IE 345 - K “Introduction to Deep Learning: Fundamentals Concepts”

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Support Vector Machine

pg. 66 - 67

In [1]:
```
# import libraries
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

In [2]:
```
# Read dataset from csv file
dataset = pd.read_csv('diabetes.csv')
dataset.head(5)
```

Out[2]:

	Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	BMI	DiabetesPedigreeFunction	Age	Outcor
0	6	148	72	35	0	33.6	0.627	50	
1	1	85	66	29	0	26.6	0.351	31	
2	8	183	64	0	0	23.3	0.672	32	
3	1	89	66	23	94	28.1	0.167	21	
4	0	137	40	35	168	43.1	2.288	33	

In [3]:
```
# create features and labels
features = dataset.drop(['Outcome'], axis=1)
labels = dataset['Outcome']
```

In [4]:
```
# split dataset into training set and test set
from sklearn.model_selection import train_test_split

features_train, features_test, labels_train, labels_test = train_test_split(features, lab
els, test_size=0.25)
```

In [5]:
```
# import support vector machine classifier
from sklearn.svm import SVC
classifier = SVC()

# fit data
classifier.fit(features_train, labels_train)

#get predicted class labels
pred = classifier.predict(features_test)
```

```
C:\Users\pablo\Python\envs\DAVID\lib\site-packages\sklearn\svm\base.py:196: FutureWarnin
g: The default value of gamma will change from 'auto' to 'scale' in version 0.22 to acco
unt better for unscaled features. Set gamma explicitly to 'auto' or 'scale' to avoid thi
s warning.
  "avoid this warning.", FutureWarning)
```

In [6]:
```
# get accuracy of model on test set
from sklearn.metrics import accuracy_score

accuracy = accuracy_score(labels_test, pred)
print('Accuracy: {}'.format(accuracy))
```

```
Accuracy: 0.625
```

Introducing the hyperparameters, changing the type of kernel used (**classifier = SVC(kernel='linear')**)

In [7]:
```
# import support vector machine classifier
from sklearn.svm import SVC
classifier = SVC(kernel='linear')

# fit data
classifier.fit(features_train, labels_train)

#get predicted class labels
pred = classifier.predict(features_test)
```

In [8]:
```
# get accuracy of model on test set
from sklearn.metrics import accuracy_score

accuracy = accuracy_score(labels_test, pred)
print('Accuracy: {}'.format(accuracy))
```

```
Accuracy: 0.78125
```

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