

Statistical Methods in MATLAB

Prerequisites

MATLAB Fundamentals and knowledge of basic Statistics and Machine Learning Toolbox.



This program has been approved by GARP and qualifies for 14 GARP CPD credit hours. If you are a Certified FRM or ERP, please record this activity in your credit tracker at <http://www.garp.org/cpd>

Day 1 of 2

Importing and Organizing Data	<p>Objective: Bring data into MATLAB and organize it for analysis. Perform common tasks, such as merging data and dealing with missing data.</p> <ul style="list-style-type: none">Importing dataData typesTables of dataMerging dataCategorical dataMissing data
Exploring Data	<p>Objective: Perform basic statistical investigation of a data set, including visualization and calculation of summary statistics.</p> <ul style="list-style-type: none">PlottingCentral tendencySpreadShapeCorrelationsGrouped data
Distributions	<p>Objective: Investigate different probability distributions and fit distributions to a data set.</p> <ul style="list-style-type: none">Probability distributionsDistribution parametersComparing and fitting distributionsNonparametric fitting
Hypothesis Tests	<p>Objective: Determine how likely an assertion about a data set is. Apply hypothesis tests for common uses, such as comparing two distributions and determining confidence intervals for a sample mean.</p> <ul style="list-style-type: none">Hypothesis testsTests for normal distributionsTests for nonnormal distributions

Day 2 of 2

Analysis of Variance	<p>Objective: Compare the sample means of multiple groups and find statistically significant differences between groups.</p> <ul style="list-style-type: none"> Multiple comparisons One-way ANOVA N-way ANOVA MANOVA Nonnormal ANOVA Categorical correlations
Regression	<p>Objective: Perform predictive modeling by fitting linear and nonlinear models to a data set. Explore techniques for improving model quality.</p> <ul style="list-style-type: none"> Linear regression models Fitting linear models to data Evaluating the fit Adjusting the model Logistic and generalized linear regression Nonlinear regression
Working with Multiple Dimensions	<p>Objective: Simplify high-dimensional data sets by reducing the dimensionality.</p> <ul style="list-style-type: none"> Feature transformation Feature selection
Random Numbers and Simulation	<p>Objective: Use random numbers to evaluate the uncertainty or sensitivity of a model, or perform simulations. Generate random numbers from various distributions, and manage the MATLAB random number generation algorithms.</p> <ul style="list-style-type: none"> Bootstrapping and simulation Generating numbers from standard distributions Generating numbers from arbitrary distributions Controlling the random number stream