



Deep Learning with MATLAB



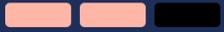
SciEngineer's training courses are designed to help organizations and individuals close skills gaps, keep up-to-date with the industry-accepted best practices and achieve the greatest value from MathWorks® and COMSOL® Products.

Deep Learning with MATLAB

This two-day course provides a comprehensive introduction to create, train, and evaluate different kinds of deep neural networks. This course focuses on convolutional neural networks and long short-term memory networks to perform classification, regression, forecasting, solving custom problems and improving the performance.

Prerequisites

MATLAB Fundamentals and Deep Learning with Onramp

DURATION	LEVEL
2 Days	Medium
	

TOPICS

Day 1

- Transfer Learning for Image Classification
- Interpreting Network Behavior
- Creating Networks
- Training a Network

Day 2

- Improving Network Performance
- Performing Image Regression
- Using Deep Learning for Computer Vision
- Classifying Sequence Data
- Generating Sequences of Output

Transfer Learning for Image Classification

OBJECTIVE: Perform image classification using pretrained networks. Use transfer learning to train customized classification networks.

- Pretrained networks
- Image datastores
- Transfer learning
- Network evaluation

Interpreting Network Behavior

OBJECTIVE: Gain insight into how a network is operating by visualizing image data as it passes through the network. Apply this technique to different kinds of images.

- Activations
- Feature extraction for machine learning

Creating Networks

OBJECTIVE: Build convolutional networks from scratch. Understand how information is passed between network layers and how different types of layers work.

- Training from scratch
- Neural networks
- Convolution layers and filters

Training a Network

OBJECTIVE: Understand how training algorithms work. Set training options to monitor and control training.

- Network training
- Training progress plots
- Validation

Improving Network Performance

OBJECTIVE: Choose and implement modifications to training algorithm options, network architecture, or training data to improve network performance.

- Training options
- Directed acyclic graphs
- Augmented datastores

Performing Image Regression

OBJECTIVE: Create convolutional networks that can predict continuous numeric Responses.

- Transfer learning for regression
- Evaluation metrics for regression networks

Using Deep Learning for Computer Vision

OBJECTIVE: Train networks to locate and label specific objects within images.

- Image application workflow
- Object detection

Classifying Sequence Data

OBJECTIVE: Build and train networks to perform classification on ordered sequences of data, such as time series or sensor data.

- Long short-term memory networks
- Sequence classification
- Sequence preprocessing
- Categorical sequences

Generating Sequences of Output

OBJECTIVE: Use recurrent networks to create sequences of predictions.

- Sequence to sequence classification
- Sequence forecasting



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knowledge**

