

Welcome to the

11th Annual

Teaching Computation with MATLAB

Educator Workshop



School Affiliations of 50+ 2025 Workshop Participants

(some with multiples, >20 returning participants)


- Bradley University
- California State University-Fullerton
- Elon University
- Emory University
- Florida Agricultural and Mechanical University
- Florida Gulf Coast University
- Florida Polytechnic University
- Instituto Tecnológico de Costa Rica
- Marshall University
- McGill University
- Merrimack College
- Middlebury College
- Minnesota State University-Mankato
- North Carolina A & T State University
- Ohio Northern University
- Polytechnic University of Puerto Rico (3?)
- Prairie View A & M University
- Purdue University-Main Campus (2)
- Sienna College
- Sonoma State University
- St. Olaf College
- Texas A & M University (2?)
- The University Of Trinidad and Tobago
- University of Alaska Anchorage
- University of Arizona
- University of Bridgeport
- University of Colorado at Boulder (3)
- University of Ferrara
- University of Florida (2?)
- University of North Carolina at Chapel Hill
- University of Oklahoma Norman Campus
- University of Southern Mississippi
- University of Technology, Jamaica
- University of Tennessee, The
- University of Texas at Dallas (2)
- University of the Incarnate Word
- University of Wyoming
- Vanderbilt University
- Virginia Military Institute
- Washington University in St. Louis
- Western Connecticut State University
- White Station High School

Your 2025 Teaching Activity Submissions – 37!

Review editors have reviewed and shared feedback on ~2/3 of the reviews

Go to dev page
Full Editor
Account/Favorites

Teaching Computation With MATLAB®



Teaching Activities

Initial Publication Date: October 7, 2025

Results 1 - 10 of 37 matches

Teaching Computation with MATLAB

- Why Teach Computation?
- Teaching Online
- Skills and Techniques**
- Computational Thinking
- Visualization
- Modeling
- Data Analysis
- Teaching Strategies**
- Building Self-Efficacy
- Cooperative Learning
- Assessment

Hydraulic transients in pipe systems

Juneseok Lee, Manhattan College

Activity/Assignment Description: Students learn the fundamentals of hydraulic transients in pressurized pipe systems, including governing equations, numerical methods, and boundary conditions. They implement ...

Resource Type: Activities: Classroom Activity, Problem Set
Subject: Engineering

Monarch Population Model: Exploration and Analysis

Michaela Kubacki, Middlebury College

The Monarch Population Model is a two-part activity designed for a first course in linear algebra. Students discover and explore the model in Part 1 and analyze the model using eigenvalues/eigenvectors in Part 2. ...

Resource Type: Activities: Activities: Classroom Activity, Project
Subject: Mathematics

Refine the Results↓

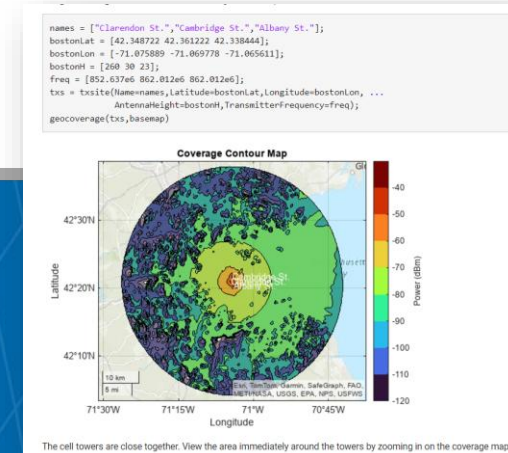
Resource Type: Activities

- Problem Set [3 matches](#)
- Classroom Activity [14 matches](#)
- Lab Activity [18 matches](#)
- Project [12 matches](#)

Subject

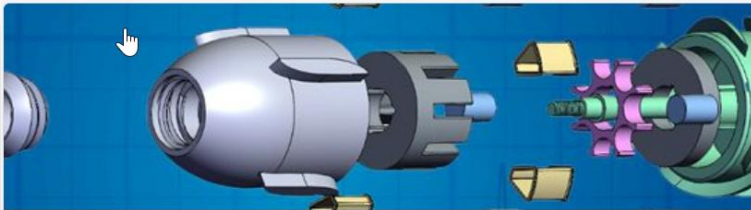
- Biology [3 matches](#)
- Chemistry [1 match](#)
- Computer Science [8 matches](#)
- Engineering [25 matches](#)
- Geoscience [1 match](#)
- Health Sciences [5 matches](#)
- Mathematics [14 matches](#)
- Physics [3 matches](#)

Lisa Kempler, Lead Convener, MathWorks
2025 MATLAB Educator Workshop
Keynote



Do you need an aspirational story to motivate students?

Making it real inspires



ENGINEERED SYSTEMS / MEDICAL DEVICES

Students Design a Low-Cost, Lifesaving Heart Pump

AI, Model-Based Design, and Code Generation Optimize Biomedical Device Development

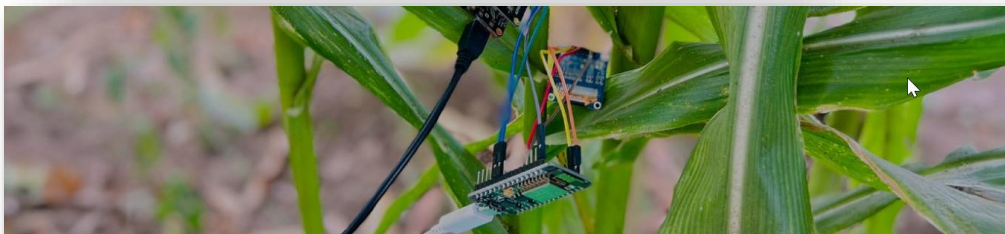
Medical Devices



Toyota Builds Virtual Proving Ground for ADAS

Creating Digital Assets for Realistic Virtual Testing

Automotive



Fighting Crop Diseases with AI and Internet of Things

IoT Sensors Help Boost Maize Production in Africa

Agriculture



AI / INTERNET OF THINGS

Stopping Cyberattacks with AI

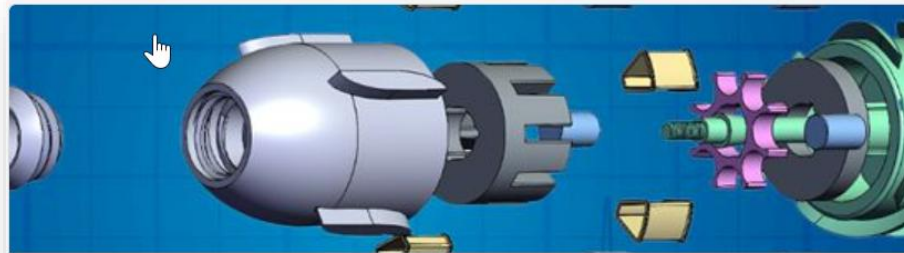
Math Plus Machine Learning Quickly Identifies and Deflects Malicious Traffic

Cybersecurity

Story: Students Cut Design Time, Build a Cheaper Heart Pump

Technologies: AI, Controls, Image Processing, GPUs, and Code Generation

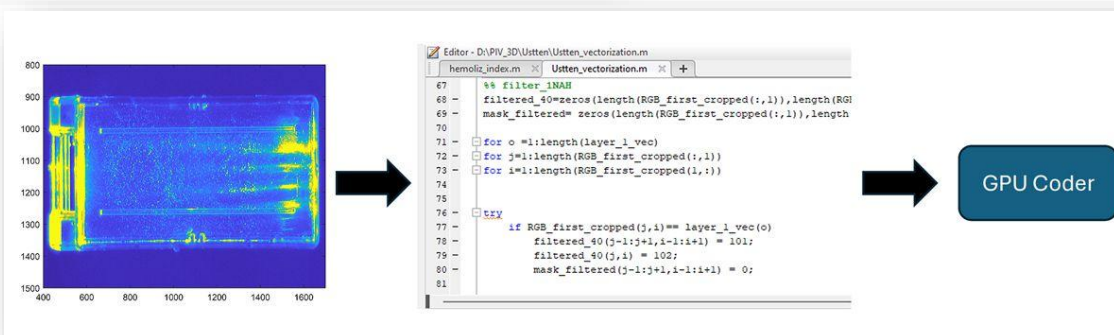
Medical Devices



ENGINEERED SYSTEMS / MEDICAL DEVICES

Students Design a Low-Cost, Lifesaving Heart Pump

AI, Model-Based Design, and Code Generation Optimize Biomedical Device Development



Tools used

- Algorithms
 - MATLAB
 - AI/RL, Image Processing
- Digital Twin (“mock circuit” of heart)
 - Simulink, Simscape
 - Simulink RT, dSPACE
- Code Generation (motor)
 - MATLAB Coder
 - GPU Coder + Nvidia TX2

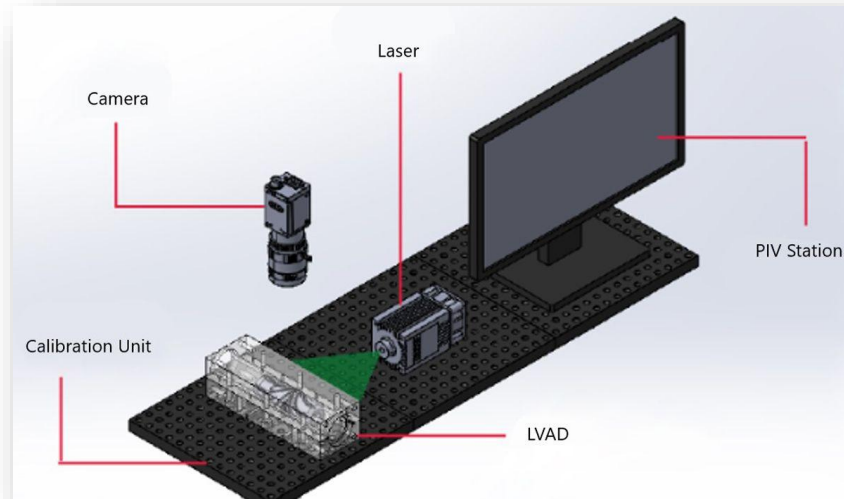
Outcomes

- Practical development
- Real-time speed adjustments
- 50% cost reduction (surgery+device)
 - More practical for Turkish patients
- Paper published
- Planned: Work with manufacturers

Students Design Heart Pump Using AI, PIV, and Code Generation - MATLAB & Simulink

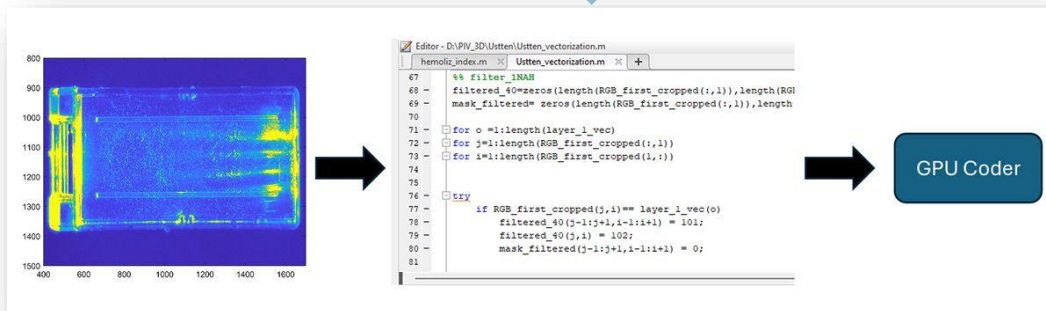
Students LVAD Heart Pump Project: What They Built

