Feature Engineering: Feature Creation

Read in text

```
import pandas as pd

data = pd.read_csv("SMSSpamCollection.tsv", sep='\t')
data.columns = ['label', 'body_text']
```

Create feature for text message length

```
data['body_len'] = data['body_text'].apply(lambda x: len(x) - x.count(" "))

data.head()
```

	label	body_text	body_len
0	spam	Free entry in 2 a wkly comp to win FA Cup fina...	128
1	ham	Nah I don't think he goes to usf, he lives aro...	49
2	ham	Even my brother is not like to speak with me. ...	62
3	ham	I HAVE A DATE ON SUNDAY WITH WILL!!	28
4	ham	As per your request 'Melle Melle (Oru Minnamin...	135

Create feature for % of text that is punctuation

```
import string

def count_punct(text):
    count = sum([1 for char in text if char in string.punctuation])
    return round(count/(len(text) - text.count(" ")), 3)*100
```

```
data['punct%'] = data['body_text'].apply(lambda x: count_punct(x))

data.head()
```

	label	body_text	body_len	punct%
0	spam	Free entry in 2 a wkly comp to win FA Cup fina...	128	4.7
1	ham	Nah I don't think he goes to usf, he lives aro...	49	4.1
2	ham	Even my brother is not like to speak with me. ...	62	3.2
3	ham	I HAVE A DATE ON SUNDAY WITH WILL!!	28	7.1
4	ham	As per your request 'Melle Melle (Oru Minnamin...	135	4.4

Evaluate created features

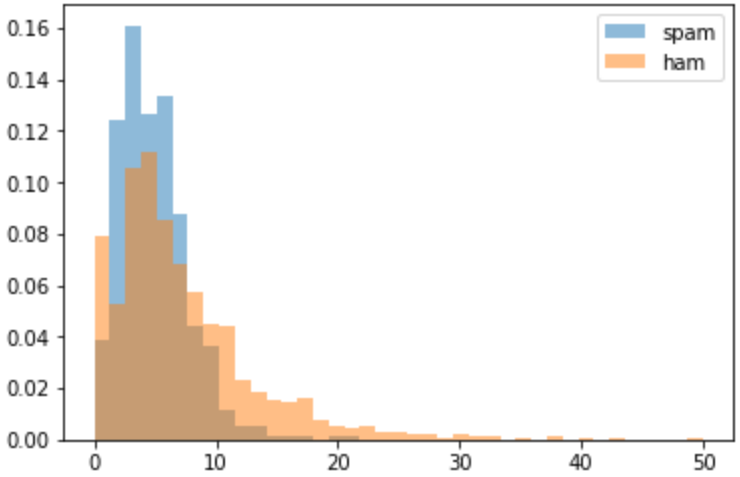
```
from matplotlib import pyplot
import numpy as np
%matplotlib inline


bins = np.linspace(0, 200, 40)

pyplot.hist(data[data['label']=='spam']['body_len'], bins, alpha=0.5, normed=True, label='spam')
pyplot.hist(data[data['label']=='ham']['body_len'], bins, alpha=0.5, normed=True, label='ham')
pyplot.legend(loc='upper left')
pyplot.show()
```


```
bins = np.linspace(0, 50, 40)

pyplot.hist(data[data['label']=='spam']['punct%'], bins, alpha=0.5, normed=True, label='spam')
pyplot.hist(data[data['label']=='ham']['punct%'], bins, alpha=0.5, normed=True, label='ham')
pyplot.legend(loc='upper right')
pyplot.show()
```



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