Machine learning regression method using R2 value

1. Multi Linear Regression value is : 0.9358680970046518
2. SVM
3. Decision Tree

**Sample Data use:**

50\_Startups.csv

**SVM:**

**Without Hyper ( Not mentioned C value):**

Linear: -0.05569157045504447

RBF (Non-linear): -0.057418393916219834

Poly: -0.05710

Sigmoid: -0.05721

**With Hyper Parameter (Mentioned C value)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S.No** | **Hyper Parameter** | **Linear** | **RBF** | **Poly** | **Sigmoid** |
| 1 | C = 100 | 0.1065 | -0.0507 | -0.0198 | -0.0305 |
| 2 | C = 500 | .5929 | -0.0243 | 0.1147 | 0.0706 |
| 3 | C = 1000 | 0.7803 | 0.0068 | 0.2662 | 0.1851 |
| 4 | C = 2000 | 0.8768 | 0.0675 | 0.4810 | 0.3971 |
| 5 | C = 5000 | 0.9004 | 0.2124 | 0.7937 | 0.7310 |
| 6 | C = 10000 | 0.9240 | 0.3719 | 0.8130 | 0.8535 |

**Decision Tree:**

Notes: Max\_feature= ‘None’ will throw an error. If we no need this just skip this parameter example for None:

**criterion='absolute\_error', splitter='best'**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S.no | Criterion | splitter | Max\_features | metrics |
| 1 | Squared\_error | best | None | 0.9214164 |
| 2 | Squared\_error | random | None | 0.85355 |
| 3 | Squared\_error | random | sqrt | -0.12001202 |
| 4 | Squared\_error | best | Sqrt | 0.6115002 |
| 5 | Squared\_error | best | Log2 | 0.7254904 |
| 6 | Squared\_error | Random | log2 | 0.4773803 |
| 7 | friedman***\_***mse | best | none | 0.9164907 |
| 8 | Friedman\_mse | Random | none | 0.2809627 |
| 9 | Friedman\_mse | Best | sqrt | 0.7525907 |
| 10 | Friedman\_mse | Random | Sqrt | 0.6728648 |
| 11 | Friedman\_mse | Best | Log2 | 0.475569 |
| 12 | Friedman\_mse | Random | Log2 | 0.571768 |
| 13 | absolute***\_***error | Best | None | 0.949701 |
| 14 | Absolute\_error | Random | None | 0.392910 |
| 15 | Absolute\_error | Best | sqrt | 0.730885 |
| 16 | Absolute\_error | Random | sqrt | 0.451201 |
| 17 | Absolute\_error | Best | Log2 | 0.874690 |
| 18 | Absolute\_error | Random | Log2 | 0.287336 |
| 19 | poisson | Best | none | 0.927526 |
| **20** | **Poisson** | **Random** | **none** | **0.935992** |
| 21 | Poisson | Best | Sqrt | 0.730122 |
| 22 | Poisson | Random | Sqrt | 0.852200 |
| 23 | Poisson | Best | Log2 | 0.629396 |
| 24 | Poisson | Random | Log2 | 0.376125 |