BEFORE TUNING

```
dtModel = create_model('dt')
```

Fold	MAE	MSE	RMSE	R2	RMSLE	MAPE
0	3.7000	26.0783	5.1067	0.6687	0.2164	0.1553
1	2.8444	13.2122	3.6349	0.8099	0.1790	0.1535
2	3.9278	35.9078	5.9923	0.0295	0.2707	0.2082
3	2.2361	7.4431	2.7282	0.9057	0.1274	0.1077
4	3.2229	31.3074	5.5953	0.7189	0.1917	0.1426
5	2.6686	14.3983	3.7945	0.6992	0.1697	0.1408
6	2.2543	7.9826	2.8253	0.8700	0.1479	0.1188
7	3.2714	27.2243	5.2177	0.6073	0.2225	0.1796
8	2.6943	14.2534	3.7754	0.8857	0.1737	0.1220
9	2.7943	13.9097	3.7296	0.8634	0.1695	0.1311
Mean	2.9614	19.1717	4.2400	0.7058	0.1868	0.1460
Std	0.5356	9.5543	1.0928	0.2457	0.0388	0.0286

Get the "parameters" of Decision Tree

```
[26] plot_model(dtModel, plot='parameter')
```

0s

	Parameters
ccp_alpha	0.0
criterion	squared_error
max_depth	None
max_features	None
max_leaf_nodes	None
min_impurity_decrease	0.0
min_samples_leaf	1
min_samples_split	2
min_weight_fraction_leaf	0.0
random_state	5759
splitter	best

AFTER TUNING

```
dtModelTuned = tune_model(dtModel, n_iter=200)
```

Fold	MAE	MSE	RMSE	R2	RMSLE	MAPE
0	3.1148	22.1687	4.7084	0.7184	0.1908	0.1301
1	2.3757	9.8753	3.1425	0.8579	0.1587	0.1301
2	3.4381	33.8897	5.8215	0.0841	0.2533	0.1870
3	2.1687	7.8518	2.8021	0.9005	0.1371	0.1165
4	3.2629	33.2442	5.7658	0.7015	0.1909	0.1487
5	2.4675	13.4160	3.6628	0.7197	0.1739	0.1348
6	2.6160	12.1803	3.4900	0.8017	0.1303	0.1186
7	2.8319	13.8013	3.7150	0.8009	0.2301	0.1932
8	2.4245	8.6698	2.9445	0.9305	0.1377	0.1128
9	2.7507	14.7131	3.8358	0.8555	0.1378	0.1120
Mean	2.7451	16.9810	3.9888	0.7371	0.1741	0.1384
Std	0.3947	9.1172	1.0345	0.2301	0.0402	0.0280

```
Fitting 10 folds for each of 200 candidates, totalling 2000 fits
```

```
plot_model(dtModelTuned, plot='parameter')
```

Parameters	
ccp_alpha	0.0
criterion	squared_error
max_depth	16
max_features	1.0
max_leaf_nodes	None
min_impurity_decrease	0.02
min_samples_leaf	3
min_samples_split	5
min_weight_fraction_leaf	0.0
random_state	5759
splitter	best

As we see the R^2 value is increased, moreover the parameters are changed after tuning. This Tuning is used for increasing the performance of model and the values depend upon the dataset used.