sklearn.preprocessing.OneHotEncoder

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class sklearn.preprocessing.OneHotEncoder(*n_values='auto'*, *categorical_features='all'*, *dtype=<class 'numpy.float64'>*, *sparse=True*, *handle_unknown='error'*) [source]

Encode categorical integer features using a one-hot aka one-of-K scheme.

The input to this transformer should be a matrix of integers, denoting the values taken on by categorical (discrete) features. The output will be a sparse matrix where each column corresponds to one possible value of one feature. It is assumed that input features take on values in the range [0, n_values).

This encoding is needed for feeding categorical data to many scikit-learn estimators, notably linear models and SVMs with the standard kernels.

Note: a one-hot encoding of y labels should use a LabelBinarizer instead.

Read more in the User Guide.

Parameters: **n_values** : 'auto', int or array of ints

Number of values per feature.

- 'auto' : determine value range from training data.
- int : *number of categorical values per feature.*

Each feature value should be in range(n_values)

- array : *n_values[i] is the number of categorical values in* X[:, i]. Each feature value should be in range(n_values[i])

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categorical_features : "all" or array of indices or mask

Specify what features are treated as categorical.

- 'all' (default): All features are treated as categorical.
- array of indices: Array of categorical feature indices.
- mask: Array of length n_features and with dtype=bool.

Non-categorical features are always stacked to the right of the matrix.

dtype : number type, default=np.float

Desired dtype of output.

sparse : boolean, default=True

Will return sparse matrix if set True else will return an array.

handle_unknown : str, 'error' or 'ignore'

Whether to raise an error or ignore if a unknown categorical feature is present during transform.

Attributes: **active_features_** : array

Indices for active features,

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meaning values that actually occur in the training set. Only available when n_values is 'auto'.

feature_indices_ : array of shape (n_features,)

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Indices to feature ranges. Feature i in the original data is mapped to features from feature_indices_[i] to feature_indices_[i+1] (and then potentially masked by *active_features_* afterwards)

n_values_ : array of shape (n_features,)

Maximum number of values per feature.

See also:

sklearn.feature_extraction.DictVectorizer

performs a one-hot encoding of dictionary items (also handles string-valued features).

sklearn.feature_extraction.FeatureHasher

performs an approximate one-hot encoding of dictionary items or strings.

sklearn.preprocessing.LabelBinarizer

binarizes labels in a one-vs-all fashion.

sklearn.preprocessing.MultiLabelBinarizer

transforms between iterable of iterables and a multilabel format, e.g. a (samples x classes) binary matrix indicating the presence of a class label.

sklearn.preprocessing.LabelEncoder

encodes labels with values between 0 and n_classes-1.

Examples

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Given a dataset with three features and four samples, we let the encoder find the maximum value per feature and transform the data to a binary one-hot encoding.

```
>>> from sklearn.preprocessing import OneHotEncoder
>>> enc = OneHotEncoder()
>>> enc.fit([[0, 0, 3], [1, 1, 0], [0, 2, 1], [1, 0, 2]])
OneHotEncoder(categorical_features='all', dtype=<... 'numpy.f
       handle_unknown='error', n_values='auto', sparse=True)
>>> enc.n_values_
array([2, 3, 4])
>>> enc.feature_indices_
array([0, 2, 5, 9])
>>> enc.transform([[0, 1, 1]]).toarray()
array([[ 1.,  0.,  0.,  1.,  0.,  0.,  1.,  0.,  0.]])
```

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Methods

fit(X[, y])	Fit OneHotEncoder to X.
fit_transform(X[, y])	Fit OneHotEncoder to X, then transform X.
get_params([deep])	Get parameters for this estimator.
set_params(**params)	Set the parameters of this estimator.
transform(X)	Transform X using one-hot encoding.

__init__(*n_values='auto'*, *categorical_features='all'*, *dtype=<class 'numpy.float64'>*, *sparse=True*, *handle_unknown='error'*) [source]

fit(*X*, *y=None*) [source]

Fit OneHotEncoder to X.

Parameters:	**X** : array-like, shape [n_samples, n_feature] Input array of type int.
Returns:	**self** :

fit_transform(*X*, *y=None*) [source]

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Fit OneHotEncoder to X, then transform X.

Equivalent to self.fit(X).transform(X), but more convenient and more efficient. See fit for the parameters, transform for the return value.

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Parameters:	**X** : array-like, shape [n_samples, n_feature] Input array of type int.

`get_params(deep=True)` [source]

Get parameters for this estimator.

Parameters:	**deep** : boolean, optional If True, will return the parameters for this estimator and contained subobjects that are estimators.
Returns:	**params** : mapping of string to any Parameter names mapped to their values.

`set_params(**params)` [source]

Set the parameters of this estimator.

The method works on simple estimators as well as on nested objects (such as pipelines). The latter have parameters of the form `<component>__<parameter>` so that it's possible to update each component of a nested object.

Returns:	**self** :

`transform(X)` [source]

Previous

Transform X using one-hot encoding.

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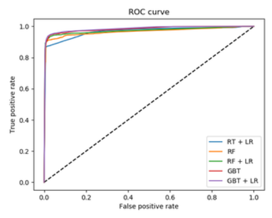
Parameters:	**X** : array-like, shape [n_samples, n_features] Input array of type int.
Returns:	**X_out** : sparse matrix if sparse=True else a 2-d array, dtype=int Transformed input.

Examples using sklearn.preprocessing.OneHotEncoder



Feature transformations with ensembles of trees