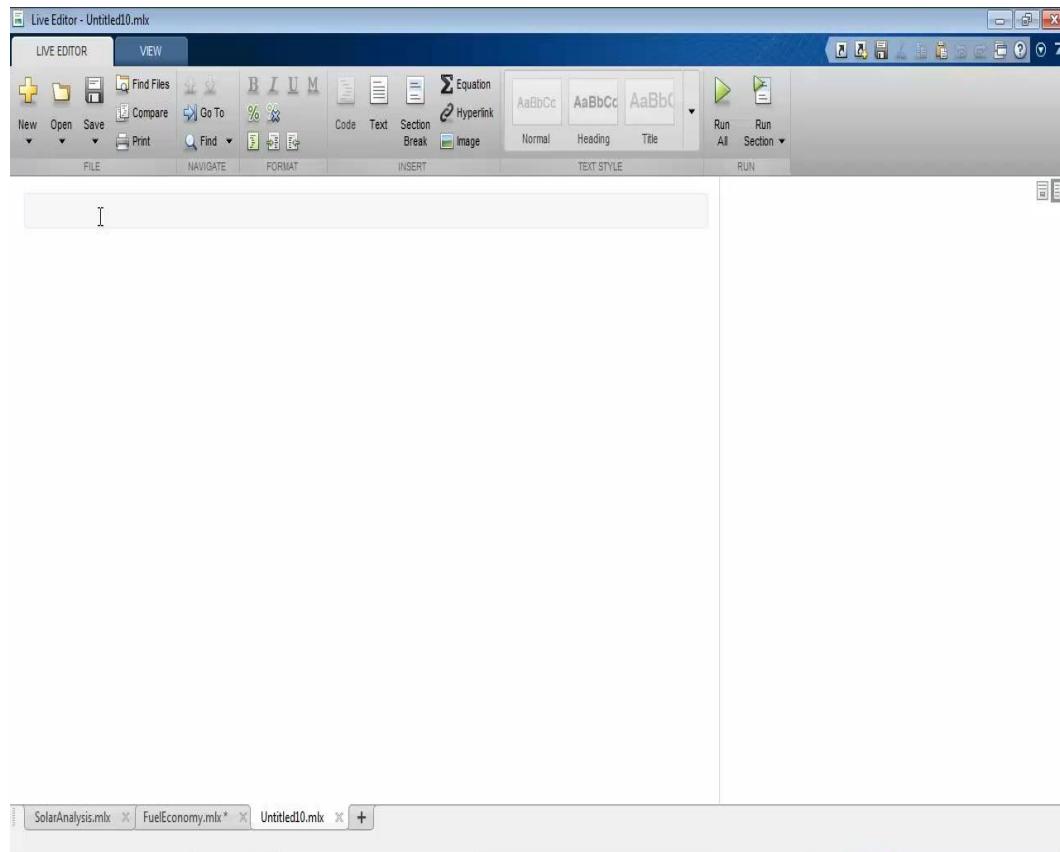
#ThankATeacher #Teacher

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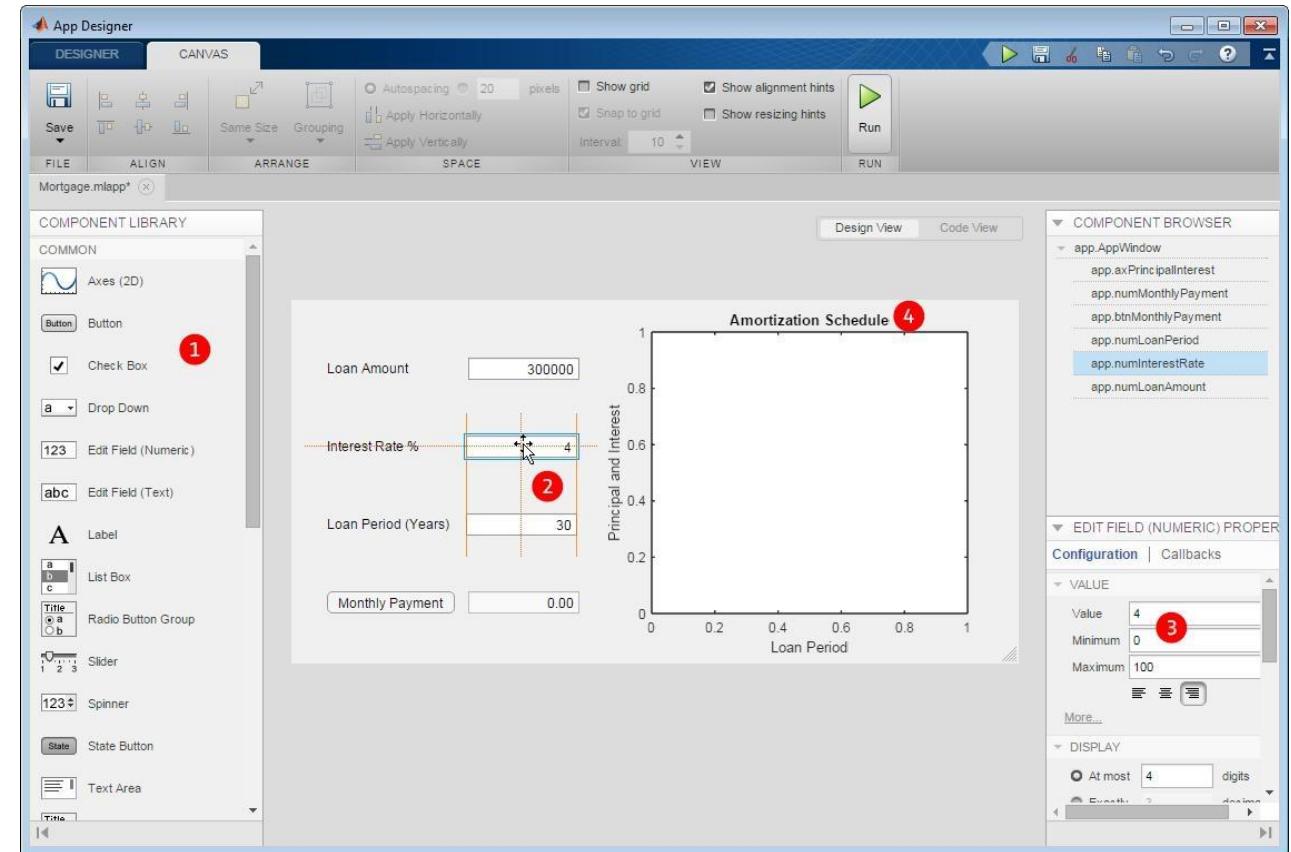
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Live Editor



[https://www.mathworks.com/products/matlab/
live-editor.html](https://www.mathworks.com/products/matlab/live-editor.html)

App Designer



<https://www.mathworks.com/products/matlab/app-designer.html>

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MATLAB Drive



Source Control Integration

[Documentation](#) [Examples](#) [Functions](#) [Videos](#) [Answers](#)[Trial Software](#)

About MathWorks Source Control Integration

You can use MATLAB® to work with files under source control. You can perform operations such as update, commit, merge changes, and view revision history directly from the Current Folder browser.

MATLAB integrates with:

- Subversion® (SVN)
- Git™

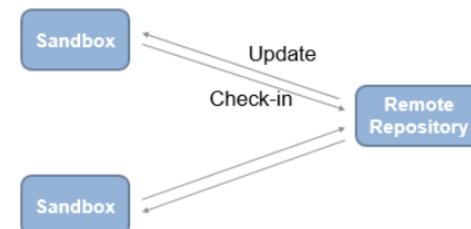
To use source control in your project, use any of these workflows:

- Retrieve files from an existing repository. See [Check Out from SVN Repository](#) or [Clone from Git Repository](#).
- Add source control to a folder. See [Create New Repository](#).
- Add new files in a folder already under source control. See [Mark Files for Addition to Source Control](#).

Additional source control integrations, such as Microsoft® Source-Code Control Interface (MSSCCI), are available for download from the Add-On Explorer. For more information, see [Get and Manage Add-Ons](#).

Classic and Distributed Source Control

This diagram represents the classic source control workflow (for example, using SVN).



