sklearn.model_selection.train_test_split

`sklearn.model_selection.train_test_split`(**arrays*, ***options*) [source]

Split arrays or matrices into random train and test subsets

Quick utility that wraps input validation and `next(ShuffleSplit().split(X, y))` and application to input data into a single call for splitting (and optionally subsampling) data in a oneliner.

Read more in the User Guide.

Parameters

***arrays** *sequence of indexables with same length / shape[0]*
Allowed inputs are lists, numpy arrays, scipy-sparse matrices or pandas dataframes.

test_size*float or int, default=None*
If float, should be between 0.0 and 1.0 and represent the proportion of the dataset to include in the test split. If int, represents the absolute number of test samples. If None, the value is set to the complement of the train size. If `train_size` is also None, it will be set to 0.25.

train_size*float or int, default=None*
If float, should be between 0.0 and 1.0 and represent the proportion of the dataset to include in the train split. If int, represents the absolute number of train samples. If None, the value is automatically set to the complement of the test size.

random_state*int or RandomState instance, default=None*
Controls the shuffling applied to the data before applying the split. Pass an int for reproducible output across multiple function calls. See Glossary.

shuffle*bool, default=True*
Whether or not to shuffle the data before splitting. If shuffle=False then stratify must be None.

stratify*array-like, default=None*
If not None, data is split in a stratified fashion, using this as the class labels.

Returns

splitting*list, length=2 * len(arrays)*
List containing train-test split of inputs.

New in version 0.16: If the input is sparse, the output will be a `scipy.sparse.csr_matrix`. Else, output type is the same as the input type.

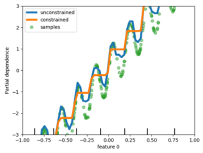
Examples

```
>>> import numpy as np
>>> from sklearn.model_selection import train_test_split
>>> X, y = np.arange(10).reshape((5, 2)), range(5)
>>> X
array([[0, 1],
       [2, 3],
       [4, 5],
       [6, 7],
       [8, 9]])
>>> list(y)
[0, 1, 2, 3, 4]
```

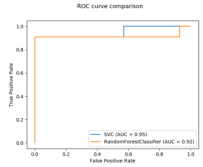
```
>>> X_train, X_test, y_train, y_test = train_test_split(
...     X, y, test_size=0.33, random_state=42)
...
>>> X_train
array([[4, 5],
       [0, 1],
       [6, 7]])
>>> y_train
[2, 0, 3]
>>> X_test
array([[2, 3],
       [8, 9]])
>>> y_test
[1, 4]
```

```
>>> train_test_split(y, shuffle=False)
[[0, 1, 2], [3, 4]]
```

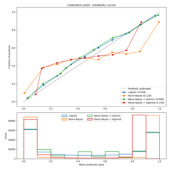
Examples using `sklearn.model_selection.train_test_split`



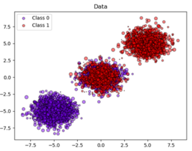
Release Highlights for scikit-learn 0.23



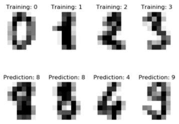
Release Highlights for scikit-learn 0.22



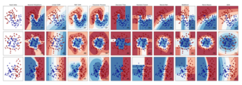
Probability Calibration curves



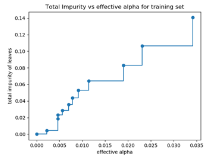
Probability calibration of classifiers



Recognizing hand-written digits

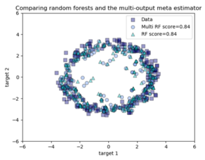


Classifier comparison

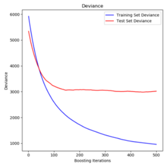


Post pruning decision trees with cost complexity pruning

Understanding the decision tree structure

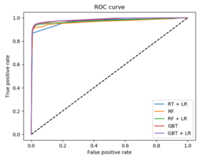


Comparing random forests and the multi-output meta estimator

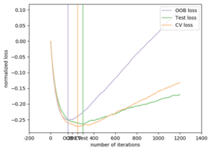


Gradient Boosting regression

Early stopping of Gradient Boosting

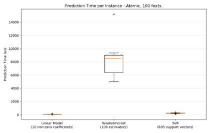


Feature transformations with ensembles of trees



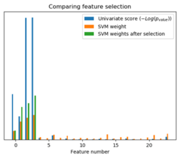
[Gradient Boosting Out-of-Bag estimates]

