# microsoft · principles of machine learning



september · november 2016 " sharepoint interface

## MODULE 1 · CLASSIFICATION

INTRODUCTION TO CLASSIFICATION

LOSS FUNCTIONS FOR CLASSIFICATION

STATISTICAL LEARNING THEORY FOR SUPERVISED LEARNING

LOGISTIC REGRESSION

MAXIMUM LIKELIHOOD PERSPECTIVE

**EVALUATION METHODS FOR CLASSIFIERS** 

**ROC CURVE ALGORITHM** 

#### **BUILDING CLASSIFICATION MODELS**

IMBALANCED DATA

## CLASSIFICATION IN AZURE ML AND R

## MODULE2 · REGRESSION

INTRODUCTION TO LINEAR REGRESSION

MULTIPLE LINEAR REGRESSION

**EVALUATING REGRESSION MODELS** 

#### CREATING REGRESSION MODELS

**INFLUENTIAL POINTS** 

**OUTLIERS** 

#### REGRESSION IN AZURE ML AND R

## MODULE3 · IMPROVING MACHINE LEARNING MODELS

**FEATURE SELECTION** 

**REGULARIZATION** 

INTERPRETING FEATURES

**FEATURE SCALING** 

#### TECHNIQUES FOR IMPROVING MODELS

**SWEEPING PARAMETERS** 

**CROSS VALIDATION** 

**NESTED CROSS VALIDATION** 

#### IMPROVING MACHINE LEARNING MODELS IN AZURE ML AND R

## MODULE4 · TREE AND ENSEMBLE METHODS

**DECISION TREES** 

CONSTRUCTION DECISION TREES

WHAT IS INFORMATION?

**ENTROPY** 

SPLITTING CRITERIA FOR DECISION TREES: INFORMATION GAIN

#### **ENSEMBLE METHODS**

BOOSTING

**ADABOOST** 

COORDINATE DESCENT

**DECISION FORESTS** 

#### DECISION TREES IN AZURE ML AND R

## MODULE5 · OPTIMIZATION-BASED METHODS

#### **NEURAL NETWORKS**

INTRODUCTION TO NEURAL NETWORKS

**BACKPROPAGATION** 

BACKPROPAGATION THOUGH A HIDDEN NEURAL NETWORK LAYER

## SUPPORT VECTOR MACHINES (SVM)

INTRODUCTION TO SVMS

KERNELS FOR SVMS

## SUPPORT VECTOR MACHINES IN AZURE ML AND R

## MODULE6 · CLUSTERING AND RECOMMENDERS

#### **CLUSTERING**

INTRODUCTION TO CLUSTERING

K-MEANS CLUSTERING

CHOOSING K FOR K-MEANS CLUSTERING

HIERARCHICAL AGGLOMERATIVE CLUSTERING

#### **RECOMMENDERS**

**RECOMMENDER SYSTEMS** 

MATRIX FACTORIZATION

#### DECISION TREES IN AZURE ML AND R