Cardiovascular Model Test Platform (with PIV)



**Digital Twin model
of 2-motor LVAD with
auto-adjusted speed**

+



**Wireless Patient
Monitoring
Device**



+

3

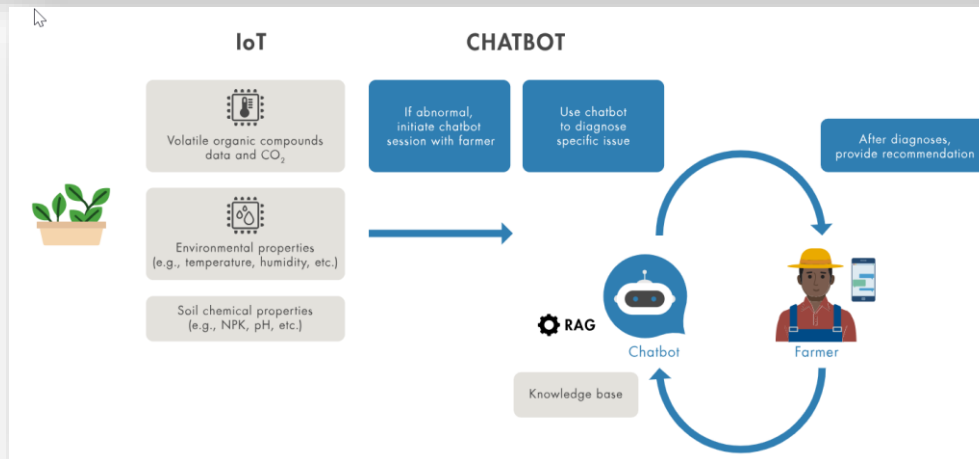
Story: East African PhD Researcher Catches Maize Disease Early

Technologies: Sensors, ThingSpeak, MATLAB, Trained AIs and Chabots



Fighting Crop Diseases with AI and Internet of Things

IoT Sensors Help Boost Maize Production in Africa



Agriculture

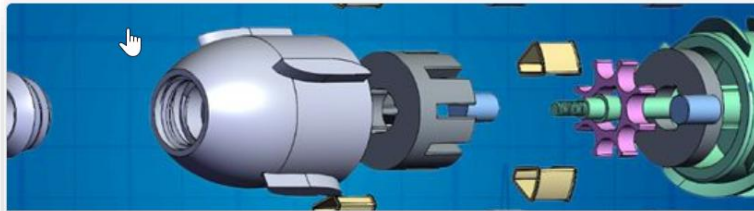
Researchers used

- Data collection about plants
 - Sensors: VOC air quality, movement
 - ThingSpeak
- Model training and development
 - MATLAB LSTMs + CNNs
- Plant health analysis process
 - MATLAB, GenAI

Outcomes → Plant health monitoring process

- Trained, reusable ML models
- 1/3 time to detect disease (4 vs. 14+ days)
- Higher crop yields
- New LLM ChatBot for farmers

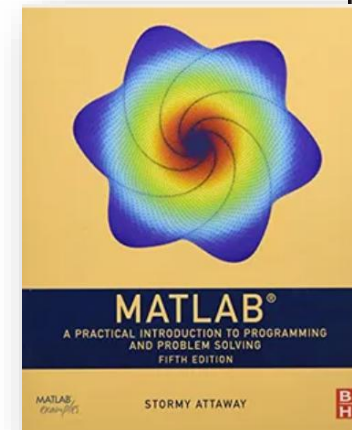
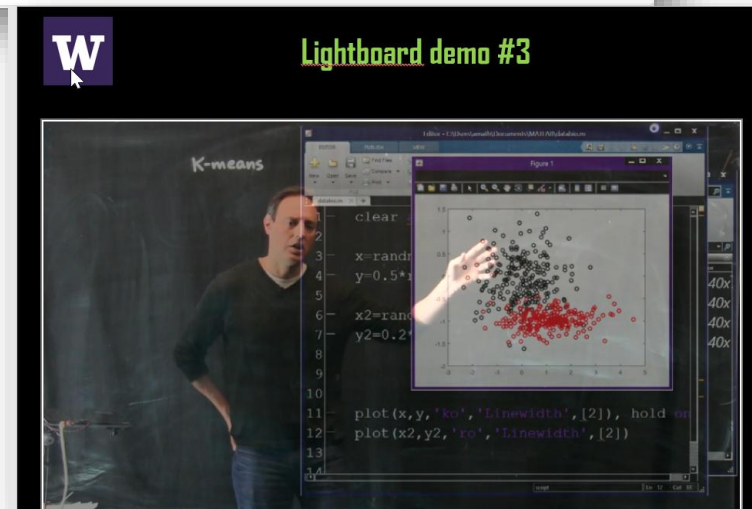
Which cool classroom innovations should you invest in?



ENGINEERED SYSTEMS / MEDICAL DEVICES

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AI, Model-Based Design, and Code Generation Optimize Biomedical Device Development

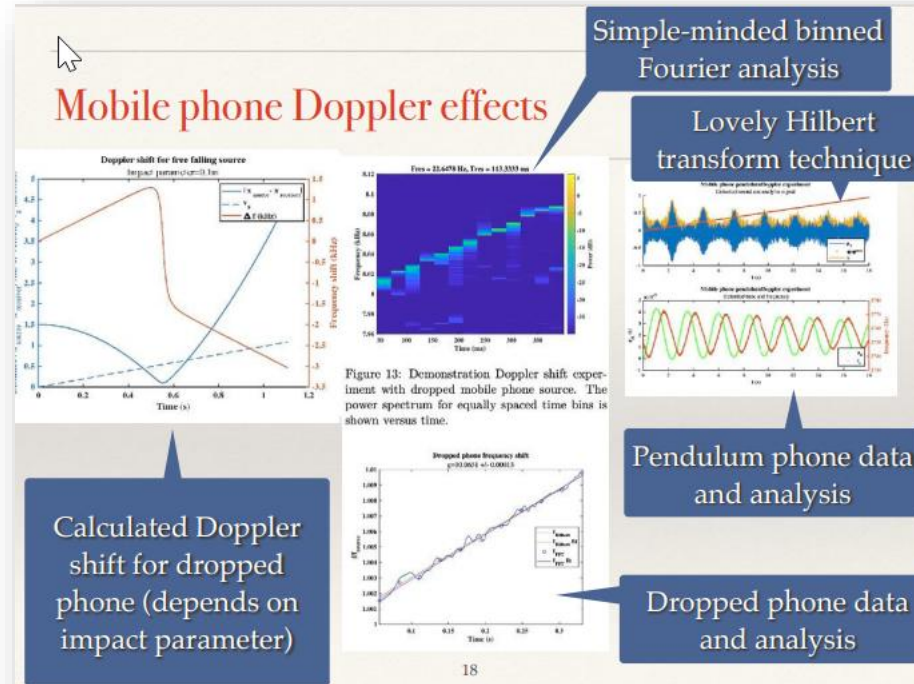


[Stormy Attaway, 2019 Workshop Keynote](#)

Example: Intro to Physics with Simple Hardware

Record Doppler Effects with iPhone MATLAB Sensor Package

[repo on File Exchange](#)
152 contributions!



What have we learned?

- ❖ Modeling is important. No model, no learning, no discovery.

MATLAB Help Center Community Learning

MATLAB Answers File Exchange Cody AI Chat Playground Discussions Contests Blogs More

Files Authors My File Exchange Publish About

Mobile Phone Pendulum Doppler Experiment

Version 1.0.0 (12.9 MB) by Duncan Carlsmith

Live Script analysis of data from mobile phone pendulum Doppler shift experiment.

+ Follow

Overview Examples Version History Reviews (0) Discussions (0)

This Live Script illustrates analysis of audio data from a receiver at several locations near a mobile phone tone generator swinging...

Extra credit: Mobile phone Doppler effects

- ❖ Create and save a sound (e.g. tone, or repetitive chirp) using MATLAB, load it into your phone (source), and play it while you record the sound with your laptop or your partner's phone (receiver). (Collaborate and share data and scripts!)
- ❖ Drop the source (careful now, you own it and phones are getting expensive) in free fall towards the receiver, or let the source swing as a pendulum from its power cord.
- ❖ What will it "sound like" in each case?
- ❖ Now deduce local 'g' for free fall, or the pendulum frequency for swinging, from the Doppler effect with FFT or Hilbert transform.

Store Mac iPad iPhone Watch Vision AirPods TV & Home Enterprise

App Store Preview

Open the Mac App Store to buy and download apps.

Audio Function Generator (4+)

Frequency and Signal Generator

Thomas Gruber

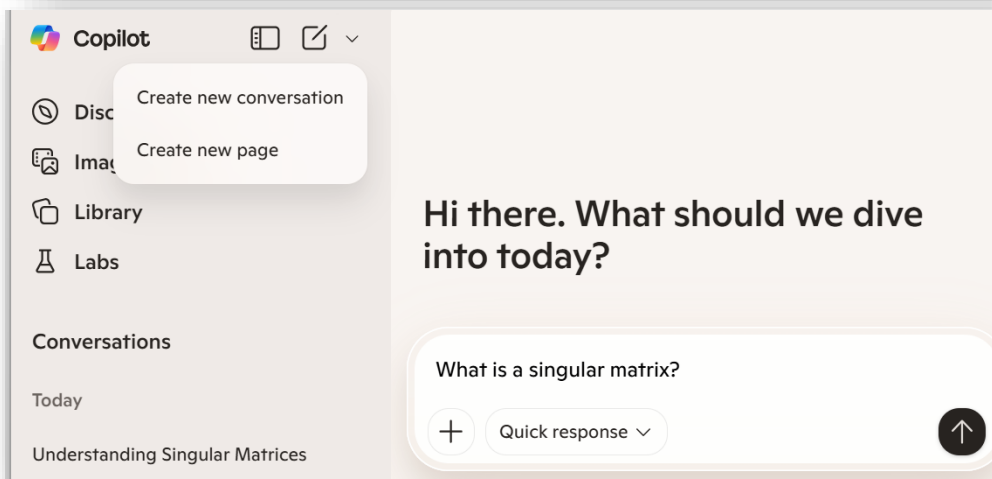
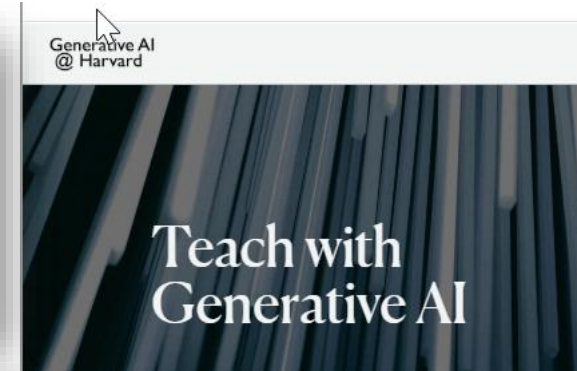
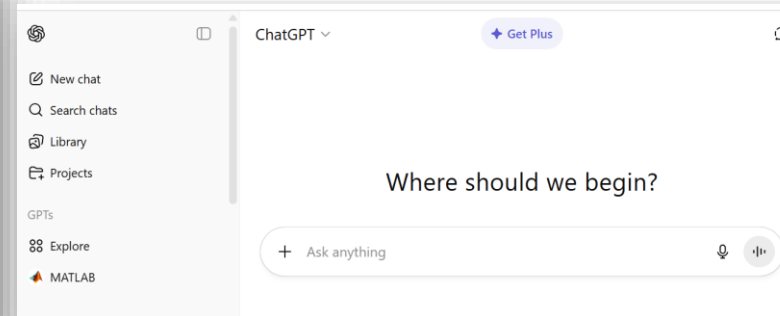
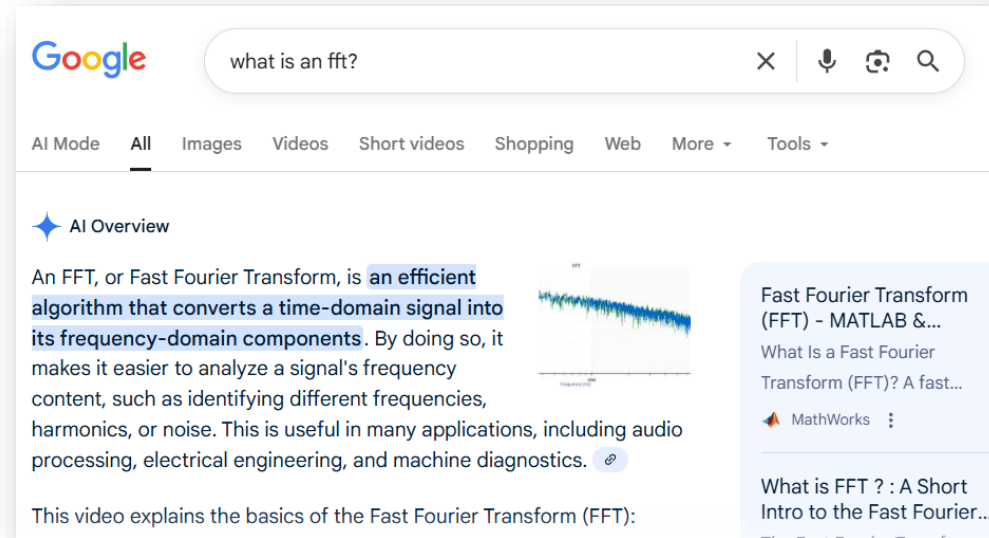
Designed for iPad

