

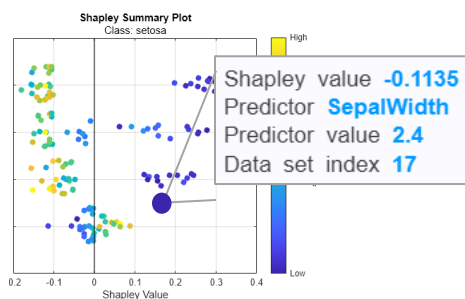
What's New in MATLAB® R2024a for AI?

Machine Learning

shapley Function

Multiple query points

Given a trained machine learning model, you can now use the [shapley](#) and [fit](#) functions to compute Shapley values for multiple query points.



Dimensionality Reduction

Create a model for incremental principal component analysis (IPCA)

Unlike the [pca](#) function, [incrementalPCA](#) allows you to update the coefficients incrementally by supplying chunks of data to the incremental fit function.

Simulink

Deployment

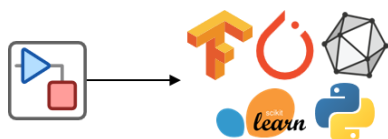
Export models from Classification Learner or Regression Learner to Simulink

On the [Classification Learner](#) or [Regression Learner](#) tab, in the **Export** section, click **Export Model** and select **Export Model to Simulink**.

Python Coexecution Blocks

Execute Python machine learning models in Simulink

You can now coexecute [TensorFlow™](#), [PyTorch®](#), [ONNX™](#), [scikit-learn®](#), and [custom Python®](#) models in Simulink together with machine learning blocks.

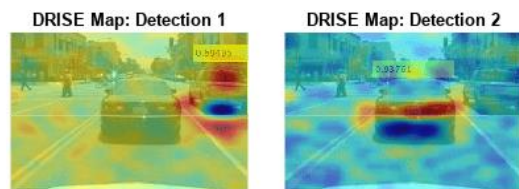


Deep Learning

Visualization

Explain object detection network predictions using D-RISE

Visual explanations for the prediction of object detection networks with the detector randomized input sampling for explanation (**D-RISE**) algorithm by using the [drise](#) function [yolov2](#), [yolov3](#), [yolov4](#) & [yolox](#) object detectors.



Neural Network Layers

New and updated neural network layers and functions

Layer	Description
attentionLayer	Focuses on parts of the input using weighted multiplication operations.
adaptiveAveragePooling2dLayer	Downsamples the input data to a specified output size using average pooling.
spatialDropoutLayer	Applies dropout by randomly setting channels of the input data to zero.
preluLayer	Scales values below zero using a learnable scaling factor.
networkLayer	A network layer contains a nested neural network.

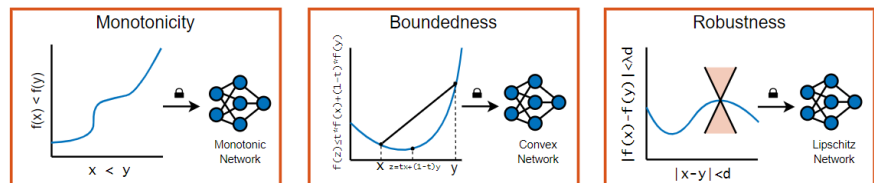
AI Verification



[Open in MATLAB Online](#)

New GitHub repo! Constrained Deep Learning for AI Verification

Constrained deep learning is an advanced approach to training deep neural networks by incorporating domain-specific constraints into the learning process. [GitHub repo here](#).



MATLAB AI Chat Playground



Use the [MATLAB® AI Chat Playground](#) to experiment, generate initial draft MATLAB code, and answer questions. The playground is built on OpenAI and optimized to assist with MATLAB related questions.

The AI Chat Playground is provided for experimental use. We look forward to improving the AI responses generated by AI Chat Playground based on your feedback and improvements to the underlying models.