Different Machine learning Regression methods to find r2 values

1. Simple Linear Regression:

R2 Value: 0. 97409934

1. Multiple Linear Regression:

R2 Value: 0.9358680

1. Support Vector Machine:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S.NO | Hyper Parameter | R2 Value | | | |
| Linear | RBF | Poly | Sigmoid |
| 1 | C10 | -0.0396 | -0.05680 | -0.05366 | -0.054719 |
| 2 | C100 | 0.10646 | -0.05072 | -0.019802 | -0.03045 |
| 3 | C500 | 0.59289 | -0.02432 | 0.11468 | 0.07057 |
| 4 | C1000 | 0.78028 | 0.006768 | 0.266163 | 0.18506 |
| 5 | C2000 | 0.87677 | 0.06751 | 0.4810 | 0.3970 |
| 6 | C3000 | 0.89567 | 0.12322 | 0.637 | 0.59136 |

In SVM regression R2 value is best for kernel Linear (C=3000): 0.89567

1. Decision Tree:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***SL.NO*** | ***CRITERION*** | ***MAX\_FEATURES*** | ***SPLITTER*** | ***R2 VALUE*** |
| 1 | squared\_error | sqrt | best | 0.62111 |
| 2 | squared\_error | log2 | best | 0.00639 |
| 3 | squared\_error | auto | best | 0.90940 |
| 4 | squared\_error | sqrt | random | 0.8930 |
| 5 | squared\_error | log2 | random | 0.80923 |
| 6 | squared\_error | auto | random | 0.90806 |
| 7 | friedman\_mse | sqrt | best | 0.55321 |
| 8 | friedman\_mse | log2 | best | 0.549742 |
| 9 | friedman\_mse | auto | best | 0.8939 |
| 10 | friedman\_mse | sqrt | random | 0.325794 |
| 11 | friedman\_mse | log2 | random | 0.63402 |
| 12 | friedman\_mse | auto | random | 0.936971 |
| 13 | absolute\_error | sqrt | best | 0.76929 |
| 14 | absolute\_error | log2 | best | 0.50424 |
| 15 | absolute\_error | auto | best | 0.956466 |
| 16 | absolute\_error | sqrt | random | 0.876061 |
| 17 | absolute\_error | log2 | random | 0.750248 |
| 18 | absolute\_error | auto | random | 0.9543817 |
| 19 | poisson | sqrt | best | 0.869501 |
| 20 | poisson | log2 | best | 0.63388 |
| 21 | poisson | auto | best | 0.93193 |
| 22 | poisson | sqrt | random | 0.788839 |
| 23 | poisson | log2 | random | 0.831641 |
| 24 | poisson | auto | random | 0.9587542 |

In Decision tree regression R2 value is best for CRITERION= poisson, MAX\_FEATURES=auto, SPLITTER= random: 0.9587542

1. RandomForestRegressor

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***SL.NO*** | ***CRITERION*** | ***MAX\_FEATURES*** | ***n\_estimators*** | ***R2 VALUE*** |
| 1 | squared\_error | sqrt | 50 | 0.84147 |
| 2 | squared\_error | log2 | 50 | 0.79486 |
| 3 | squared\_error | auto | 50 | 0.918320 |
| 4 | squared\_error | sqrt | 100 | 0.805771 |
| 5 | squared\_error | log2 | 100 | 0.801316 |
| 6 | squared\_error | auto | 100 | 0.939130 |
| 7 | friedman\_mse | sqrt | 50 | 0.786053 |
| 8 | friedman\_mse | log2 | 50 | 0.840876 |
| 9 | friedman\_mse | auto | 50 | 0.935113 |
| 10 | friedman\_mse | sqrt | 100 | 0.820590 |
| 11 | friedman\_mse | log2 | 100 | 0.847721 |
| 12 | friedman\_mse | auto | 100 | 0.93297 |
| 13 | absolute\_error | sqrt | 50 | 0.837697 |
| 14 | absolute\_error | log2 | 50 | 0.804880 |
| 15 | absolute\_error | auto | 50 | 0.937659 |
| 16 | absolute\_error | sqrt | 100 | 0.787840 |
| 17 | absolute\_error | log2 | 100 | 0.822564 |
| 18 | absolute\_error | auto | 100 | 0.938897 |
| 19 | poisson | sqrt | 50 | 0.751191 |
| 20 | poisson | log2 | 50 | 0.770854 |
| 21 | poisson | auto | 50 | 0.917797 |
| 22 | poisson | sqrt | 100 | 0.768471 |
| 23 | poisson | log2 | 100 | 0.774061 |
| 24 | poisson | auto | 100 | 0.932259 |

In RandomForest Regressor, R2 value is best for CRITERION= squared\_error, MAX\_FEATURES=auto, n\_estimators= 100: 0.93913