4.7 ★ 2K Ratings

Free · Offers In-App Purchases

[Duncan Carlsmith](#),
UWisc-Madison
workshop: 2019, '20, '22

And Now GenAI: Forcing Curriculum Rethinking and Rework



Frequently asked questions

The following information offers advice for educators interested in using generative AI tools in their teaching and course preparation. As this technology is constantly evolving, this page will be updated frequently with new resources and advice.

- How can I use generative AI to help prepare my curriculum?
- How can I use generative AI to help me teach in the classroom, day to day?
- How can I redesign assessments to reduce the misuse of generative AI?
- What are the most important risks of using GenAI tools in my classroom?
- How do I know whether GenAI is even effective for teaching?
- How can I become a GenAI whiz?
- What policies should I keep in mind when using LLMs in my classroom?

Programming Evolution: Blinking Cursor to Data-Driven Guided Coding

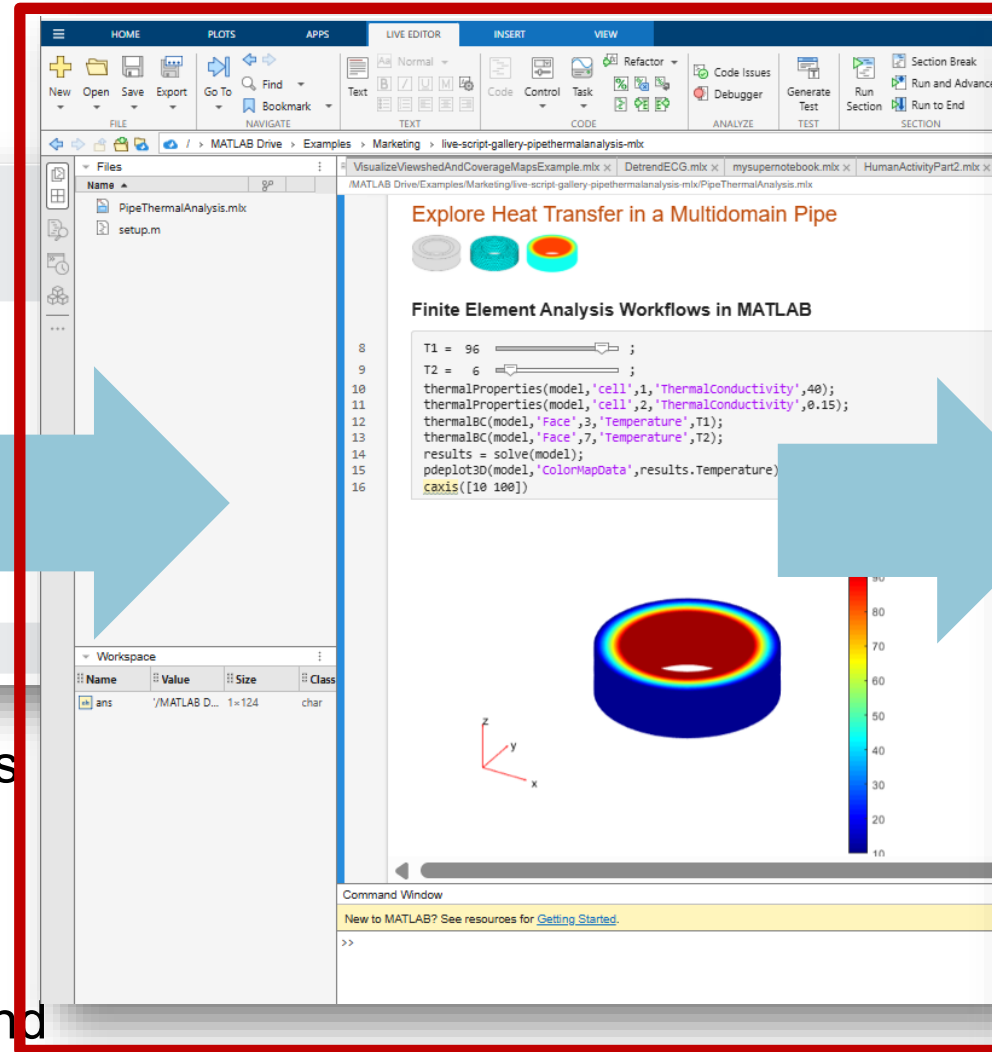
myfirstprogram.c

```
#include <stdio.h>

int main() {
    printf("Hello World!");
    return 0;
}
```

Programming in the '80s
(‘70s was assembly!)

Blank screen of death
Debug = “print” command



MATLAB

Prompt

Create an animation of a sine wave

Searched 4 sites

Creating an animation of a sine wave in MATLAB can be done effectively using the `animatedline` function, which optimizes the animation process by allowing you to add points to a line dynamically. Here's a detailed example that shows how to create such an animation:

```
matlab

% Define the sine wave parameters
t = linspace(0, 4*pi, 1000); % Time vector from 0 to 4*pi
y = sin(t); % Sine wave values

% Set up the animated line
h = animatedline('Color', 'b', 'LineWidth', 2);

% Set up the figure
figure;
axis([0 4*pi -1 1]); % Set axis limits
xlabel('Time (t)');
ylabel('Amplitude');
title('Sine Wave Animation');

% Animate the sine wave
for k = 1:length(t)
    addpoints(h, t(k), y(k));
    drawnow limitrate; % Update the display
    pause(0.01); % Pause to control the speed of the animation
end
```

“IDEs” + 4GLs → Executable Notebooks

Apps that know how to program

*Who has used GenAI
in your courses?*

(hands up)

GenAI in MATLAB: MATLAB Copilot:

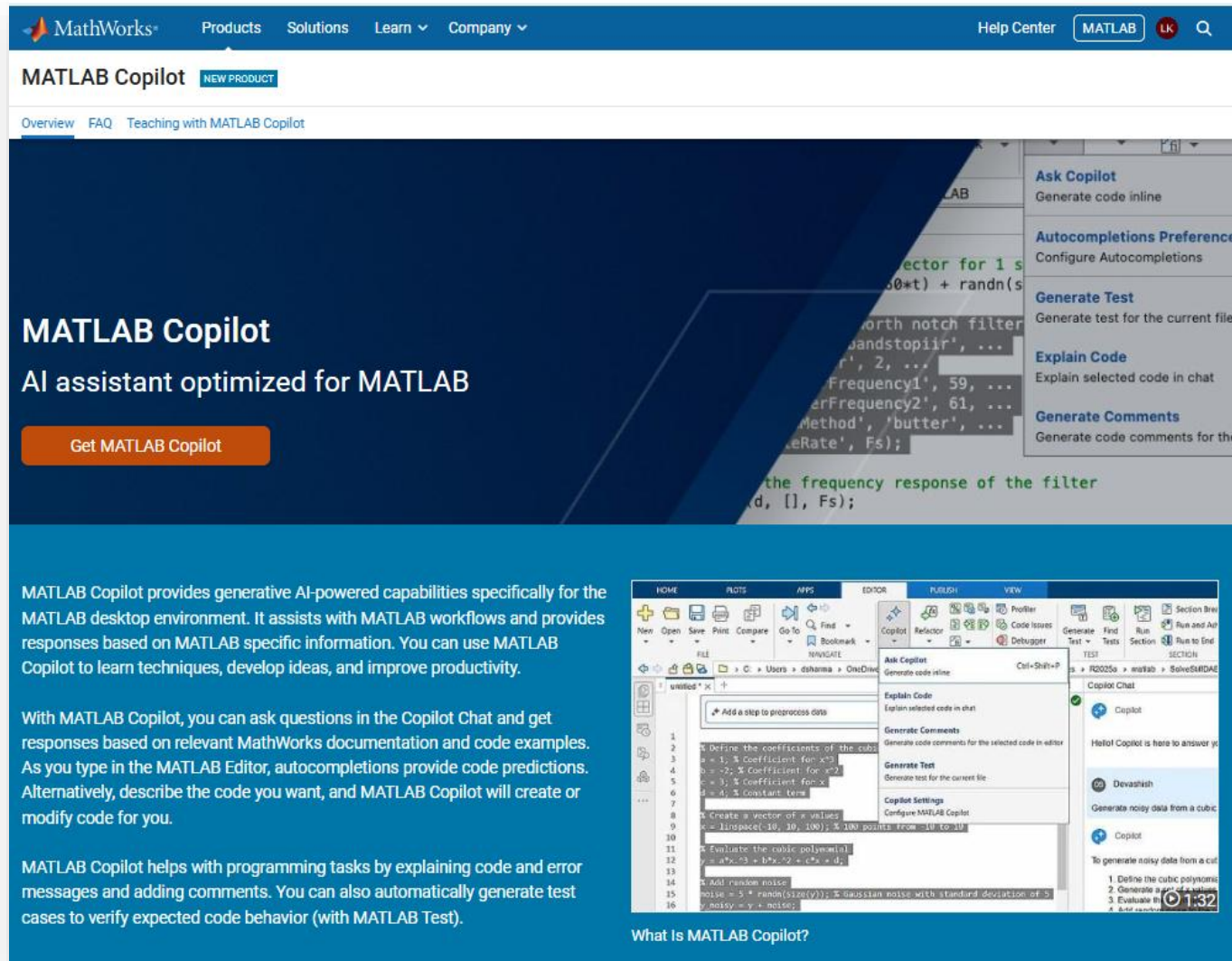
May 14th
Release

DEMO

ChatGPT PROMPTS

create an errorbar plot that shows temperature differences in major cities

Modify to use different colors for the different city bars. make the positive and negative error different per city



The image shows a screenshot of the MATLAB Copilot website and a MATLAB editor window. The website header includes the MathWorks logo, navigation links (Products, Solutions, Learn, Company), a Help Center link, and a search bar. The main heading is "MATLAB Copilot" with a "NEW PRODUCT" tag. Below it, there's a subheading "AI assistant optimized for MATLAB" and a "Get MATLAB Copilot" button. To the right, a sidebar lists features: "Ask Copilot" (Generate code inline), "Autocompletions Preferences" (Configure Autocompletions), "Generate Test" (Generate test for the current file), "Explain Code" (Explain selected code in chat), and "Generate Comments" (Generate code comments for the selected code). The bottom section of the website describes the capabilities of MATLAB Copilot. The MATLAB editor window shows a script with code for generating a vector, evaluating a cubic polynomial, and adding random noise. A Copilot chat window is open on the right, showing a prompt and a response.

