RANDOM FOREST

ENSEMBLE LEARNING(1/3)

- Random forest is a version of ensemble learning.

- Ensemble leaning is where we take multiple algorithms or a single algorithm multiple time and put them together to get a more powerful algorithm to produce a prediction.

- For Example:
  - We typically ask the opinions of several doctors before agreeing to a medical procedure.
  - We read user reviews before purchasing an item.
  - We evaluate future employees by checking their references.

CONTD.(2/3)

STEP 1: Pick at random K data points from the training set.

STEP 2: Build the decision tree associated to these K data points.

STEP 3: Choose the number Ntress you want to build and repeat STEPS 1 & 2.

STEP 4: For a new data point, make each one of your Ntree trees predict the value of Y for the data point in question and assign the new data point the average across all the predicted Y values.

CONTD.(3/3)

RANDOM FOREST INTUITION

STEPS INVOLVED

- Importing the basic libraries

```python
# importing initial libraries
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

IMPORTING DATA AND SPLITTING THE X AND Y VARIABLES

X	Name	Type	Size	Shape	Value
x	RandomForestR...	ABCMeta	2008		
x	X	ndarray	80	(10, 1)	[[1] [2] [3] [4] [5] [6] ...
x	X_grid	ndarray	7200	(900, 1)	[[1.] [1.01] [1.02] [1.03] [1.0...
x	dataset	DataFrame	368	(10, 3)	Position Level Salary ...
x	regressor	RandomForestR...	48		RandomForestRegressor(bootstrap=True,...
x	y	ndarray	80	(10,)	[45000 50000 60000 80000 110...
x	y_pred	ndarray	8	(1,)	[167000.]

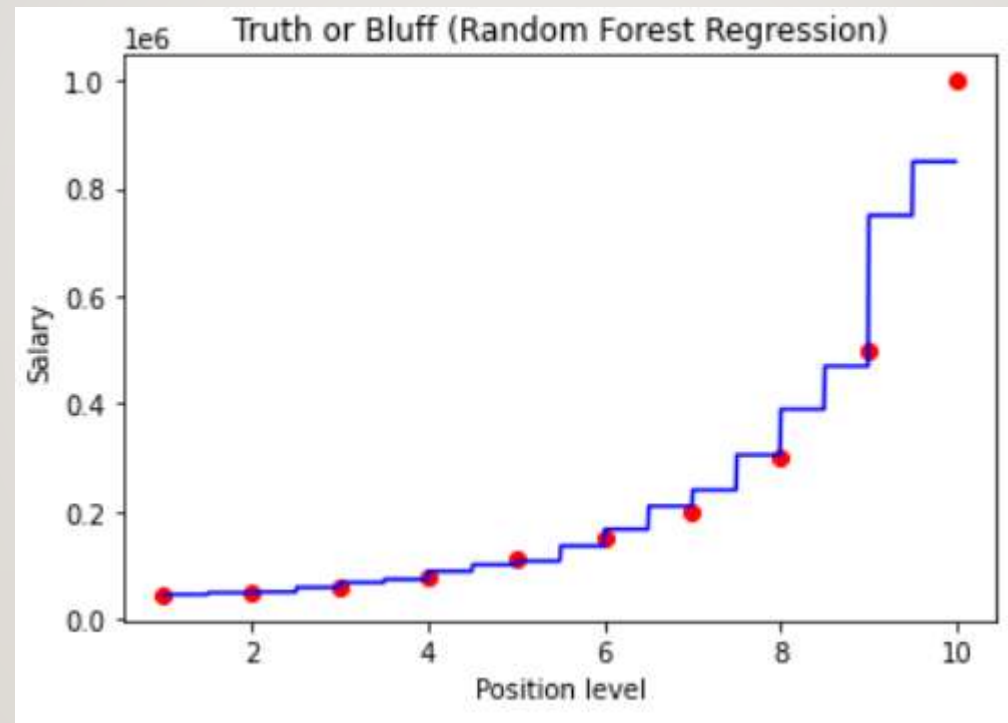# FITTING THE DECISION TREE MODEL

```
RandomForestRegressor(bootstrap=True, ccp_alpha=0.0, criterion='mse',
                      max_depth=None, max_features='auto', max_leaf_nodes=None,
                      max_samples=None, min_impurity_decrease=0.0,
                      min_impurity_split=None, min_samples_leaf=1,
                      min_samples_split=2, min_weight_fraction_leaf=0.0,
                      n_estimators=10, n_jobs=None, oob_score=False,
                      random_state=0, verbose=0, warm_start=False)
```

PREDICTING AND REPRESENTING DATA

THANK YOU