**Machine Learning Regression**

1. **Multiple Linear Regression**

R² value =0.9358680970046241

1. **Support Vector Machine**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S.No | Hyper Parameter | Linear (r value) | RBF (Non Linear) (r value) | Poly (r value) | SIGMOID ( r value) |
| 1 | C10 | -2.43 | -0.0558 | 0.0253 | -0.0576 |
| 2 | C100 | -357.07 | -0.0302 | 0.4656 | -0.0587 |
| 3 | C1 | 0.8950 | 0.0500 | 0.6207 | -0.06401 |
| 4 | C4 | 0.4854 | 0.1606 | 0.6403 | -0.0707 |
| 5 | C6 | -0.22590 | 0.2883 | 0.6717 | -0.0845 |
| 6 | C8 | -1.1874 | 0.3951 | 0.6909 | -0.0989 |

The SVN regression use R² value linear (r) and hyper parameter (C1)= 0.8950

1. **DECISION Tree**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S.No | Criterion | Max Features | Splitter | R value |
| 1 | friedman\_mse | sqrt | best | 0.5048896724192927 |
| 2 | friedman\_mse | sqrt | random | 0.12917109053591114 |
| 3 | friedman\_mse | log2 | best | -0.5001223619313993 |
| 4 | friedman\_mse | log2 | random | 0.5564509228577512 |
| 5 | friedman\_mse | None | best | 0.918434435677645 |
| 6 | friedman\_mse | None | random | 0.8133501215737005 |
| 7 | poisson | sqrt | best | 0.9171247178186414 |
| 8 | poisson | sqrt | random | 0.8858251753565449 |
| 9 | poisson | log2 | best | 0.646695666105565 |
| 10 | poisson | log2 | random | 0.6656005248161825 |
| 11 | poisson | None | best | 0.932598397150456 |
| 12 | poisson | None | random | 0.5761496049800853 |
| 13 | absolute\_error | sqrt | best | 0.7571544300750539 |
| 14 | absolute\_error | sqrt | random | 0.38001980919854705 |
| 15 | absolute\_error | log2 | best | 0.7163578157389303 |
| 16 | absolute\_error | log2 | random | -0.06757770288783549 |
| 17 | absolute\_error | None | best | 0.9583050443607486 |
| 18 | absolute\_error | None | random | 0.890449668476497 |

The Decision Tree Regression use R² value (criterion= absolute\_error , maxFeatures=None & splitter= absolute\_error ) = 0.9583050443607486