MATLAB Copilot
AI assistant optimized for MATLAB

Get MATLAB Copilot

MATLAB Copilot provides generative AI-powered capabilities specifically for the MATLAB desktop environment. It assists with MATLAB workflows and provides responses based on MATLAB specific information. You can use MATLAB Copilot to learn techniques, develop ideas, and improve productivity.

With MATLAB Copilot, you can ask questions in the Copilot Chat and get responses based on relevant MathWorks documentation and code examples. As you type in the MATLAB Editor, autocompletions provide code predictions. Alternatively, describe the code you want, and MATLAB Copilot will create or modify code for you.

MATLAB Copilot helps with programming tasks by explaining code and error messages and adding comments. You can also automatically generate test cases to verify expected code behavior (with MATLAB Test).

What is MATLAB Copilot?

MATLAB GPT: A ChatGPT Variant

MATLAB GPT

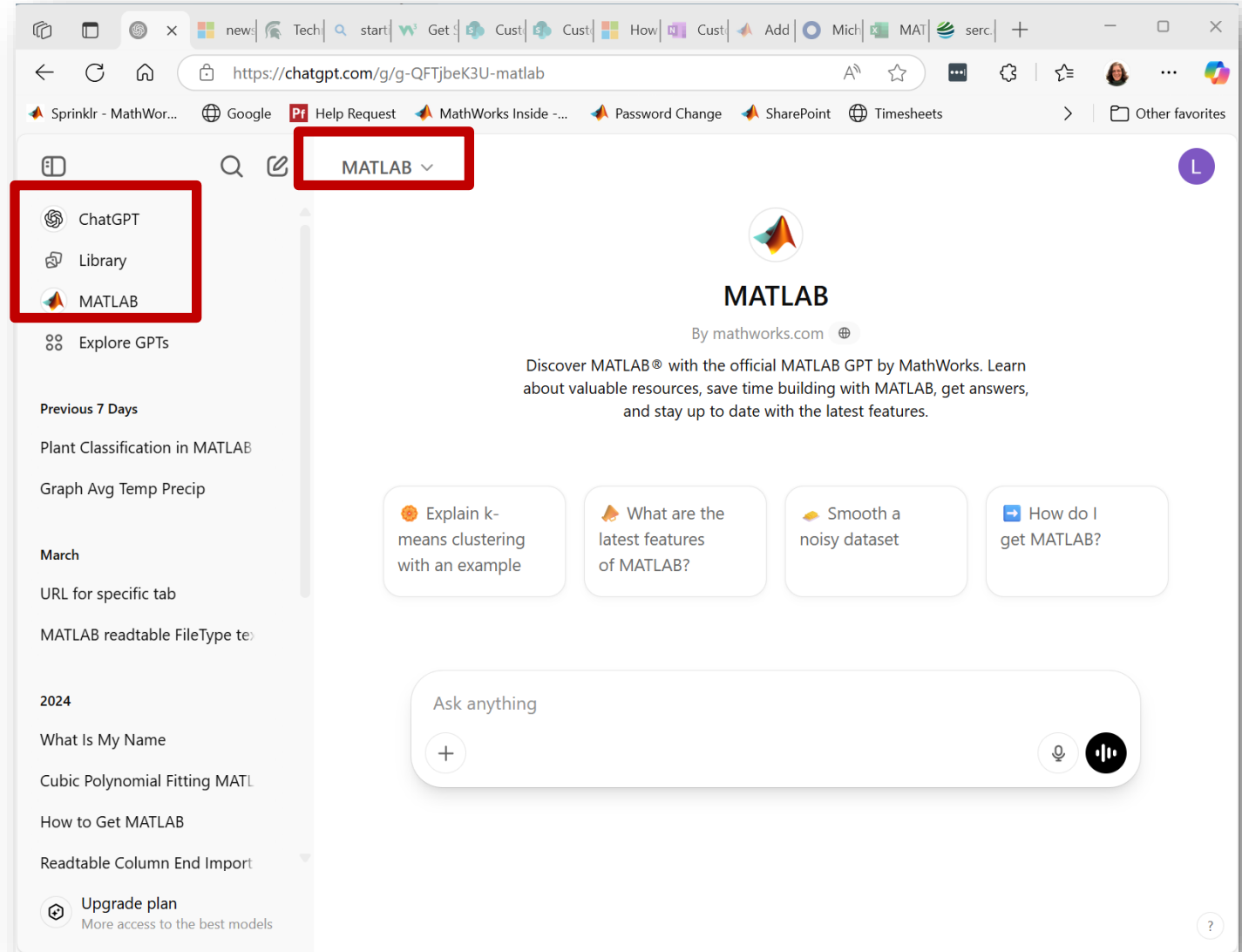
OpenAI's ChatGPT

- LLM = GPT-5

+

MATLAB plug-in with

- www.mathworks.com contents (documentation, examples, etc.)



MATLAB Copilot

MATLAB R2025b

HOME PLOTS APPS LIVE EDITOR INSERT VIEW Search (Ctrl+Shift+Space)

New Open Save Print Export Compare Go To Find Bookmark

FILE NAVIGATE TEXT TEXT CODE ANALYZE TEST SECTION RUN

OneDrive Documents MATLAB Examples R2025b signal HumanActivityRecognitionUsingMobilePhoneDataExample

Files

UAVPackageDeliveryExample.mlx Inputs_for_error_barplots.mlx bar_with_error_script.mlx Inputs_for_barplots.mlx spectr

bar_with_error_script

```
1 %% bar_with_error_script
2
3 %% define (y, s, g)
4 numDataPoints = 1000;
5 y = rand(numDataPoints, 1);
6 g = randi([1,3], numDataPoints, 1);
7 s = randi([1,5], numDataPoints, 1);
8
9 %% make errorbar plot
10 T = table(y, s, g, 'VariableNames', ["Data","S
11 R = groupsummary(T, ["Series","Group"], ["mean
12 R.std_err = R.std_Data ./ sqrt(R.GroupCount);
13
14 Yavg = unstack(R(:,["Series","Group"],"mean_Dat
15 "mean_Data", "Series", VariableNamingRule=
16 Yerr = unstack(R(:,["Series","Group"],"std_err"
17 "std_err", "Series", VariableNamingRule="f
18
```

Workspace

Name	Value	Size
actid	7776×1 dou...	7776×1
actnames	1×4 cell	1×4
atx	44×7776 do...	44×7776
fs	10	1×1

Command Window

New to MATLAB? See resources for [Getting Started](#).

>> Press **Ctrl** + **Shift** + **P** to generate code with Copilot

Copilot Chat

Copilot

Hello! Copilot is here to answer your questions, help write and explain code, and even identify code issues. Learn more about [Copilot](#).

Copilot sometimes produces output that seems accurate but is not. Validate generated output before use. Share feedback on the output to help improve the responses.

Shuffle Example Prompts

- Roll two six-sided dice 1000 times and plot the sum of each roll
- Solve the linear equations with coefficients $A = [2, 4; 1, 3]$ and constants $B = [8; 5]$ and display the results
- Create a 3D bar graph of data from magic function

Ask Copilot

Validate generated output before use.

Editor: 100% UTF-8 LF Script Ln 1 Col 1

Recent University Trip: 2 Educators had a realization.

“Teaching Computation: It’s not just about working code anymore”

Program Evaluation Rubrics

Name: |

Report: Culmination of Procrustes!

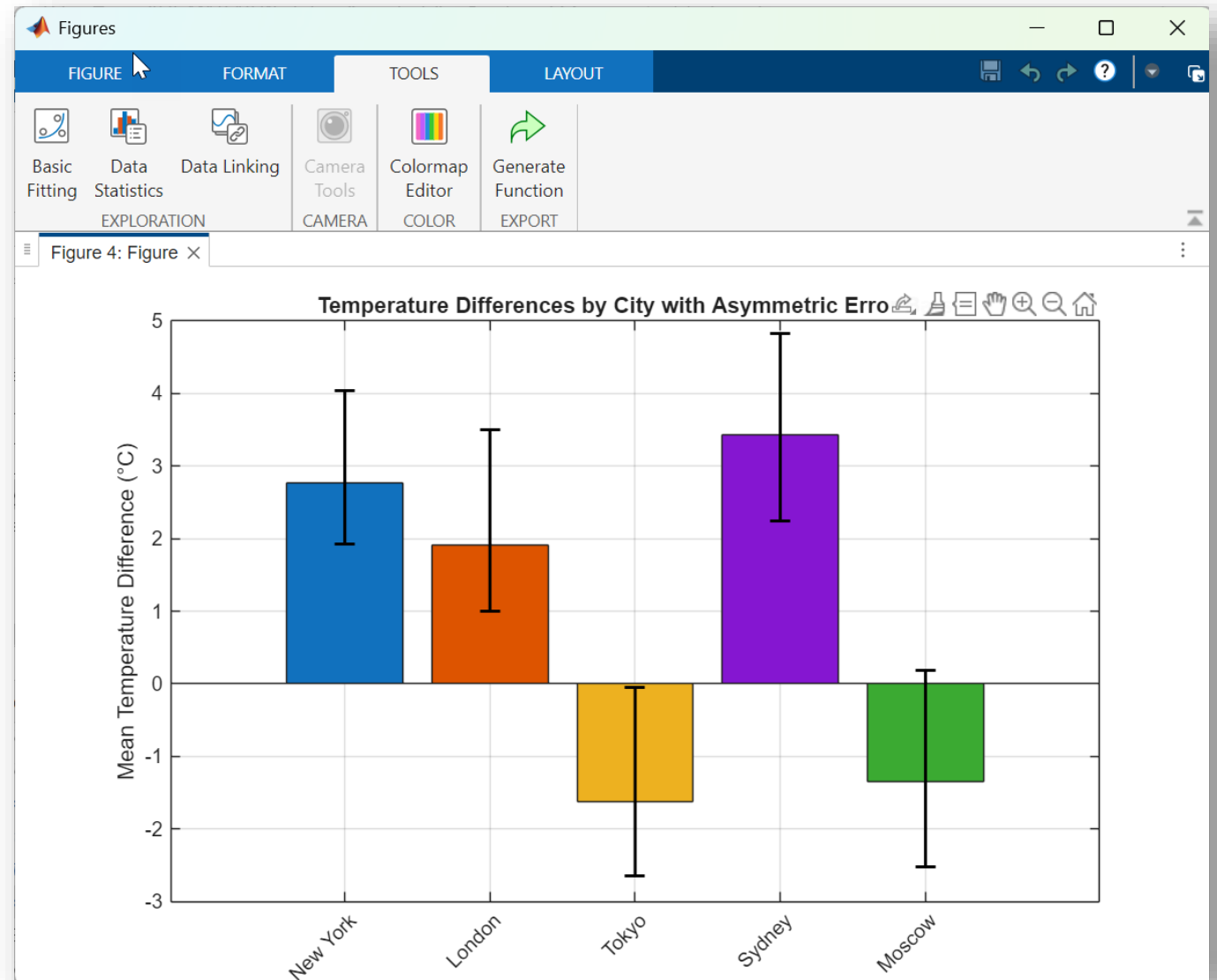
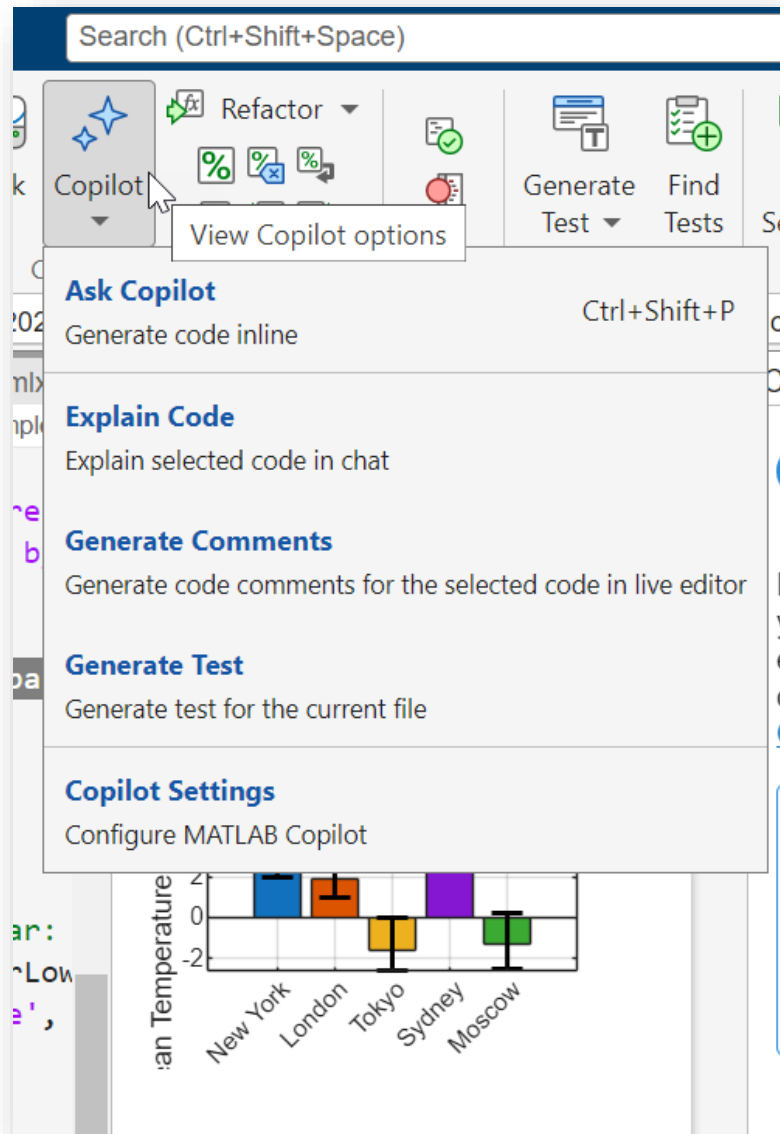


