

## ▼ MACHINE LEARNING

### ▼ Simple Linear Regression

#### ▼ Step 1.Import Libraries

```
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
import sklearn
```

#### ▼ Step 2. Import Dataset

```
df = pd.read_csv('salary_data.csv')
df.head()
```

	YearsExperience	Salary
0	1.1	39343
1	1.3	46205
2	1.5	37731
3	2.0	43525
4	2.2	39891

#### ▼ Step 3. Selecting input and output variable

```
X = df[["YearsExperience"]]
y = df["Salary"]
from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(X,y,test_size=0.2,random_state=0)
```

#### ▼ Step 4.Making Linear Regression Model

```
from sklearn.linear_model import LinearRegression
model= LinearRegression()
```

#### ▼ Step 5.Fitting Model

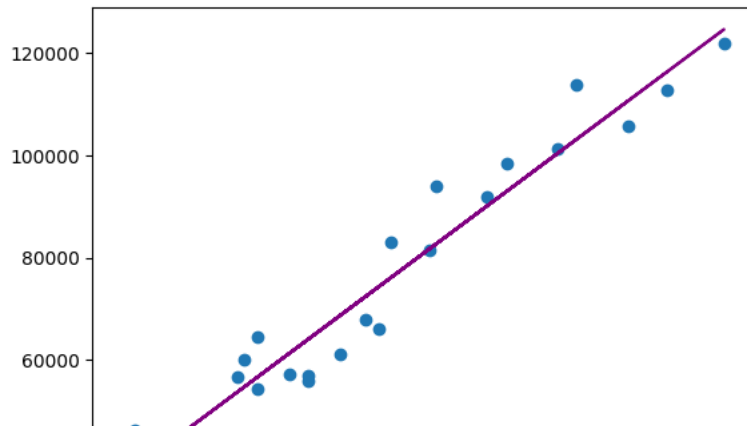
```
model = model.fit(X,y)
model
```

```
LinearRegression
LinearRegression()
```

#### ▼ Step 6. Plot the Graph

```
import matplotlib.pyplot as plt
plt.scatter(X_train,y_train)
plt.plot(X_train.values, model.predict(X_train), color="purple")
```

[&lt;matplotlib.lines.Line2D at 0x7f6781be7670&gt;]



### ▼ step 7. Predicting Model

```
model.predict([[10]])
```

```
/usr/local/lib/python3.10/dist-packages/sklearn/base.py:439: UserWarning: X does not have valid feature names, but LinearRegression was
warnings.warn(
array([120291.82341322])
```

### ▼ Step 8. Evaluating Model

```
from sklearn.linear_model import LinearRegression
from sklearn.model_selection import train_test_split
from sklearn.metrics import r2_score
model = LinearRegression()
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=0)
model.fit(X_train, y_train)
y_pred = model.predict(X_test)
accuracy = r2_score(y_test, y_pred)
print("Accuracy score: {:.2f}".format(accuracy))
```

Accuracy score: 0.99

Rich text editor toolbar: Bold (B), Italic (I), Underline (U), Text Color (A), Background Color (B), Bulleted List (List), Numbered List (List), Indent (List), Outdent (List), Link (Chain), Unlink (Chain), Undo (Circular Arrow), Redo (Circular Arrow), Help (Question Mark), and a menu icon.

####Step 9. Splitting and computing score according to 80/20

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```
from sklearn.linear_model import LinearRegression
from sklearn.metrics import r2_score
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=0)
model = LinearRegression()
model.fit(X_train, y_train)
y_pred = model.predict(X_test)
accuracy = r2_score(y_test, y_pred)
print("Accuracy:", accuracy)
```

Accuracy: 0.988169515729126

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