

```
In [14]: import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

```
In [15]:
```

```
In [16]: dftrain=pd.read_csv(r"C:\USERS\user\Downloads\C3_bot_detection_data - C3_bot_d
```

```
Out[16]:
```

	User ID	Username	Tweet	Retweet Count	Mention Count	Follower Count	Verified	Bot Label	Lo
0	132131	flong	Station activity person against natural majori...	85	1	2353	False	1	Adl
1	289683	hinesstephanie	Authority research natural life material staff...	55	5	9617	True	0	Sand
2	779715	roberttran	Manage whose quickly especially foot none to g...	6	2	4363	True	0	Harri
3	696168	pmason	Just cover eight opportunity strong policy which.	54	5	2242	True	1	Martin
4	704441	noah87	Animal sign six data good or.	26	3	8438	False	1	Camac
...	...	...	...	...	...	...	...	...	...
49995	491196	uberg	Want but put card direction know miss former h...	64	0	9911	True	1	Kimberl
49996	739297	jessicamunoz	Provide whole maybe agree church respond most ...	18	5	9900	False	1	Grei
49997	674475	lynncunningham	Bring different everyone international capital...	43	3	6313	True	1	Debo
49998	167081	richardthompson	Than about single generation itself seek sell ...	45	1	6343	False	0	Steph

User ID	Username	Tweet	Retweet Count	Mention Count	Follower Count	Verified	Bot Label	Location
		Here morning class						

In [17]:

```
Out[17]: Index(['User ID', 'Username', 'Tweet', 'Retweet Count', 'Mention Count',  
              'Follower Count', 'Verified', 'Bot Label', 'Location', 'Created At',  
              'Hashtags'],  
             dtype='object')
```

In [18]: `a=dftrain[['User ID','Retweet Count','Mention Count','Follower Count','Bot Lab`

Out[18]:

	User ID	Retweet Count	Mention Count	Follower Count	Bot Label
0	132131	85	1	2353	1
1	289683	55	5	9617	0
2	779715	6	2	4363	0
3	696168	54	5	2242	1
4	704441	26	3	8438	1
...	...	...	...	...	...
49995	491196	64	0	9911	1
49996	739297	18	5	9900	1
49997	674475	43	3	6313	1
49998	167081	45	1	6343	0
49999	311204	91	4	4006	0

50000 rows × 5 columns

```
In [19]: b=dftrain.head(10)
```

```
Out[19]:
```

	User ID	Username	Tweet	Retweet Count	Mention Count	Follower Count	Verified	Bot Label	Location
0	132131	flong	Station activity person against natural majori...	85	1	2353	False	1	Adkinstr
1	289683	hinesstephanie	Authority research natural life material staff...	55	5	9617	True	0	Sanderstr
2	779715	roberttran	Manage whose quickly especially foot none to g...	6	2	4363	True	0	Harrisonft
3	696168	pmason	Just cover eight opportunity strong policy which.	54	5	2242	True	1	Martinezbe
4	704441	noah87	Animal sign six data good or.	26	3	8438	False	1	Camachovil
5	570928	james00	See wonder travel this suffer less yard office...	41	4	3792	True	1	West Cheyenr
6	734182	leonard00	Door final sound my guess building rich.	54	0	10	True	0	South Dona
7	107312	lesterdaniel	Job phone price magazine worry stage check view.	64	0	1442	False	1	Smithhave
8	549888	kimberlymorris	Eye rest prove mission show floor.	25	2	836	False	0	Lal Brittanyvil
9	117640	schmittjill	Add letter year performance western what cultu...	67	3	6523	False	1	We Hannahborouç

```
In [20]: a=b[['User ID','Retweet Count','Mention Count','Follower Count','Bot Label']]
```

```
Out[20]:
```

	User ID	Retweet Count	Mention Count	Follower Count	Bot Label
0	132131	85	1	2353	1
1	289683	55	5	9617	0
2	779715	6	2	4363	0
3	696168	54	5	2242	1
4	704441	26	3	8438	1
5	570928	41	4	3792	1
6	734182	54	0	10	0
7	107312	64	0	1442	1
8	549888	25	2	836	0
9	117640	67	3	6523	1