Attribute	Exceptional	Accomplished	Needs More Work	Not Acceptable	Score
Cover page (2 points – 2/0)	<ul style="list-style-type: none"> Included 			<ul style="list-style-type: none"> Not included 	/2
ProcWork m-file (5 points – 5/3/1/0)	<ul style="list-style-type: none"> Works perfectly 	<ul style="list-style-type: none"> One minor mistake, ex, <ul style="list-style-type: none"> One wrong index. Procrustes not normalized. One piece of extra output on screen 	<ul style="list-style-type: none"> Major mistakes, ex, <ul style="list-style-type: none"> Comparison based on 3 points instead of 18 points. Two or more minor mistakes. One or more (shifting, scaling, rotation) is wrong 	<ul style="list-style-type: none"> No included, or Not working 	/5
GetSkullPoints.m (5 points – 5/3/1/0)	<ul style="list-style-type: none"> Works perfectly 	<ul style="list-style-type: none"> One minor mistakes, ex, <ul style="list-style-type: none"> Missing color input. One piece of extra output on screen 	<ul style="list-style-type: none"> Major mistakes, ex, <ul style="list-style-type: none"> 	<ul style="list-style-type: none"> No included, or Not working 	/5
PlotSkullFunction.m (5 points – 5/3/1/0)	<ul style="list-style-type: none"> Works perfectly 	<ul style="list-style-type: none"> One minor mistakes, ex, <ul style="list-style-type: none"> Missing color input. One wrong index. One piece of extra output on screen 	<ul style="list-style-type: none"> Major mistakes, ex, <ul style="list-style-type: none"> Did not create four separate close polygons. 	<ul style="list-style-type: none"> No included, or Not working 	/5
Comments (12 points – 12/8/4/0)	<ul style="list-style-type: none"> Headers included Purpose Variable explained Detailed comments throughout 	<ul style="list-style-type: none"> Missing one 	<ul style="list-style-type: none"> Missing two 	<ul style="list-style-type: none"> Missing three or four 	/12
Efficiency (8 points – 8/5/3/0)	<ul style="list-style-type: none"> Include clear, home Compact code (loops and function used effectively). 	<ul style="list-style-type: none"> One minor mistake, ex, <ul style="list-style-type: none"> Using for loop to get distance instead of as an array. 	<ul style="list-style-type: none"> Major mistakes, ex, <ul style="list-style-type: none"> Compute distance for each pair (18 points) with 18 separate lines. Two or more minor mistakes. 	<ul style="list-style-type: none"> Very inefficiency No logical flow (counter intuitive) 	/8
Elegance (4 points – 4/2/0)	<ul style="list-style-type: none"> Well named variables Extra space for readability 	<ul style="list-style-type: none"> Missing one 		<ul style="list-style-type: none"> Missing both 	/4
Figures (4 points – 4/3/1/0)	<ul style="list-style-type: none"> Included both best fit and least fit skulls, and all information is present. 	<ul style="list-style-type: none"> One minor mistake, ex, <ul style="list-style-type: none"> Missing titles Wrong label axis Not identifying which pairs of skulls 	<ul style="list-style-type: none"> Major mistakes, ex, <ul style="list-style-type: none"> 18 points on skull not in correct order. Two or more minor mistakes. 	<ul style="list-style-type: none"> Not included 	/4
Discussion (5 points – 5/3/1/0)	<ul style="list-style-type: none"> Give initial estimates. Make sense. Give <i>procrustes</i> values for all pairs. 	<ul style="list-style-type: none"> Missing one 	<ul style="list-style-type: none"> Missing two or more. 	<ul style="list-style-type: none"> Not included 	/5
Total (out of 50)					

[Procrustes Shape Analysis Rubric --](#)

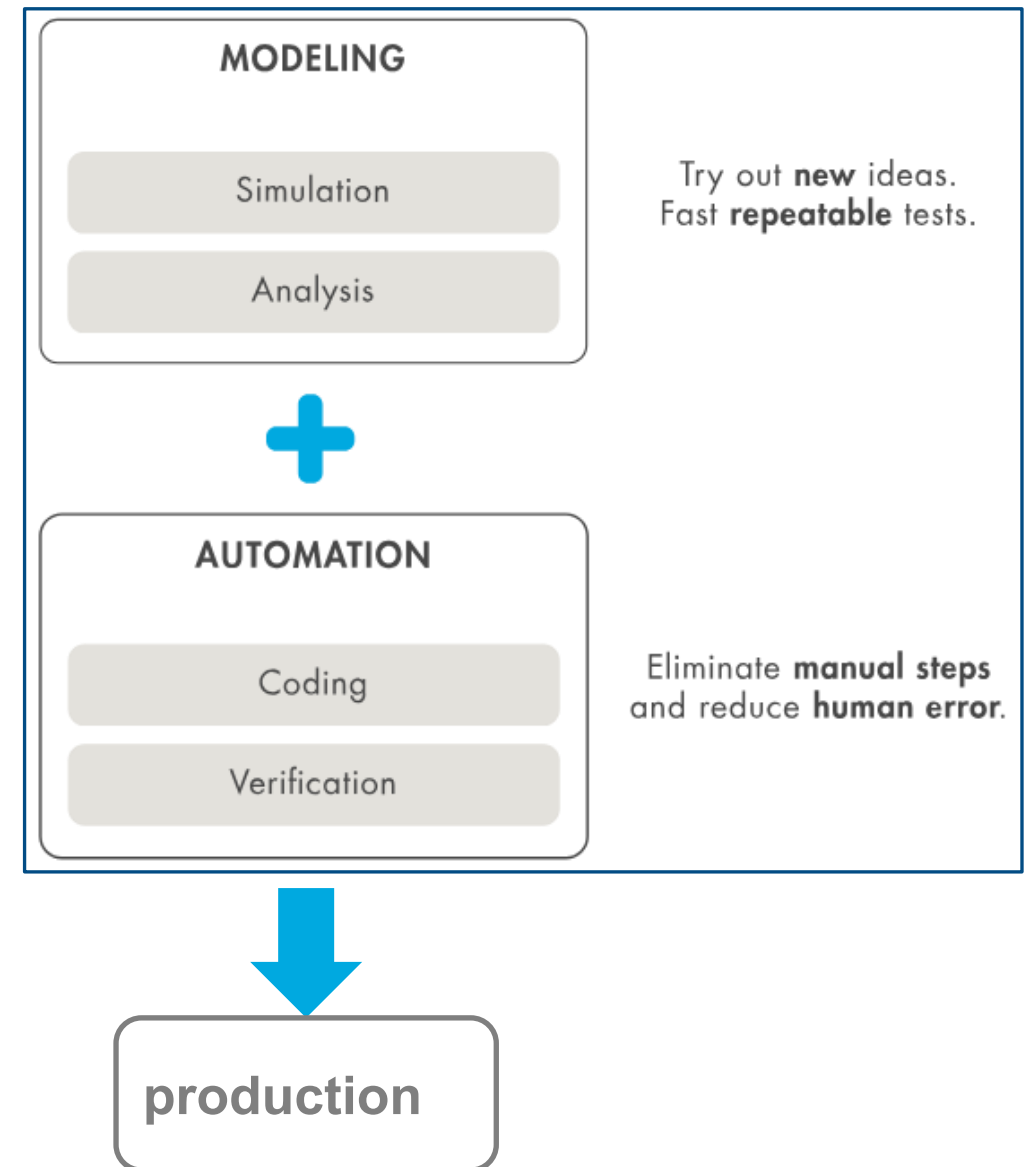
Emily Domar and Glen Livesay,
Rose Hulman Institute

CoPilot Actions and `plot` Tools – Windows into Owning Your Code



More Beyond Code: What is Model-Based Design?

