

Choise_based_on_stability_and_regulation_1

February 24, 2019

```
In [1]: from sklearn.model_selection import train_test_split
import numpy as np
from sklearn.datasets import make_classification
X, y = make_classification(n_samples = 100, n_features=100,
                          n_informative=5, n_redundant=2, random_state=101)
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.30, random_state=101)
```

```
In [5]: from sklearn.linear_model import LogisticRegression
classifier = LogisticRegression(C=0.1, penalty='l1', random_state=101) # the smaller the C, the more regularization
classifier.fit(X_train, y_train)
print("Accuracy of trening samples: %3f" % classifier.score(X_train, y_train))
print("Accuracy of test samples: %3f" % classifier.score(X_test, y_test))
```

Accuracy of trening samples: 0.785714

Accuracy of test samples: 0.933333

d:\python\lib\site-packages\sklearn\linear_model\logistic.py:433: FutureWarning: Default solver will be changed to 'lbfgs' in version 0.20. To silence this warning, please use solver='lbfgs'. FutureWarning)

```
In [6]: from sklearn.linear_model import LogisticRegression
classifier = LogisticRegression(C=0.6, penalty='l1', random_state=101) # the smaller the C, the more regularization
classifier.fit(X_train, y_train)
print("Accuracy of trening samples: %3f" % classifier.score(X_train, y_train))
print("Accuracy of test samples: %3f" % classifier.score(X_test, y_test))
```

Accuracy of trening samples: 1.000000

Accuracy of test samples: 0.800000

d:\python\lib\site-packages\sklearn\linear_model\logistic.py:433: FutureWarning: Default solver will be changed to 'lbfgs' in version 0.20. To silence this warning, please use solver='lbfgs'. FutureWarning)

```
In [8]: from sklearn.linear_model import RandomizedLogisticRegression
selector = RandomizedLogisticRegression(n_resampling=300, random_state=101)
selector.fit(X_train, y_train)
```


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Number of chosen variables: 4
Accuracy of training samples: 0.885714
Accuracy of test samples: 0.833333

```
In [12]: from sklearn.linear_model import RandomizedLasso # works for linear models
         from sklearn.datasets import make_regression
         X, y = make_regression(n_samples=100, n_features=10, n_informative=4, random_state=10)
         rlasso = RandomizedLasso()
         rlasso.fit(X,y)
```

```
d:\python\lib\site-packages\sklearn\utils\deprecation.py:58: DeprecationWarning: Class RandomizedLasso is deprecated. Use RandomizedLasso1 from sklearn.linear_model.
  warnings.warn(msg, category=DeprecationWarning)
d:\python\lib\site-packages\sklearn\utils\deprecation.py:58: DeprecationWarning: Class MemoryEfficientRandomizedLasso is deprecated. Use MemoryEfficientRandomizedLasso1 from sklearn.linear_model.
  warnings.warn(msg, category=DeprecationWarning)
d:\python\lib\site-packages\sklearn\utils\deprecation.py:58: DeprecationWarning: Class ParallelRandomizedLasso is deprecated. Use ParallelRandomizedLasso1 from sklearn.linear_model.
  warnings.warn(msg, category=DeprecationWarning)
d:\python\lib\site-packages\sklearn\utils\deprecation.py:77: DeprecationWarning: Function delay_warnings is deprecated. Use warnings.warn from the warnings module.
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```
In [13]: list(enumerate(rlasso.scores_)) # only 4 features are informative
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```
(5, 1.0),  
(6, 0.0),  
(7, 0.0),  
(8, 1.0),  
(9, 0.0)]
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In [ ]:
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