Benefits of classic source control:

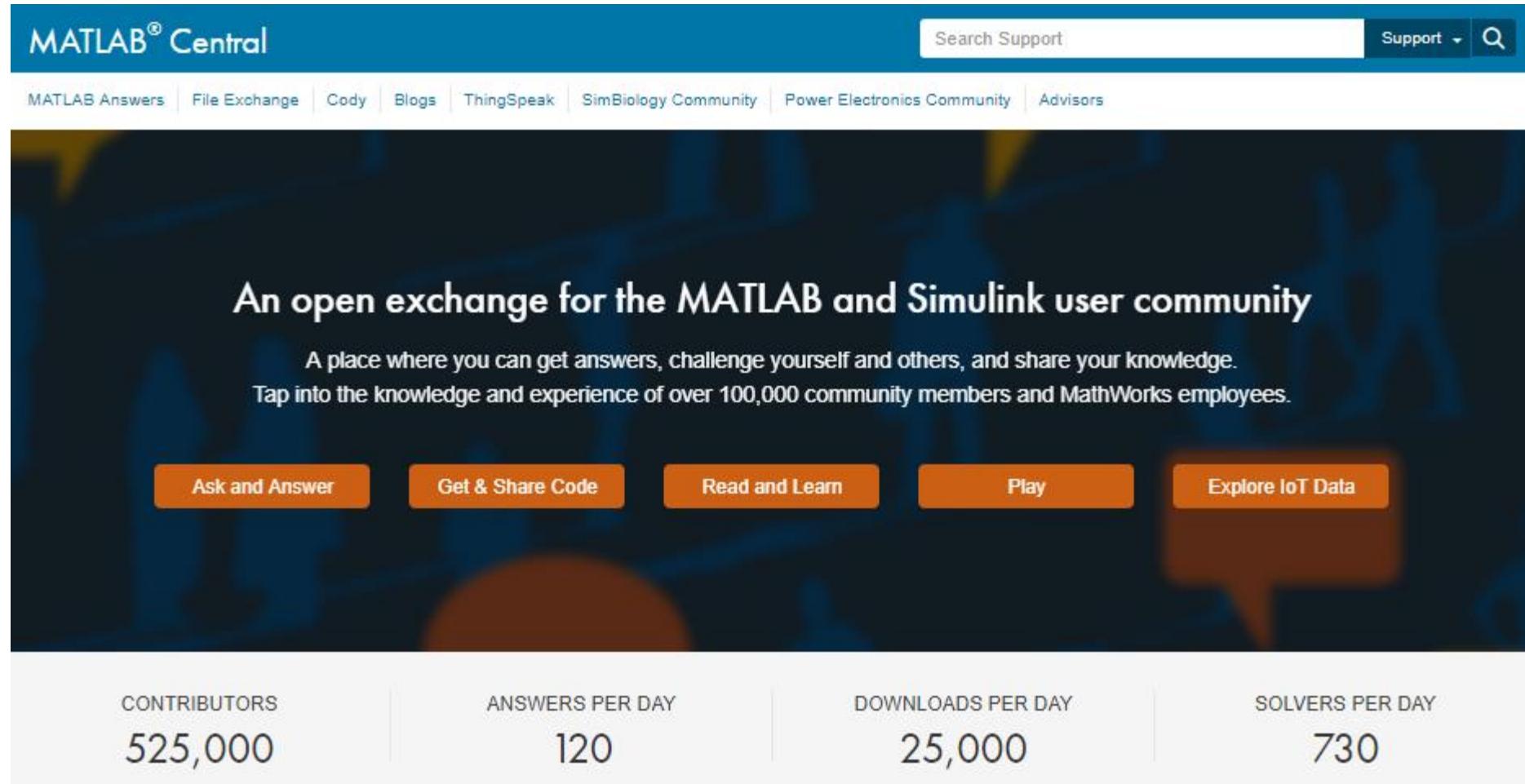
- Locking and user permissions on a per-file basis (e.g., you can enforce locking of model files)

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MATLAB Central



The image shows the MATLAB Central homepage. At the top, there's a navigation bar with links for MATLAB Answers, File Exchange, Cody, Blogs, ThingSpeak, SimBiology Community, Power Electronics Community, and Advisors. A search bar and a support link are also present. The main banner features the text "An open exchange for the MATLAB and Simulink user community" and describes it as a place for answers, challenges, and knowledge sharing. It mentions over 100,000 community members and MathWorks employees. Below the banner are five orange buttons labeled "Ask and Answer", "Get & Share Code", "Read and Learn", "Play", and "Explore IoT Data". At the bottom, there are four statistics: 525,000 contributors, 120 answers per day, 25,000 downloads per day, and 730 solvers per day.