- Creating a virtual representation of a real-world system
 - **Model** new ideas and perform repeatable tests with **simulation**
 - Adjust **design** based on these simulations and **iterate**
 - **Digital twin** = Identical software model



MATLAB GPT to Write Assignments

(Output mapped well to Teaching Activity Structure – context, learning outcomes, assessment)

[ChatGPT](#) [Assignment Writing](#) [Prompts](#)

MATLAB 5 ▾

7. *Audience:* First-year engineering students

Behavior: will document and comment their MATLAB code, following coding standards

Condition: when submitting labs or projects

Degree: meeting all coding-standard checklist items (e.g. variable naming, comments, function headers)

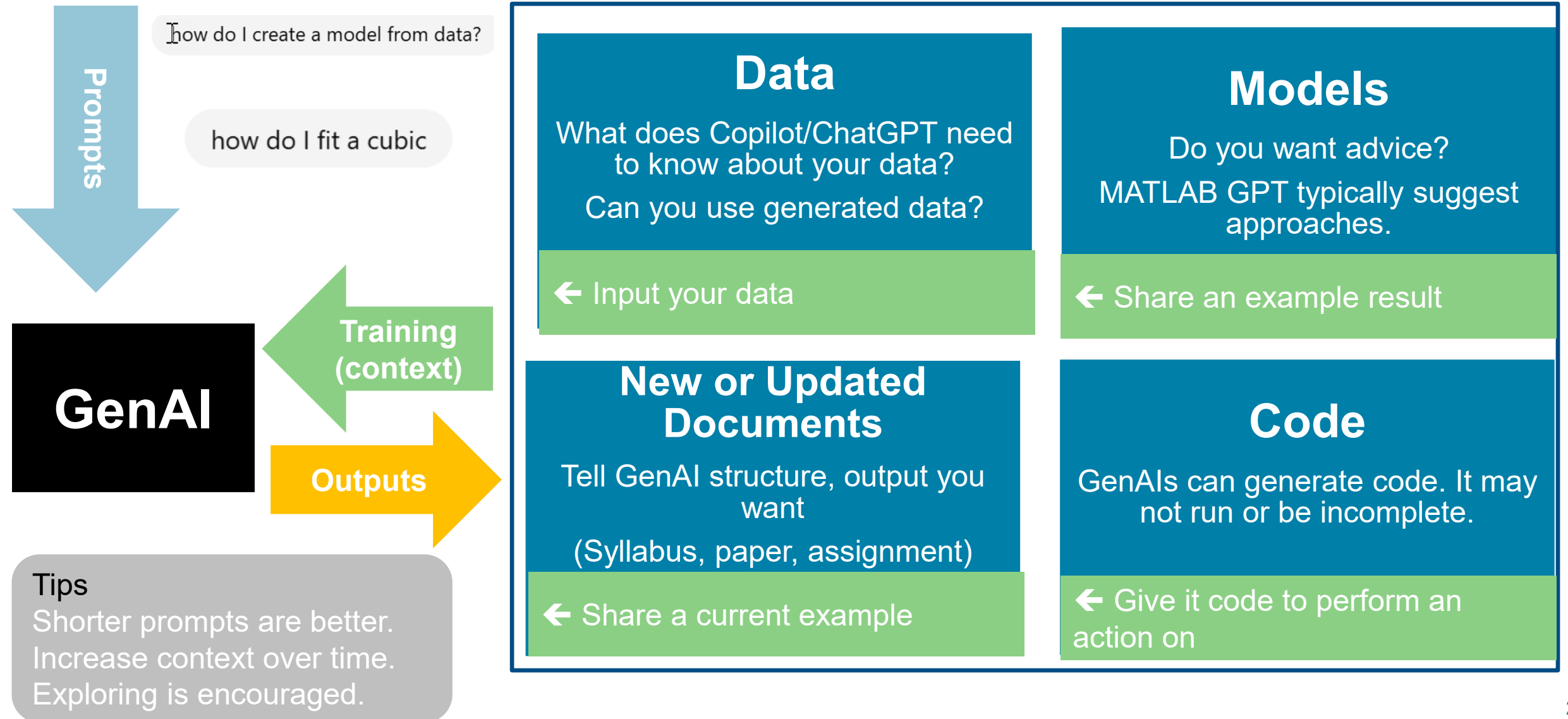
Objective: In all labs and projects, first-year engineering students will document and comment their MATLAB code (using variable naming conventions, function headers, inline comments), meeting all items on the coding-standard checklist provided by the instructor.

If you like, I can package a full set (say 10–12) aligned to your syllabus, or match them to specific weeks. Do you want me to do that?

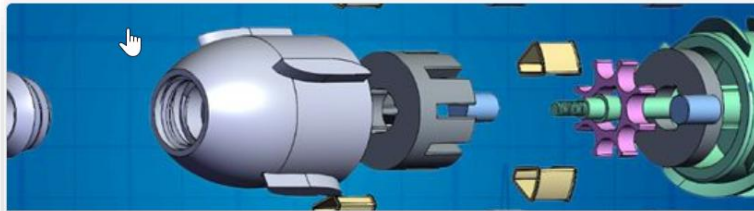
+ | Message MATLAB



Complex GenAIs Tasks Require Thoughtful Design of Your Ask



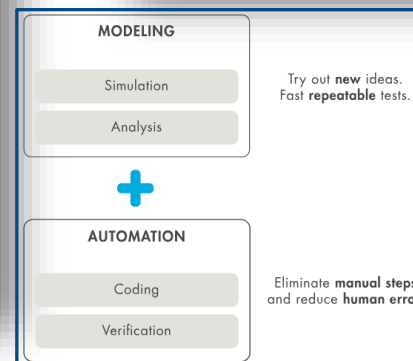
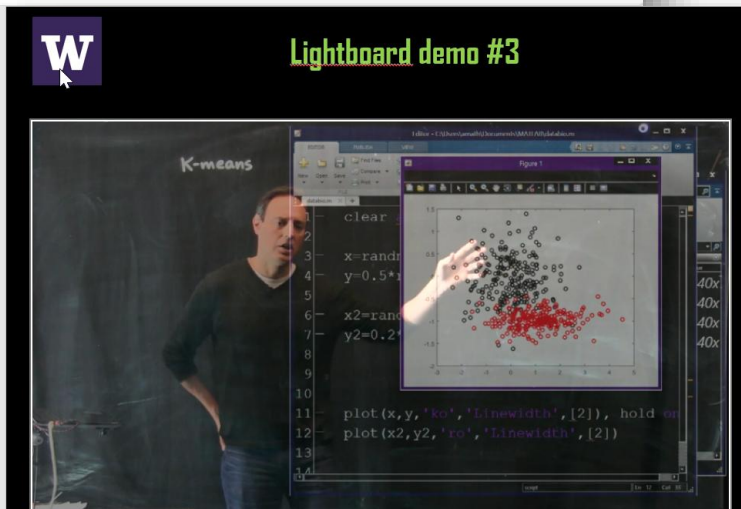
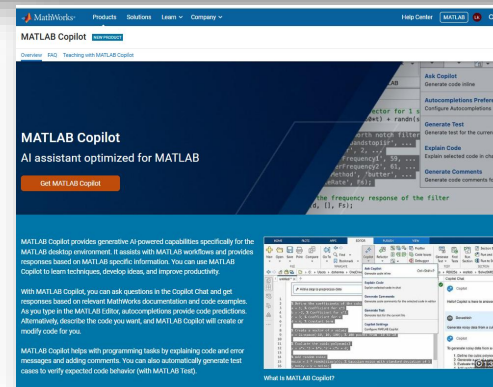
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AI, Model-Based Design, and Code Generation Optimize Biomedical Device Development



Stormy Attaway, 2019 Workshop Keynote

*How can I
(and students)
learn to do all that?*



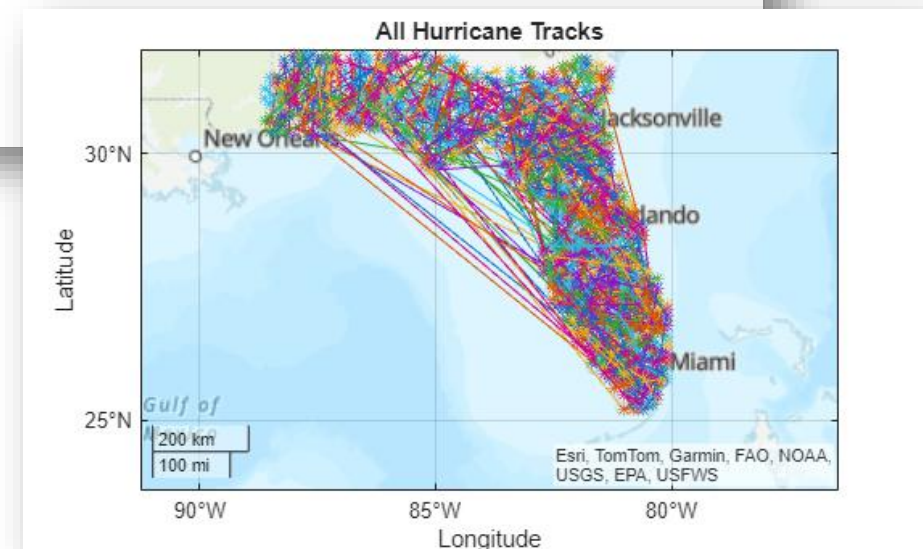
Expose students to *many* ways to learn
(and assign the exploration)

Documentation Code Examples: Open in MATLAB → Reuse for Projects Hurricane Natural Catastrophe Risk Estimation

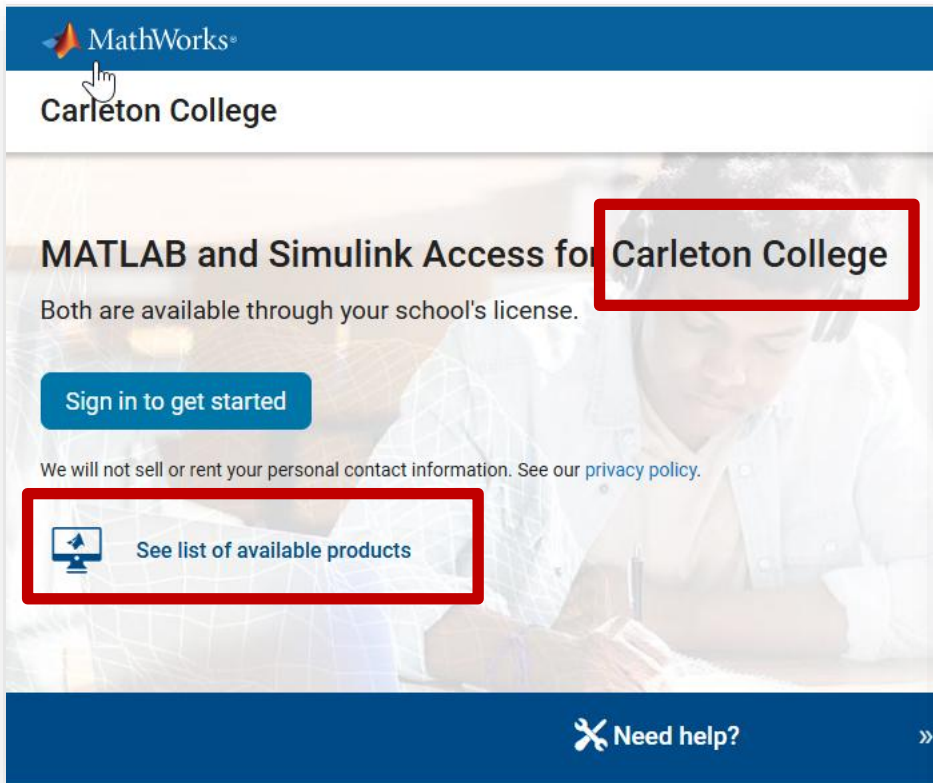
DEMO

The screenshot shows the MATLAB Help Center interface. The top navigation bar includes 'MATLAB Help Center', 'Community', and 'Learning'. The left sidebar contains a 'CONTENTS' menu with categories like 'Documentation Home', 'Mathematics and Optimization', 'Radar', 'Mapping Toolbox', 'Applications', and 'Climate'. The main content area is titled 'Hurricane Natural Catastrophe Risk Estimation' and includes a 'Since R2025a' tag. The text describes the example's purpose: measuring natural catastrophe (NatCat) risk for hurricanes in an area of interest (AOI) using simulations from a hazard model, data about property assets, and a damage function. It lists three inputs: hazard data, exposure data, and asset vulnerability. A 'Within the example, you perform these tasks:' section lists five steps: import data, specify exposure, define damage function, estimate property loss, and analyze property loss. On the right, there are buttons for 'Open in MATLAB Online' and 'Copy Command'.