```
In [30]: c=a.iloc[:,0:5]
```

```
In [31]:
```

```
Out[31]: (10, 5)
```

```
In [32]:
```

```
Out[32]: (10,)
```

```
In [33]:
```

```
In [34]:
```

```
In [36]: logr=LogisticRegression()
```

```
Out[36]: LogisticRegression()
```

```
In [37]:
```

```
In [38]: prediction=logr.predict(observation)
```

```
Out[38]: array(['Animal sign six data good or.'], dtype=object)
```

In [39]:

```
Out[39]: array(['Add letter year performance western what culture large development fa
st.',
               'Animal sign six data good or.',
               'Authority research natural life material staff rate common protect at
tention.',
               'Door final sound my guess building rich.',
               'Eye rest prove mission show floor.',
               'Job phone price magazine worry stage check view.',
               'Just cover eight opportunity strong policy which.',
               'Manage whose quickly especially foot none to goal range case.',
               'See wonder travel this suffer less yard office man certainly.',
               'Station activity person against natural majority none few size expect
six marriage.'],
              dtype=object)
```

In [40]:

```
Out[40]: 0.006089885652408111
```

In [41]:

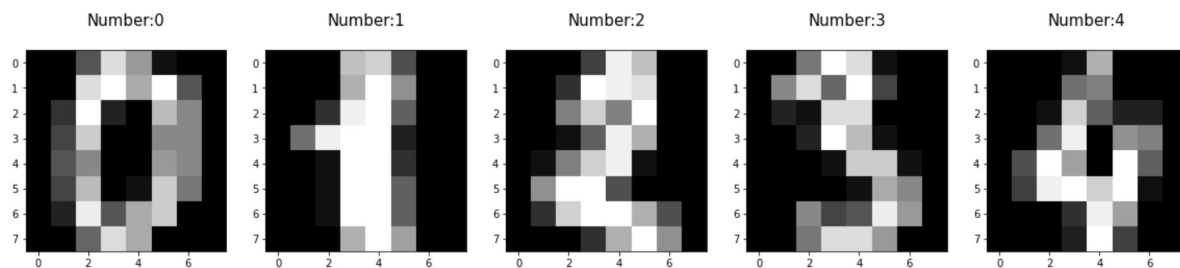
```
import re
from sklearn.datasets import load_digits
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.linear_model import LogisticRegression
```

In [42]:

```
digits=load_digits()
```

```
Out[42]: {'data': array([[ 0.,  0.,  5., ...,  0.,  0.,  0.],
                        [ 0.,  0.,  0., ..., 10.,  0.,  0.],
                        [ 0.,  0.,  0., ..., 16.,  9.,  0.],
                        ...,
                        [ 0.,  0.,  1., ...,  6.,  0.,  0.],
                        [ 0.,  0.,  2., ..., 12.,  0.,  0.],
                        [ 0.,  0., 10., ..., 12.,  1.,  0.])),
          'target': array([0, 1, 2, ..., 8, 9, 8]),
          'frame': None,
          'feature_names': ['pixel_0_0',
                           'pixel_0_1',
                           'pixel_0_2',
                           'pixel_0_3',
                           'pixel_0_4',
                           'pixel_0_5',
                           'pixel_0_6',
                           'pixel_0_7',
                           'pixel_1_0',
                           'pixel_1_1',
                           'pixel_1_2',
                           'pixel_1_3',
                           'pixel_1_4',
                           'pixel_1_5',
                           'pixel_1_6',
                           'pixel_1_7',
                           'pixel_2_0',
                           'pixel_2_1',
                           'pixel_2_2',
                           'pixel_2_3',
                           'pixel_2_4',
                           'pixel_2_5',
                           'pixel_2_6',
                           'pixel_2_7',
                           'pixel_3_0',
                           'pixel_3_1',
                           'pixel_3_2',
                           'pixel_3_3',
                           'pixel_3_4',
                           'pixel_3_5',
                           'pixel_3_6',
                           'pixel_3_7',
                           'pixel_4_0',
                           'pixel_4_1',
                           'pixel_4_2',
                           'pixel_4_3',
                           'pixel_4_4',
                           'pixel_4_5',
                           'pixel_4_6',
                           'pixel_4_7',
                           'pixel_5_0',
                           'pixel_5_1',
                           'pixel_5_2',
                           'pixel_5_3',
                           'pixel_5_4',
                           'pixel_5_5',
                           'pixel_5_6',
                           'pixel_5_7',
                           'pixel_6_0',
                           'pixel_6_1',
                           'pixel_6_2',
                           'pixel_6_3',
                           'pixel_6_4',
                           'pixel_6_5',
                           'pixel_6_6',
                           'pixel_6_7',
                           'pixel_7_0',
                           'pixel_7_1',
                           'pixel_7_2',
                           'pixel_7_3',
                           'pixel_7_4',
                           'pixel_7_5',
                           'pixel_7_6',
                           'pixel_7_7',
                           'pixel_8_0',
                           'pixel_8_1',
                           'pixel_8_2',
                           'pixel_8_3',
                           'pixel_8_4',
                           'pixel_8_5',
                           'pixel_8_6',
                           'pixel_8_7',
                           'pixel_9_0',
                           'pixel_9_1',
                           'pixel_9_2',
                           'pixel_9_3',
                           'pixel_9_4',
                           'pixel_9_5',
                           'pixel_9_6',
                           'pixel_9_7'])
```

