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

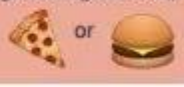
BASIC REGRESSION

LINEAR — linear_model.LinearRegression()

Lots of numerical data

LOGISTIC — linear_model.LogisticRegression()

Target variable is categorical



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