- View Notebook in doc
 - Open in MATLAB Online (or “Copy Command”)
 - Clear Output + Side Output
 - Run and Advance



Resources: University Portal Pages → Individual Product Subsites




MathWorks®
Carleton College


MATLAB and Simulink Access for Carleton College

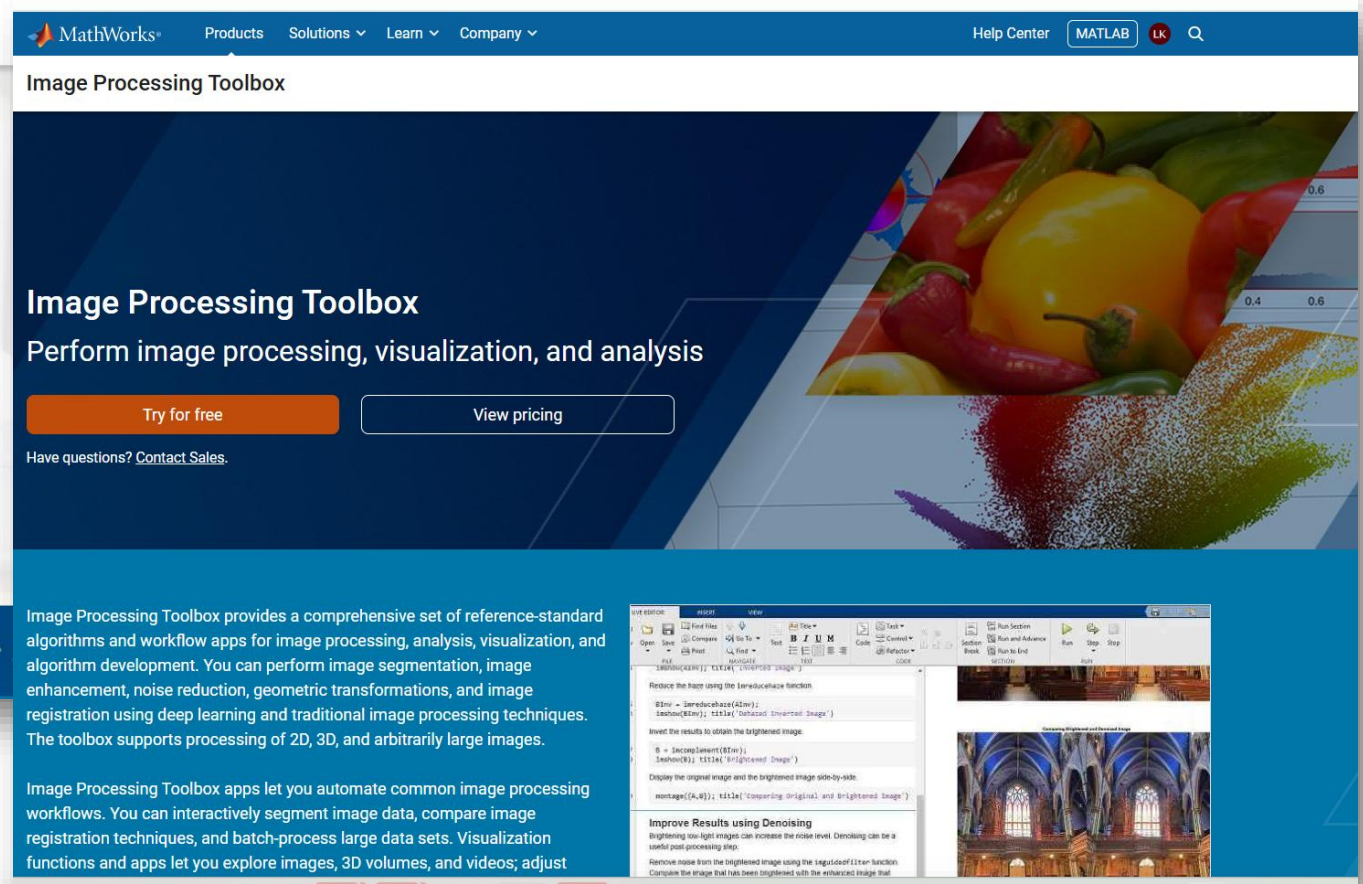
Both are available through your school's license.

[Sign in to get started](#)

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MathWorks® Products Solutions Learn Company Help Center MATLAB LK

Image Processing Toolbox

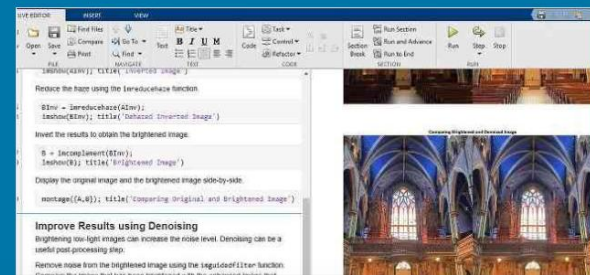
Perform image processing, visualization, and analysis

[Try for free](#) [View pricing](#)

Have questions? [Contact Sales](#).

Image Processing Toolbox provides a comprehensive set of reference-standard algorithms and workflow apps for image processing, analysis, visualization, and algorithm development. You can perform image segmentation, image enhancement, noise reduction, geometric transformations, and image registration using deep learning and traditional image processing techniques. The toolbox supports processing of 2D, 3D, and arbitrarily large images.


Image Processing Toolbox apps let you automate common image processing workflows. You can interactively segment image data, compare image registration techniques, and batch-process large data sets. Visualization functions and apps let you explore images, 3D volumes, and videos; adjust



Product Resources:

[Documentation](#) [Examples](#) [Videos](#) [Hardware support](#) [Requirements](#) [Release notes](#)

MATLAB Onramps and Training: Learn MATLAB Capabilities (FREE)



MATLAB Onramp

3% | 2 hours |
Share Certificate & Progress | Share Course

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Course

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☒ Onramp (Introductory Course)
24

Using MATLAB

All MATLAB

4

Get Started with MATLAB

1

Language Fundamentals

1

Programming

1

App Building

1

Using Simulink

All Simulink

9

Get Started with Simulink

4

Modeling and Simulation

1

Physical Modeling

6

Event-Based Modeling

1

Applications & Workflows

AI, Data Science, and Statistics

6

Control Systems

2

Classification

1

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Onramp (Introductory Course) ✕

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Results 1 - 10 of 24

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New to MATLAB? Start here:

MATLAB Onramp

3% | 2 hours | Languages

Get started quickly with the basics of MATLAB.




New to Simulink? Start here:

Simulink Onramp

2 hours | Languages

Get started quickly with the basics of Simulink.



Machine Learning Onramp

2 hours | Languages

Learn the basics of practical machine learning methods for class

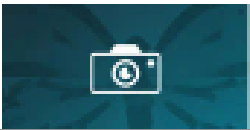



Image Processing Onramp

2 hours | Languages

Learn the basics of practical image processing techniques in MATLAB.


3



Visualization in MATLAB

LEARNING PATH: 3 COURSES

Master creating and customizing 2D and 3D plots and gain fine control over your visualizations.




Power Systems Simulation Onramp

1.5 hours | Languages

Learn how to progressively build and validate power systems using Simscape Electrical.

NEW



Signal Classification with Deep Learning

1 hour | Languages

Learn the workflow for classifying signals with deep networks.

90 Self-Paced Courses to Learn from

28

Beyond MATLAB Onramp: Image Processing Onramp

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Image Processing Onramp

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0% v1 — English ([change](#))

Learn the basics of practical image processing techniques in MATLAB®. Modify and extract information from images to develop an algorithm.

Course modules


- [Introduction](#) 5 min
- [Images in MATLAB](#) 25 min
- [Image Segmentation](#) 25 min
- [Preprocessing and Postprocessing Techniques](#) 25 min
- [Classification and Batch Processing](#) 25 min
- [Conclusion](#) 10 min

About this course



Format: [Self-paced](#)
Length: About 2 hours
Language: English ([change](#))


Recommended prerequisites


[MATLAB Onramp](#)

Features


- Hands-on exercises with automated feedback
- Access to MATLAB through your web browser
- Shareable progress report and course certificate

Authored By:



Erin Byrne
MathWorks

Related Learning



Work with Image Data Types
Learn how to identify, convert, and manipulate different types of image data

YouTube Select Some Videos for Students to Learn From

matlab image processing

Quick Pivot | Caraway + Slack

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Lecture 2: Histogram Equalization on an image using MATLAB | Image Processing Using Matlab

382 views • 3 years ago

CodePal

This lectures explains about creating the histograms of the image using imhist() function and later on equalize the image using ...

TEACH

LEVERAGING GENERATIVE AI AND MATLAB IN ENGINEERING EDUCATION

Bradley Horton MathWorks

Can you show me the equations of motion in the attached picture

13:21

Leveraging Generative AI and MATLAB in Engineering Education

2.4K views • 5 months ago

MATLAB

Curious about the capabilities and implications of generative AI (GenAI)? This demonstration is ideal for those interested in ...