```
In [43]: plt.figure(figsize=(20,4))
for index,(image,label) in enumerate(zip(digits.data[0:5],digits.target[0:5])):
    plt.subplot(1,5,index+1)
    plt.imshow(np.reshape(image,(8,8)),cmap=plt.cm.gray)
```



```
In [44]:
```

```
In [45]: print(x_train.shape)
print(x_test.shape)
print(y_train.shape)
```

```
(1257, 64)
(540, 64)
(1257,)
(540,)
```

```
In [46]: logre=LogisticRegression(max_iter=10000)
```

```
Out[46]: LogisticRegression(max_iter=10000)
```

```
In [47]:
```

```
[4 3 9 1 0 8 0 2 4 4 0 8 3 2 7 7 4 7 6 8 6 5 7 6 6 9 6 1 1 3 3 8 5 9 4 6 4
5 3 1 5 9 2 3 4 6 9 2 6 9 9 1 6 8 1 0 8 3 4 9 9 9 9 6 1 9 9 4 6 0 5 6 4 0
1 3 9 6 6 2 7 3 9 3 0 2 5 1 0 3 8 7 5 9 5 1 1 9 1 2 2 0 6 9 1 2 9 9 7 4 8
6 7 6 0 7 2 7 3 0 6 6 2 6 6 8 8 5 6 9 0 7 5 6 6 0 0 3 0 5 9 9 8 4 8 7 4 6
3 6 5 1 9 2 0 5 8 4 9 6 1 4 4 5 9 5 6 4 3 8 5 7 5 2 1 6 0 5 0 9 4 1 0 9 5
0 2 2 4 6 3 5 2 5 6 2 0 7 6 8 4 4 2 0 8 0 0 4 1 8 4 8 8 0 2 4 7 8 2 0 5 5
2 5 5 1 5 9 7 3 9 1 7 2 9 2 7 8 0 8 5 4 0 1 8 3 4 6 1 2 9 8 0 6 3 2 7 5 2
5 8 5 9 2 8 0 3 2 5 0 6 3 6 5 3 3 0 4 0 3 9 1 4 2 8 3 9 2 2 6 9 1 8 5 2 8
7 7 8 0 1 1 0 2 4 8 3 5 6 1 6 0 6 5 5 0 6 8 4 4 1 3 5 5 0 2 8 1 1 6 8 5 7
1 8 1 5 1 1 9 4 7 9 1 2 6 0 7 7 2 3 1 6 8 0 2 4 9 6 2 4 6 5 6 4 0 0 5 9 7
7 4 0 1 5 7 3 5 9 2 0 6 1 5 3 1 6 8 5 8 9 3 0 2 1 3 7 8 5 0 1 8 2 4 7 4 1
0 2 8 8 6 8 8 6 8 0 2 2 4 4 3 7 7 7 2 7 7 4 6 7 4 6 5 6 1 3 3 1 2 5 5 8 2
9 9 9 9 9 9 7 2 8 1 0 0 8 7 0 9 4 3 2 1 7 9 6 2 1 3 0 8 5 3 0 0 6 0 8 1 0
4 0 3 0 1 5 6 6 1 4 3 4 2 8 4 9 8 8 3 3 1 0 2 1 0 6 9 9 7 8 9 6 3 1 1 7 0
5 1 3 5 2 7 7 8 6 1 8 4 0 3 4 2 5 1 3 0 1 2]
```

```
In [48]:
```

```
0.9629629629629629
```

```
In [ ]:
```

