



UNIVERSIDADE  
CATÓLICA  
PORTUGUESA

BRAGA

# Machine Learning

Session 9 - PL

## Instance-based and Probabilistic Models

Ciência de Dados Aplicada

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# KNN with Scikit-Learn



- <https://scikit-learn.org/stable/modules/generated/sklearn.neighbors.KNeighborsClassifier.html>

## `sklearn.neighbors.KNeighborsClassifier`

```
class sklearn.neighbors.KNeighborsClassifier(n_neighbors=5, *, weights='uniform', algorithm='auto', leaf_size=30,
p=2, metric='minkowski', metric_params=None, n_jobs=None)¶
```

[\[source\]](#)

```
>>> X = [[0], [1], [2], [3]]
>>> y = [0, 0, 1, 1]
>>> from sklearn.neighbors import KNeighborsClassifier
>>> neigh = KNeighborsClassifier(n_neighbors=3)
>>> neigh.fit(X, y)
KNeighborsClassifier(...)
>>> print(neigh.predict([[1.1]]))
[0]
>>> print(neigh.predict_proba([[0.9]]))
[[0.666... 0.333...]]
```

# Naive Bayes with Scikit-Learn

- [https://scikit-learn.org/stable/modules/generated/sklearn.naive\\_bayes.MultinomialNB.html#sklearn-naive-bayes-multinomialnb](https://scikit-learn.org/stable/modules/generated/sklearn.naive_bayes.MultinomialNB.html#sklearn-naive-bayes-multinomialnb)

## `sklearn.naive_bayes.MultinomialNB`

```
class sklearn.naive_bayes.MultinomialNB(*, alpha=1.0, force_alpha=True, fit_prior=True, class_prior=None) \[source\]
```

```
>>> import numpy as np
>>> rng = np.random.RandomState(1)
>>> X = rng.randint(5, size=(6, 100))
>>> y = np.array([1, 2, 3, 4, 5, 6])
>>> from sklearn.naive_bayes import MultinomialNB
>>> clf = MultinomialNB()
>>> clf.fit(X, y)
MultinomialNB()
>>> print(clf.predict(X[2:3]))
[3]
```

# Exercises:

- Notebooks on the github repository:
  - Notebook with examples:
    - `notebooks/session9/examples.ipynb`
  - Notebook with exercises:
    - `notebooks/session9/exercises.ipynb`