SCIKIT-LEARN

THE CORE SKLEARN API

- · Has wide range of algorithmic options covering: REGIRESSION, CLASSIFICATION, and UNSUPERVISED LEARNING
- · Provides libraries on: DATA PREPARATION, MODEL SELECTION, and EVALUATION

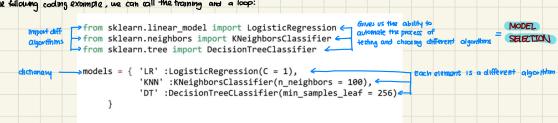
Scikit-learn's 3 Steps



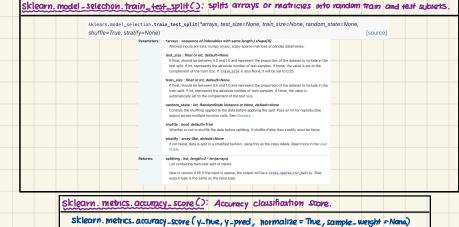
In the following coding example, we can call the training and a loop:

fit method ---- for m in models:

within the loop



models[m].fit(df[X], df[y]) NOTE: KNN = K-Neavest neighbors



ground truth (correct) labels predicted labels, as returned by classifier of correctly classified samples Tive = returns fraction of Correctly classified samples

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arameters		n_neighbors : int, default=5 Number of neighbors to use by default for kneighbors queries.										metric: str or callable, default="minkowski" The distance metric to use for the tree. The default metric is minkowski, and with p=2 is equivalen to the standard Euclidean metric. For a list of available metrics, see the documentation of										
		weights : ('uniform', 'distance') or callable, default='uniform' Weight function used in prediction. Possible values:											to the same and accurrent intents, rout also of wateries intents, see the documentation of distancedertric and the metrics listed in sklearn.setrics.pain-isse.PAIDSE_DISTANCE_FINETIONS. Note that the "rosaine" metric uses cosine_distances. If metric is "precomputed", X is assumed to be a distance matrix and must be square during fit. X may be a sparse graph, in which case only "nonzero" elements may be									
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		 'distance': weight points by the inverse of their distance. in this case, closer neighbors of a query point will have a greater influence than neighbors which are further away. 											metric_params: dict, default=None Additional keyword arguments for the metric function. **Impaire: Coan be another **Impaire: C									
		 [callable]: a user-defined function which accepts an array of distances, and returns an array of the same shape containing the weights. 											n_gobs: Int, orautrewone The number of parallel jobs to run for neighbors search. None means 1 unless in a job1ib.parallel_backend context. —1 means using all processors. See Glossary for more details.									
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CHEAT SHEET

K-Nearest Neighbors

Algorithm Name	KNN
Description	For a given test point, the KNN algorithm identifies the k most similar training points and finds the most common label among them. This label is used as a prediction for the test point.
Applicability	Often competitive in low-dimensional spaces in settings with many classes; used for classification or regression.
Assumptions	"Similar inputs have similar labels"; KNN assumes that the user has a way to compute distances that reflect meaningful dissimilarities.
Underlying Mathematical Principles	Distance metrics
Additional Details	 Hyperparameter is number of neighbors (k) Dealing with ties — fall back to smaller k-values Distance metric used is application specific
Example	Identify individuals visible in a photo uploaded to a social media account.