MACHINE LEARNING IN EMOJI

SUPERVISED · UNSUPERVISED · REINFORCEMENT

SUPERVISED human builds model based on input / output

UNSUPERVISED human input, machine output
human utilizes if satisfactory

REINFORCEMENT human input, machine output
human reward/punish, cycle continues

BASIC REGRESSION

LINEAR
linear_model.LinearRegression()

Lots of numerical data

LOGISTIC
linear_model.LogisticRegression()

Target variable is categorical

or

CLASSIFICATION

NEURAL NET
neural_network.MLPClassifier()

Complex relationships. Prone to overfitting
Basically magic.

K-NN
neighbors.KNeighborsClassifier()

Group membership based on proximity

DECISION TREE
tree.DecisionTreeClassifier()

If/then/else. Non-contiguous data
Can also be regression

RANDOM FOREST
ensemble.RandomForestClassifier()

Find best split randomly
Can also be regression

SVM
svm.SVC() svm.LinearSVC()

Maximum margin classifier. Fundamental
Data Science algorithm

NAIVE BAYES
GaussianNB() MultinomialNB() BernoulliNB()

Updating knowledge step by step with new info

CLUSTER ANALYSIS

K-MEANS
cluster.KMeans()

Similar datum into groups
based on centroids

ANOMALY DETECTION
covariance.
EllipticalEnvelope()

Finding outliers
through grouping

FEATURE REDUCTION

T-DISTRIB STOCHASTIC NEIB EMBEDDING
manifold.TSNE()

Visualize high dimensional data. Convert
similarity to joint probabilities

PRINCIPLE COMPONENT ANALYSIS
decomposition.PCA()

Distill feature space into components that
describe greatest variance

CANONICAL CORRELATION ANALYSIS
decomposition.CCA()

Making sense of cross-correlation
matrices

LINEAR DISCRIMINANT ANALYSIS
lda.LDA()

Linear combination of features that
separates classes

OTHER IMPORTANT CONCEPTS

BIAS VARIANCE TRADEOFF

UNDERFITTING / OVERFITTING

INERTIA

ACCURACY FUNCTION (TP + TN) / (P + N)

PRECISION FUNCTION TP / (TP + FP)

SPECIFICITY FUNCTION TN / (FP + TN)

SENSITIVITY FUNCTION TP / (TP + FN)

@emilyinamillion made this