**To find following the machine learning regression method using in r2 value**

1. MULTIPLE LINEAR REGRESSION: (R2 value)=0.93
2. SUPPORT VECTOR MACHINE: Default= rbf

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| --- | --- | --- | --- | --- | --- |
| S.NO | HYPER  PARAMETER | LINEAR  (r value) | RBF (NON LINEAR)  (r value) | POLY  (r value) | SIGMOID  (r value) |
| 1. | NIL(without standardization) | 0.8630 | 0.0 | -179 | 0.0 |
| 2. | NIL(with standardization) | -17078 | -4692 | -9389 | -2247 |
| 3. | C10 | -168856.50 | -4684 | -9384 | -2240 |
| 4. | C100 | -2230.67 | -4621 | -9400 | -2196 |
| 5. | C500 | -4.7493 | -1878 | -381 | -1101 |
| 6. | C1000 | -0.34050 | -454.2 | -98.13 | -280 |
| 7. | C2000 | 0.5510 | -114.3 | -200 | -37.05 |
| 8. | C3000 | 0.5774 | -43.26 | -376 | -2.780 |

The SVM Regression use R2 value Linear (without standardization) and hyper parameter is NIL=0.86

1. DECISION TREE: default=”squared\_error”

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SI.NO | CRITERION | MAX FEATURES | SPLITTER | With Random\_state=42  (R value) | Without random\_state=42  (R VALUE) |
| 1. | () | () | () | 0.81 | 0.90 |
| 2. | Mse | None | Best | 0.81 | 0.92 |
| 3. | Mse | None | Random | 0.83 | 0.82 |
| 4. | Mse | Sqrt | Best | 0.02 | 0.64 |
| 5. | Mse | Sqrt | Random | 0.39 | 0.61 |
| 6. | Mse | Log2 | best | 0.02 | 0.75 |
| 7. | Mse | Log2 | random | 0.39 | -1.49 |
| 8. | Mae | None | Best | 0.87 | 0.93 |
| 9. | Mae | None | Random | 0.81 | 0.77 |
| 10. | Mae | Sqrt | Best | 0.54 | 0.93 |
| 11. | Mae | Sqrt | random | 0.68 | 0.53 |
| 12. | Mae | Log2 | Best | 0.54 | 0.72 |
| 13. | Mae | Log2 | Random | 0.68 | 0.32 |
| 14. | friedman\_mse | None | Best | 0.80 | 0.91 |
| 15. | friedman\_mse | None | Random | 0.83 | 0.83 |
| 16. | friedman\_mse | Log2 | Best | -0.005 | 0.37 |
| 17. | friedman\_mse | Log2 | random | 0.39 | -0.02 |
| 18. | friedman\_mse | Sqrt | Best | -0.005 | -0.00 |
| 19. | friedman\_mse | Sqrt | Random | 0.39 | 0.94 |

The Decision Tree Regression use R2 value (Mean absolute\_value\_None\_best) after assigning (random\_state as 42)=0.87

Yellow colored = Highest value, Green colored= default value