



Machine Learning with MATLAB



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Machine Learning with MATLAB

This two-day course focuses on data analytics and machine learning techniques in MATLAB using functionality within Statistics and Machine Learning Toolbox and Deep Learning Toolbox. The course demonstrates the use of unsupervised learning to discover features in large data sets and supervised learning to build classification, predictive and regressive models and neural networks.

Prerequisites

MATLAB Fundamentals

DURATION

2 Days



LEVEL

Medium



TOPICS

Day 1

- Importing and Organizing Data
- Finding Natural Patterns in Data
- Building Classification Models

Day 2

- Improving Predictive Models
- Building Regression Models
- Creating Neural Networks

Importing and Organizing Data

OBJECTIVE: Bring data into MATLAB and organize it for analysis, including normalizing data and removing observations with missing values.

- Data types
- Tables
- Categorical data
- Data preparation

Finding Natural Patterns in Data

OBJECTIVE: Use unsupervised learning techniques to group observations based on a set of explanatory variables and discover natural patterns in a data set.

- Unsupervised learning
- Clustering methods
- Cluster evaluation and interpretation

Building Classification Models

OBJECTIVE: Use supervised learning techniques to perform predictive modeling for classification problems. Evaluate the accuracy of a predictive model.

- Supervised learning
- Training and validation
- Classification methods

Improving Predictive Models

OBJECTIVE: Reduce the dimensionality of a data set. Improve and simplify machine learning models.

- Cross validation
- Hyperparameter optimization
- Feature transformation
- Feature selection
- Ensemble learning

Building Regression Models

OBJECTIVE: Use supervised learning techniques to perform predictive modeling for continuous response variables.

- Parametric regression methods
- Nonparametric regression methods
- Evaluation of regression models

Creating Neural Network

OBJECTIVE: Create and train neural networks for clustering and predictive modeling. Adjust network architecture to improve performance.

- Clustering with Self-Organizing Maps
- Classification with feed-forward networks
- Regression with feed-forward networks



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knowledge**

