WK 9 Report

Machine Learning Task (SVM)

Yunting Chiu

We try to utilize only **ONE** image in a single video

```
fake = []
for i in range(len(filename)):
  # add constraint
  if i % 7 == 0:
    fake.append(imageio.imread(filename[i]))
    print("Saving Img {} in an array".format(str(i)))
fake = np.array(fake)
print(fake.shape)
```

```
Saving Img 0 in an array
Saving Img 7 in an array
Saving Img 14 in an array
Saving Img 21 in an array
Saving Img 28 in an array
Saving Img 35 in an array
Saving Img 42 in an array
Saving Img 49 in an array
Saving Img 56 in an array
Saving Img 63 in an array
Saving Img 70 in an array
Saving Img 77 in an array
Saving Img 84 in an array
Saving Img 91 in an array
Saving Img 98 in an array
Saving Img 105 in an array
Saving Img 112 in an array
Saving Img 119 in an array
```

Add constraint
if i % 7 == 0

Flatten X features

Flatten X_{real}

```
[ ]
1 # flatten X
2 X_real = []
3 for i in range(len(real)):
4   X_real.append(np.ndarray.flatten(real[i]))
5 X_real = np.array(X_real)
6 print(X_real.shape)
7 #print(type(X_fake))
8
9 # Label y
10 #y = np.zeros(shape=(len(filename), 1))
11 #print(y.shape)
```

```
(1000, 307200)
```

Flatten X_{fake}

```
[ ]
1 # flatten X
2 X_fake = []
3 for i in range(len(fake)):
4   X_fake.append(np.ndarray.flatten(fake[i]))
5 X_fake = np.array(X_fake)
6 print(X_fake.shape)
7 #print(type(X_fake))
8
9 # Label y
10 #y = np.zeros(shape=(10, 1))
11 #print(y.shape)
```

```
(998, 307200)
```

Use tuples to save X_feature and label y

Label "fake" as Y features

```
[ ]  1 np_data = []
     2 for i in range(len(X_fake)):
     3   np_data.append((X_fake[i], "fake"))
     4 print(np_data)
```

```
[(array([133, 130, 115, ...,  71,  59,  71], dtype=uint8), 'fake'), (array([ 49,  40,  25, ..., 111, 105,  73], dtype=uint8), 'fake'),
```

Label "real" as Y features

```
[ ]  1 for i in range(len(X_real)):
     2   # use the data [] that we have saved the result from "fake" session
     3   np_data.append((X_real[i], "real"))
     4 print(np_data[-1])
```

```
(array([81, 51, 41, ..., 38, 27, 69], dtype=uint8), 'real')
```

I have data now !!

Read the data

```
[6]  1 data = np.load("np_data.npy", allow_pickle=True)
     2 print(data.shape)
```

```
(1998, 2)
```

Check the length of X and y

```
[8]  1 X = []
     2 y = []
     3 for i in data:
     4   X.append(i[0])
     5   y.append(i[1])
     6 print(len(X))
     7 print(len(y))
     8 print("The length should be " + str((6984+7000)/7))
```

```
1998
1998
The length should be 1997.7142857142858
```

```
[5]  1 print(X)
     2 print(y)
```

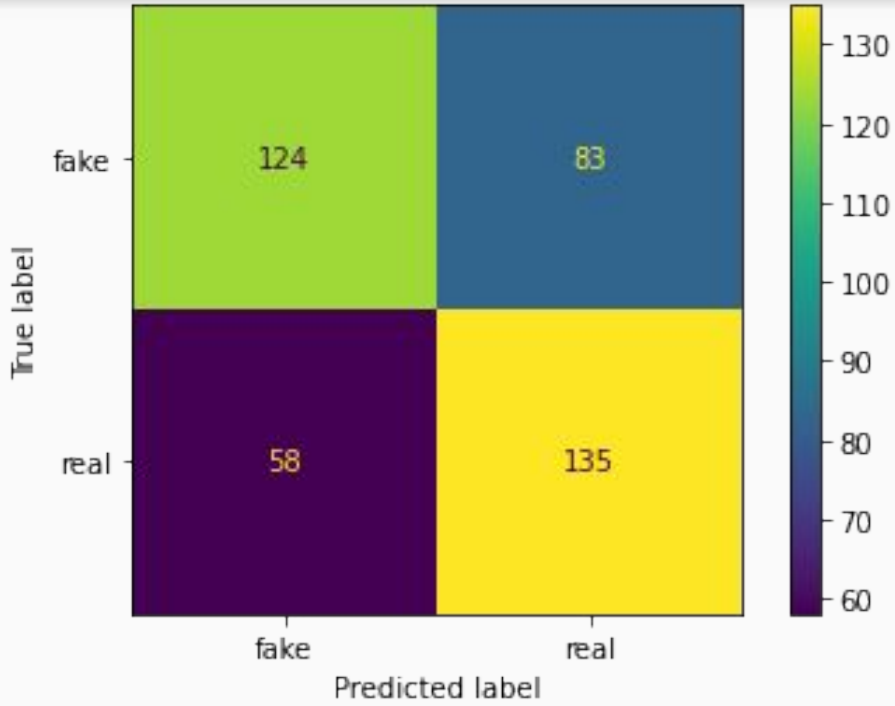
```
[array([133, 130, 115, ...,  71,  59,  71], dtype=uint8), array([ 49,  40,  25, ..., 111, 105,  73], dtype=uint8), array([28, 21, 15, ..., 49, 44, 40], dty
['fake', 'fake', 'fake', 'fake', 'fake', 'fake', 'fake', 'fake', 'fake', 'fake', 'fake', 'fake', 'fake', 'fake', 'fake', 'fake', 'fake', 'fake', 'f
```

Support Vector Machine

```
[8]  1 start_time = time.time()
     2 X_train, X_test, y_train, y_test = train_test_split(X, y, test_size = 0.2, random_state = 42)
     3 svm_clf = make_pipeline(StandardScaler(), SVC(gamma='scale', C = 1)) # clf = classifer
     4 svm_clf.fit(X_train, y_train)
     5 y_pred = svm_clf.predict(X_test)
     6
     7 print("--- %s seconds ---" % (time.time() - start_time))
     8 print(confusion_matrix(y_test, y_pred))
```

```
--- 1559.2773115634918 seconds ---
[[124  83]
 [ 58 135]]
```

Confusion Matrix & Accuracy Score



SVM Accuracy Score

```
[10]  1 print(accuracy_scor
      2
      3 target_names = ['fa
      4 #print(classificati
```

0s

```
0.6475
```

Source Code *GitHub/twyunting*

main Deepfake_Video_Classifier / code / Go to file Add file ···

twyunting rename 20146bc 1 minute ago History

..

HPC	rename the scripts	4 hours ago
records	rename	4 hours ago
troubleshooting	rename the scripts	4 hours ago
.bash_history	func	22 days ago
00.FaceForensics_download_script.ipynb	rename the scripts	4 hours ago
01.capture_videos_to _images.ipynb	rename the scripts	4 hours ago
02.facial_extractions.ipynb	rename the scripts	4 hours ago
03.construct_Xfeatures_ylabels.ipynb	rename the scripts	4 hours ago
04.machine_learning_tasks.ipynb	rename	1 minute ago