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

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Regression: Predicting Boston Housing Prices

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

In [2]:
```
dataset = pd.read_csv('Boston.csv')
dataset.head(5)
```

Out[2]:

	Unnamed: 0	crim	zn	indus	chas	nox	rm	age	dis	rad	tax	ptratio	black	lstat	medv
0	1	0.00632	18.0	2.31	0	0.538	6.575	65.2	4.0900	1	296	15.3	396.90	4.98	24.0
1	2	0.02731	0.0	7.07	0	0.469	6.421	78.9	4.9671	2	242	17.8	396.90	9.14	21.6
2	3	0.02729	0.0	7.07	0	0.469	7.185	61.1	4.9671	2	242	17.8	392.83	4.03	34.7
3	4	0.03237	0.0	2.18	0	0.458	6.998	45.8	6.0622	3	222	18.7	394.63	2.94	33.4
4	5	0.06905	0.0	2.18	0	0.458	7.147	54.2	6.0622	3	222	18.7	396.90	5.33	36.2

Dataset download from:

https://forge.scilab.org/index.php/p/rdataset/source/tree/master/csv/MASS/Boston.csv (https://forge.scilab.org/index.php/p/rdataset/source/tree/master/csv/MASS/Boston.csv)

In [3]:
```
dataset.shape
```

Out[3]:
```
(506, 15)
```

In [4]:
```
X = dataset.drop(['Unnamed: 0', 'medv'], axis=1)
y = dataset['medv']
```

In [5]:
```
from sklearn.model_selection import train_test_split

x_train, x_test, y_train, y_test = train_test_split(X, y, test_size=0.3)
```

In [6]:
```
#Importing the model
from sklearn.linear_model import LinearRegression

regressor = LinearRegression()
regressor.fit(x_train, y_train)
```

Out[6]:
```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None,
         normalize=False)
```

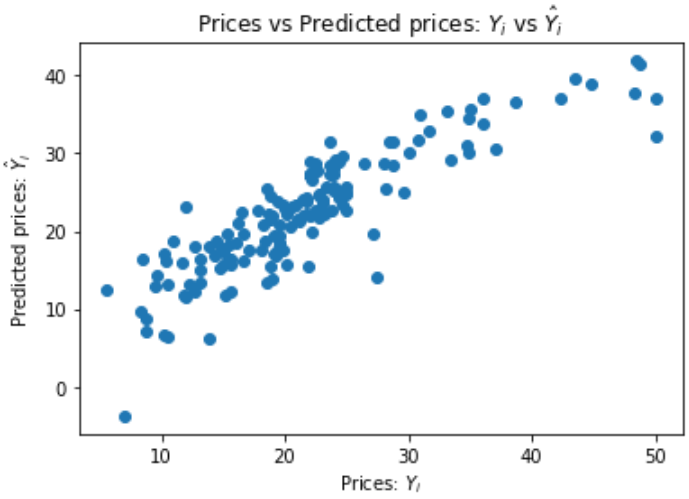
In [7]:
```
y_pred = regressor.predict(x_test)

from sklearn.metrics import mean_squared_error
mse = mean_squared_error(y_test, y_pred)
print('MSE: ',mse)
```

```
MSE:  19.33913675649094
```

In [8]:
```
plt.scatter(y_test, y_pred)
plt.xlabel('Prices: $Y_i$')
plt.ylabel('Predicted prices: $\hat{Y}_i$')
plt.title("Prices vs Predicted prices: $Y_i$ vs $\hat{Y}_i$")
```

Out[8]:
```
Text(0.5, 1.0, 'Prices vs Predicted prices: $Y_i$ vs $\\hat{Y}_i$')
```



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