[Faces recognition example using eigenfaces and SVMs]

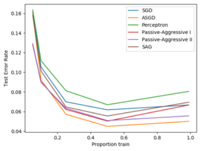


[Prediction Latency]

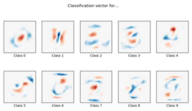
[Pipeline Anova SVM]



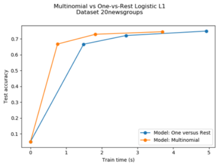
[Univariate Feature Selection]



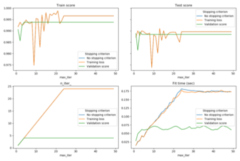
[Comparing various online solvers]



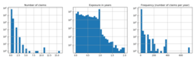
[MNIST classification using multinomial logistic + L1]



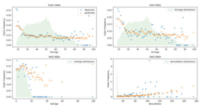
[Multiclass sparse logistic regression on 20newgroups]



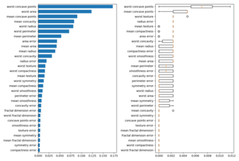
[Early stopping of Stochastic Gradient Descent]



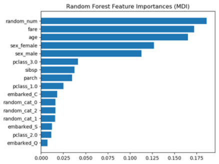
[Poisson regression and non-normal loss]



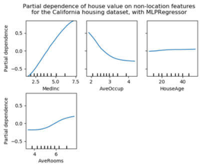
[Tweedie regression on insurance claims]



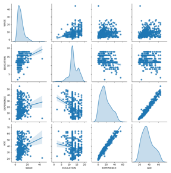
[Permutation Importance with Multicollinear or Correlated Features]



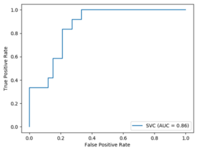
[Permutation Importance vs Random Forest Feature Importance (MDI)]



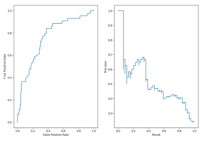
[Partial Dependence Plots]



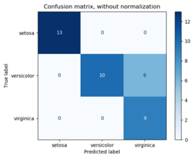
[Common pitfalls in interpretation of coefficients of linear models]



[ROC Curve with Visualization API]

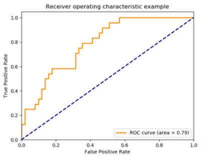


[Visualizations with Display Objects]

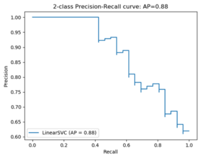


[Confusion matrix]

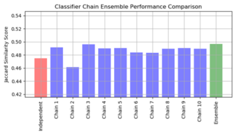
[Parameter estimation using grid search with cross-validation]



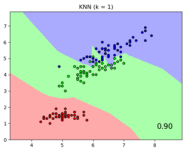
[Receiver Operating Characteristic (ROC)]



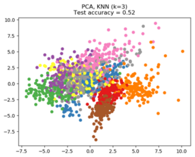
[Precision-Recall]



[Classifier Chain]

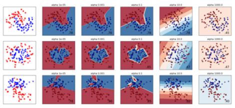


[Comparing Nearest Neighbors with and without Neighborhood Components Analysis]



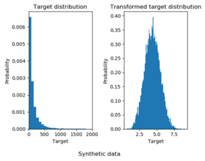
[Dimensionality Reduction with Neighborhood Components Analysis]

[Restricted Boltzmann Machine features for digit classification]

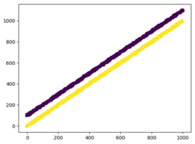


[Varying regularization in Multi-layer Perceptron]

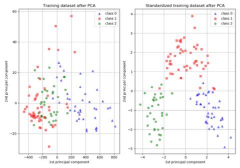
[Column Transformer with Mixed Types]



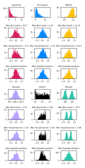
[Effect of transforming the targets in regression model]



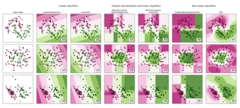
[Using FunctionTransformer to select columns]



[Importance of Feature Scaling]



Map data to a normal distribution



[Feature discretization]