Training Binary Classifiers

Thursday, February 27, 2020 4:09 PM

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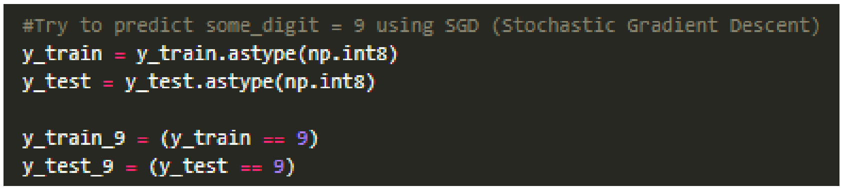
Lets simplify to only detecting 1 digit -> Example: T detect Number 9 (Like a 9 detector tools)
This tools is capable to detect just 2 classes -> Whether its 9 or not 9.

To start

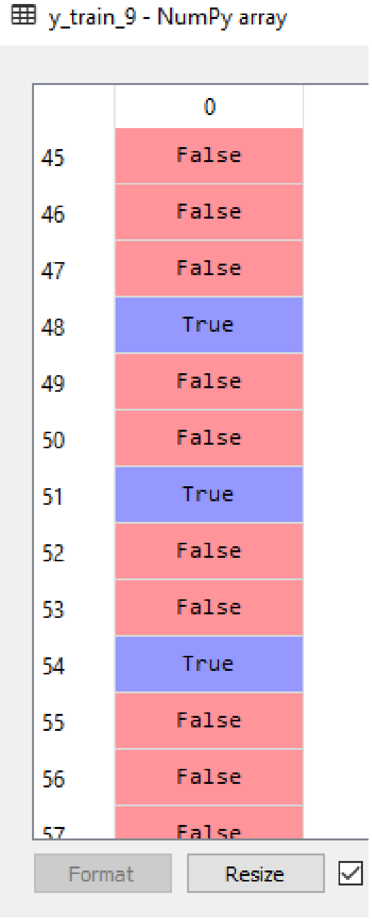
Now, create a target vector for binary classifiers.



```
#Try to predict some_digit = 9 using SGD (Stochastic Gradient Descent)
y_train = y_train.astype(np.int8)
y_test = y_test.astype(np.int8)

y_train_9 = (y_train == 9)
y_test_9 = (y_test == 9)
```

```
#Create a Boolean from labelled data.

y_train = y_train.astype(np.int8)
y_test = y_test.astype(np.int8)

y_train_9 = (y_train == 9)
y_test_9 = (y_test == 9)
```

Result:



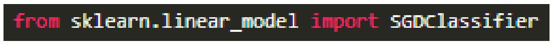
y_train_9 - NumPy array

	0
45	False
46	False
47	False
48	True
49	False
50	False
51	True
52	False
53	False
54	True
55	False
56	False
57	False

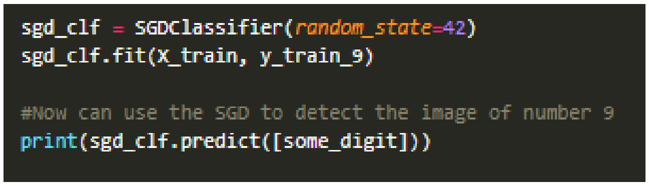
Strat with SGD (Stochastic Gradient Descent)

SGD - Good for handling large datasets efficiently. It also deals with training instances independently one at a time. Good for online learning.

Create SGD Classifier:



```
from sklearn.linear_model import SGDClassifier
```



```
sgd_clf = SGDClassifier(random_state=42)
sgd_clf.fit(X_train, y_train_9)

#Now can use the SGD to detect the image of number 9
print(sgd_clf.predict([some_digit]))
```

```
sgd_clf = SGDClassifier(random_state=42)
sgd_clf.fit(X_train, y_train_9)

#Now can use the SGD to detect the image of number 9
print(sgd_clf.predict([some_digit]))
```

Result:

[True] -> It can detect out picture is truly 5!