LIVESTREAM

AI WITH MODEL-BASED DESIGN

Hosted by Tianyi Zhu and Arkady Turevsky

1:04:36

AI with Model-Based Design

10K views • Streamed 1 year ago

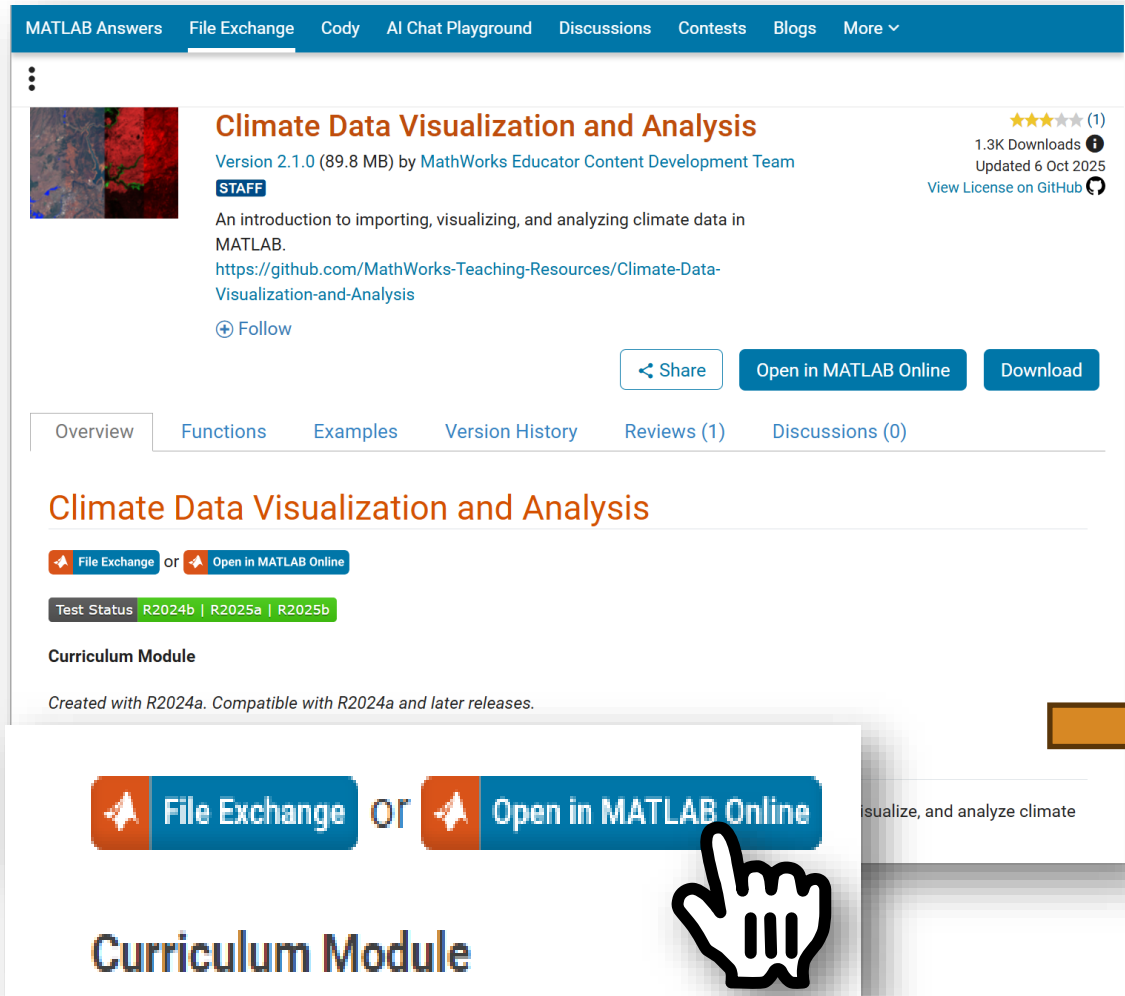
MATLAB

In this session, we will talk about how you can incorporate AI in Model-Based Design and how MATLAB and Simulink help ...

33 chapters Presenter Intro | Intro and Agenda | 3 Trends in AI + Systems | Model-Based Design | AI in Model-Base...

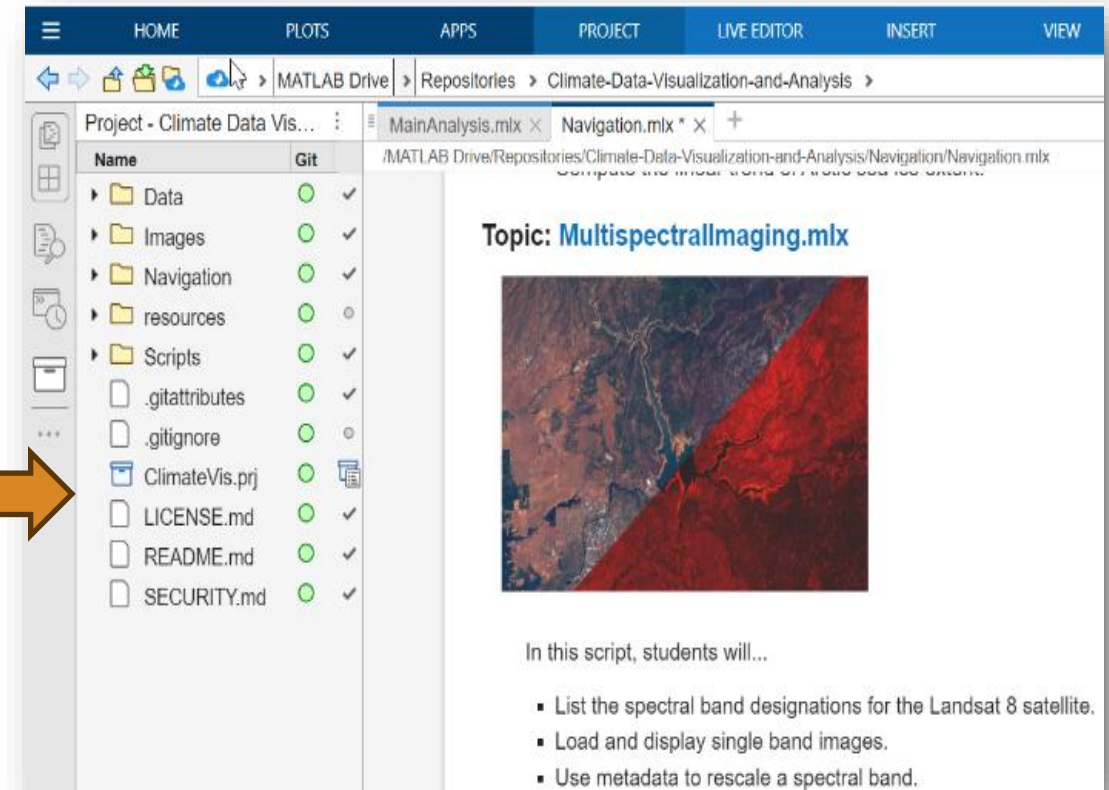
Free Curriculum on GitHub: Open directly in MATLAB Online

Add Open in MATLAB Online *to your repos to open in MATLAB*



The screenshot shows the MATLAB File Exchange page for the 'Climate Data Visualization and Analysis' curriculum module. The page includes a header with navigation links (MATLAB Answers, File Exchange, Cody, AI Chat Playground, Discussions, Contests, Blogs, More), a title 'Climate Data Visualization and Analysis', version information (Version 2.1.0, 89.8 MB), and a 'STAFF' badge. A description states it's an introduction to importing, visualizing, and analyzing climate data in MATLAB. A 'Follow' button and a 'Share' button are visible. Below the description, there are tabs for 'Overview', 'Functions', 'Examples', 'Version History', 'Reviews (1)', and 'Discussions (0)'. A 'Test Status' bar shows compatibility with R2024b, R2025a, and R2025b. A 'Curriculum Module' section notes it was created with R2024a and is compatible with R2024a and later releases. At the bottom, there are two buttons: 'File Exchange' and 'Open in MATLAB Online', with a hand cursor pointing to the latter.

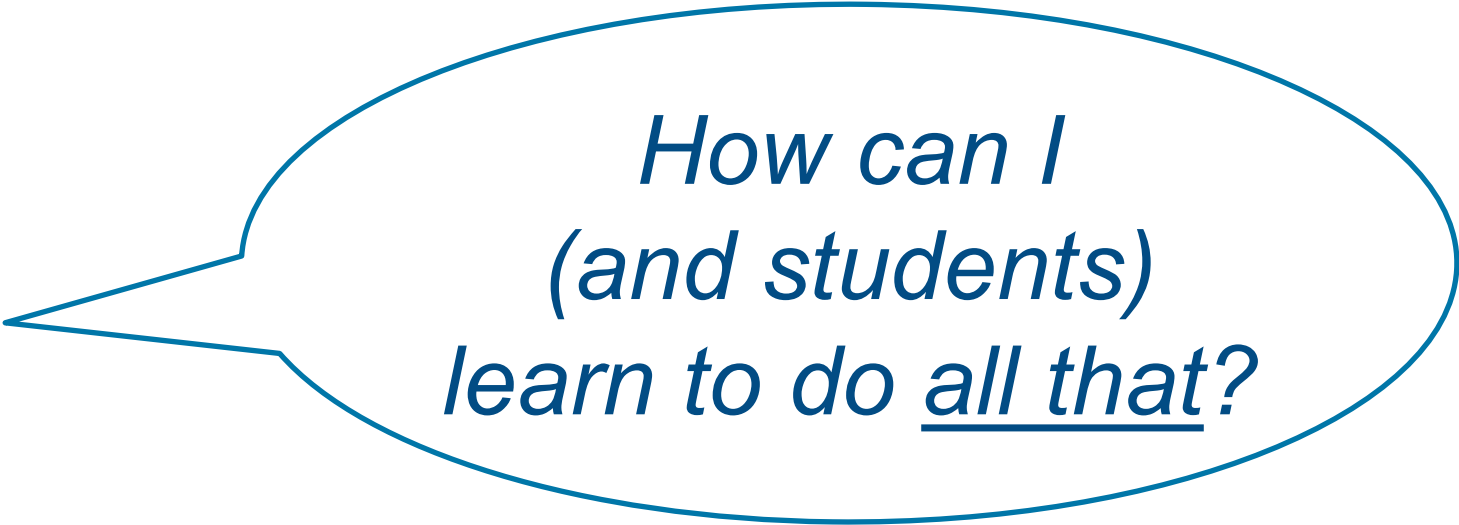
MATLAB Online



The screenshot shows the MATLAB Online interface. The top navigation bar includes 'HOME', 'PLOTS', 'APPS', 'PROJECT', 'LIVE EDITOR', 'INSERT', and 'VIEW'. The 'PROJECT' tab is active, showing a file browser on the left and a script editor on the right. The file browser lists the project files: 'Data', 'Images', 'Navigation', 'resources', 'Scripts', '.gitattributes', '.gitignore', 'ClimateVis.prj', 'LICENSE.md', 'README.md', and 'SECURITY.md'. The script editor displays the 'MainAnalysis.mlx' script, which is titled 'Topic: MultispectralImaging.mlx'. The script content includes a description of the topic and a list of tasks for students: 'List the spectral band designations for the Landsat 8 satellite', 'Load and display single band images', and 'Use metadata to rescale a spectral band'.

Summary: Learning Technologies and MATLAB Capabilities

- Documentation
- Code Examples
- Product Pages
- Onramps and training
- Curriculum
- Videos
- MATLAB GPT and MATLAB Copilot



*How can I
(and students)
learn to do all that?*

And – Learn from each other.

Workshop Schedule

Sunday: Settling In and Zeroing in on What We Want to Accomplish

Teaching Activity Submission

Teaching Activity Peer Review

Prewrite

1-on-1 Mentoring Sessions

WORKSHOP BEGINS – Sunday 5-8 (CDT)

Intro and Ice Breakers

Talk: Teaching and Learning:
What's Important to Know?

Convener Panel

Networking

We Are Here

ACTION:

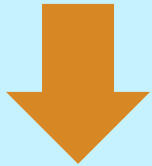
- Find the Program on the SERC site now.
- Spend a minute reviewing it.

Educator Talks + MATLAB Tools → Curriculum Work

MONDAY

(Completed)
SUNDAY

**Orientation and
Networking**



**Practical
Considerations for
Teaching
Computation**

Invited Educator Talks (Kelly Roos)
Activity: Breakouts (best practices)

Learning Outcomes (Ben Bratton)
Activity: Breakouts (outcomes?)

MATLAB Teaching Tools Demo and Practice (Laura, Ram)

Invited Educator Talks (Michele McColgan)
Activity: Breakouts (assessing student learning)

Worktime: Upgrading Your Curriculum (Dan Burleson)

- Attributes of an exemplary teaching activity
- Affinity working group and feedback
- Individual work time: Teaching Activity/Module Development

Roadcheck (fill out survey)



Tuesday: Upgrade Courses → Share Course Plan → Feedback

TUESDAY

Sunday
Orientation and
Networking

....

Monday
MATLAB Tools
Deep Dive
+
Curriculum
Development

Intro

Upgrading Your Curriculum, Part 2 (Dan Burleson)
Activity: Individual Time + Groups

Teaching Activity Sharing and Feedback
Activity: Working group activity sharing and feedback

Workshop Synthesis and Next Steps

Workshop Evaluation (fill out survey)

Teaching Activity post-review updates



Dinner Time – Enjoy!

Convener Panel starts at 7:15

Convenor Panel

Help yourself to dessert and coffee
and get your questions ready

