

Assignment 8

June 4, 2020

0.1 IT 542: Pattern Recognition and Machine Learning Assignment Logistic Regression

0.1.1 201916006

```
[1]: import pandas as pd
import numpy as np
from sklearn import datasets
```

```
[2]: iris=datasets.load_iris()
x=iris.data[:, :4]
y=iris.target
df=pd.
    ↳DataFrame(x, columns=['sepal-length', 'sepal-width', 'petal-length', 'petal-width'])
df['class']=y
```

1 KNN-Classfier

```
[17]: from sklearn.model_selection import train_test_split
from sklearn.neighbors import KNeighborsClassifier

k=3
knn=[]
for i in range(20):
    x_train, x_test, y_train, y_test = train_test_split(x, y, test_size=.20,
    ↳random_state=None, stratify=y)
    model = KNeighborsClassifier(n_neighbors=k)
    #Fitting the Model
    model.fit(x_train, y_train)
    y_pred = model.predict(x_test)
    knn.append(model.score(x_test, y_test))
np.mean(knn)
```

```
[17]: 0.9483333333333333
```

2 Logistic Regression

```
[18]: from sklearn.linear_model import LogisticRegression

clf = LogisticRegression(random_state=0,
                          solver='lbfgs',
                          max_iter=1000,
                          multi_class='multinomial').fit(x_train, y_train)

y_pred=clf.predict(x_test)
```

```
[16]: from sklearn.metrics import classification_report,accuracy_score

print(classification_report(y_test,y_pred,target_names=['class 0','class_
→1','class 2']))
print("Accuracy Score:",accuracy_score(y_test,y_pred))
```

	precision	recall	f1-score	support
class 0	1.00	1.00	1.00	10
class 1	1.00	0.90	0.95	10
class 2	0.91	1.00	0.95	10
accuracy			0.97	30
macro avg	0.97	0.97	0.97	30
weighted avg	0.97	0.97	0.97	30

Accuracy Score: 0.9666666666666667

```
[ ]:
```