

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	<code>linear_model.LinearRegression()</code> Lots of numerical data	
	LOGISTIC	<code>linear_model.LogisticRegression()</code> Target variable is categorical	or

CLASSIFICATION

	NEURAL NET	<code>neural_network.MLPClassifier()</code> Complex relationships. Prone to overfitting Basically magic.	
	K-NN	<code>neighbors.KNeighborsClassifier()</code> Group membership based on proximity	
	DECISION TREE	<code>tree.DecisionTreeClassifier()</code> If/then/else. Non-contiguous data Can also be regression	
	RANDOM FOREST	<code>ensemble.RandomForestClassifier()</code> Find best split randomly Can also be regression	
	SVM	<code>svm.SVC()</code> <code>svm.LinearSVC()</code> Maximum margin classifier. Fundamental Data Science algorithm	
	NAIVE BAYES	<code>GaussianNB()</code> <code>MultinomialNB()</code> <code>BernoulliNB()</code> Updating knowledge step by step with new info	

CLUSTER ANALYSIS

	K-MEANS	<code>cluster.KMeans()</code> Similar datum into groups based on centroids	
	ANOMALY DETECTION	<code>covariance.EllipticalEnvelope()</code> Finding outliers through grouping	

FEATURE REDUCTION

T-DISTRIBUTION STOCHASTIC NEIGHBOR EMBEDDING	<code>manifold.TSNE()</code> Visualize high dimensional data. Convert similarity to joint probabilities	
PRINCIPLE COMPONENT ANALYSIS	<code>decomposition.PCA()</code> Distill feature space into components that describe greatest variance	
CANONICAL CORRELATION ANALYSIS	<code>decomposition.CCA()</code> Making sense of cross-correlation matrices	
LINEAR DISCRIMINANT ANALYSIS	<code>lda.LDA()</code> 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	$TP / (TP + FN)$		