CONTRIBUTORS	ANSWERS PER DAY	DOWNLOADS PER DAY	SOLVERS PER DAY
525,000	120	25,000	730

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Sharing your knowledge by teaching



The screenshot shows a classroom setting where several students are seated at desks, each working on a computer monitor. The monitors display the MATLAB Grader interface, which features a large blue 'checkmark' icon and the text "MATLAB Grader" and "Automatically grade MATLAB code in any learning environment". A prominent blue button at the bottom of the interface says "Start using MATLAB Grader for free". The overall theme is educational and professional.



Create interactive course
assignments



Automatically grade student work
and provide feedback



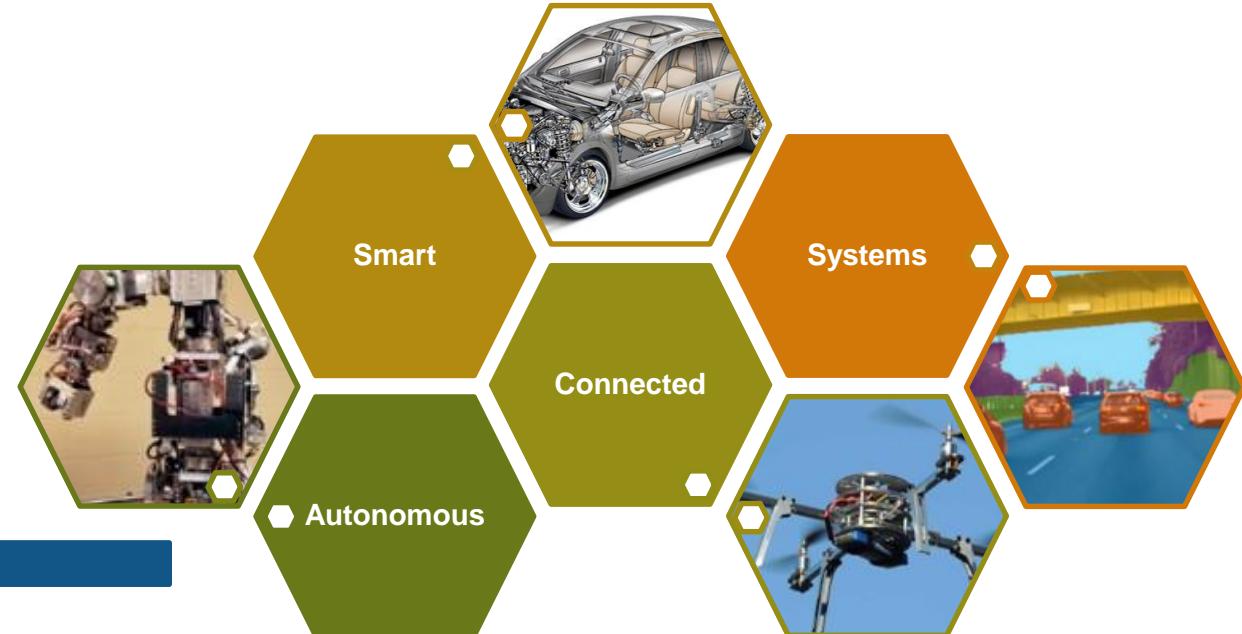
Run your assignments in any learning
environment

Poll Time



- What are you interested in exploring?
- What would you like to see presented next?

At each step you take



we are here to help

MathWorks Customer Success Engineers

consult with faculty and researchers to support them with their STEM initiatives, including integrating computational or systems thinking into their curriculum.

education@mathworks.com; ahaciogl@mathworks.com



