

Decision tree ml regression model and Random forest model

```
import numpy as np

import pandas as pd

import matplotlib.pyplot as plt


dataset = pd.read_csv(r'D:\Samsom - All Data\Naresh IT Institute\New
folder\emp_sal.csv')


x = dataset.iloc[:, 1:2].values
y = dataset.iloc[:, 2].values


from sklearn.linear_model import LinearRegression

lin_reg = LinearRegression()

lin_reg.fit(x, y)


plt.scatter(x, y, color = 'red')
plt.plot(x, lin_reg.predict(x), color = 'blue')
plt.title('linear regression model (Linear Regression)')
plt.xlabel('Position level')
plt.ylabel('Salary')
plt.show()


lin_model_pred = lin_reg.predict([[6.5]])

lin_model_pred

# non linear model
```

```
from sklearn.preprocessing import PolynomialFeatures
```

```
poly_reg = PolynomialFeatures(degree = 6)
```

```
x_poly = poly_reg.fit_transform(x)
```

```
poly_reg.fit(x_poly, y)
```

```
lin_reg_2 = LinearRegression()
```

```
lin_reg_2.fit(x_poly, y)
```

```
#1st model lin_reg_2 (linear model)
```

```
#2nd model poly_reg (polynomial model)
```

```
plt.scatter(x, y, color = 'red')
```

```
plt.plot(x, lin_reg_2.predict(poly_reg.fit_transform(x)))
```

```
plt.title('polynomial (Polynomial Regression)')
```

```
plt.xlabel('Position level')
```

```
plt.ylabel('Salary')
```

```
plt.show()
```

```
poly_model_pred = lin_reg_2.predict(poly_reg.fit_transform([[6.5]]))
```

```
poly_model_pred
```

```
# SVR model
```

```
from sklearn.svm import SVR
```

```
svr_model = SVR(kernel="poly", degree=5)
```

```
svr_model.fit(x, y)
```

```
svr_model_pred = svr_model.predict([[6.5]])
```

svr_model_pred

```
#=====
=====
```

KNN model

from sklearn.neighbors import KNeighborsRegressor

knn_model = KNeighborsRegressor(n_neighbors=3)

knn_model.fit(x,y)

knn_model_pred = knn_model.predict([[6.5]])

print(knn_model_pred)

```
#=====
=====
```

decision tree ml regression model

from sklearn.tree import DecisionTreeRegressor

dt_model = DecisionTreeRegressor()

dt_model.fit(x,y)

dt_model_pred = dt_model.predict([[6.5]])

print(dt_model_pred)

```
#=====
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```

RANDOM FOREST MODEL

```
from sklearn.ensemble import RandomForestRegressor  
rf_model = RandomForestRegressor(random_state=0)  
rf_model.fit(x,y)  
  
rf_model_pred = rf_model.predict([[6.5]])  
print(rf_model_pred)
```