**To Find following the machine learning regression method using r2 value**

1. MULTIPLE LINEAR REGRESSION (R2 VALUE= 0.935)
2. SUPPORT VECTOR MACHINE:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S.NO** | **HYPER**  **PARAMETER** | **LINEAR**  **(r value)** | **RBF (NON LINEAR)**  **(r value)** | **POLY**  **(r value)** | **SIGNOID (r value)** |
| 1 | No changes | 0.895 | -0.0574 | -0.057 | -0.057 |
| 2 | C0.01 | 0.9335 | -0.057 | -0.057 | -0.057 |
| 3 | C0.001 | 0.9330 | -0.57 | -0.057 | -0.057 |
| 4 | C0.001 | 0.9330 | -0.030 | 0.465 | -0.058 |
| 5 | C500 | -3547.07 | 0.0500 | 0.6207 | -0.0640 |
| 6 | C1000 | -3654.0 | 0.1606 | 0.6403 | -0.0707 |
| 7 | C2000 | -3769.0 | 0.288 | 0.6717 | -0.0845 |

The SVM Regression use R2 value (Linear and hyper parameter(C0.001) = 0.9330

3.DECISION TREE:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.NO** | **CRITERION** | **MAX FEATURES** | **SPLITTER** | **R VALUE** |
| 1 | Squared\_error | Auto | best | 0.915 |
| 2 | Squared\_error | Auto | random | 0.888 |
| 3 | Squared\_error | Sqrt | Best | 0.6546 |
| 4 | Squared\_error | Sqrt | Random | 0.899 |
| 5 | Squared\_error | Log2 | Best | 0.0281 |
| 6 | Squared\_error | Log2 | random | -0.177 |
| 7 | friedman\_mse | Auto | random | 0.928 |
| 8 | friedman\_mse | Auto | best | 0.903 |
| 9 | friedman\_mse | Sqrt | random | 0.8058 |
| 10 | friedman\_mse | Sqrt | best | 0.5690 |
| 11 | friedman\_mse | Log2 | random | 0.6144 |
| 12 | friedman\_mse | Log2 | best | 0.4498 |
| 13 | poisson | auto | random | 0.9091 |
| 14 | poisson | auto | best | 0.9156 |
| 15 | poisson | sqrt | random | 0.0498 |
| 16 | poisson | sqrt | best | -0.0479 |
| 17 | poisson | Log2 | random | 0.6844 |
| 18 | poisson | Log2 | best | 0.559 |
| 19 | absolute\_error | auto | Random | 0.8390 |
| 20 | Absolute\_error | auto | best | 0.9239 |
| 21 | Absolute\_error | sqrt | Best | 0.645 |
| 22 | Absolute\_error | sqrt | Random | 0.8856 |
| 23 | Absolute\_error | Log2 | Best | -0.621 |
| 24 | Absolute\_error | Log2 | random | 0.2689 |

The Decision tree Regression use R2value( poisson , auto, best)=0.9325