**Below Machine Learning regression method show all model R2 value**

1. **Multiple Linear Regression (R2 Value)** = 0.7894
2. **Support vector Machine:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S.NO** | **Hyper Parameter** | **Linear**  **(r\_score)** | **RBF (Non linear)**  **(r\_score)** | **Poly**  **(r\_score)** | **Sigmoid**  **(r\_score)** |
| 1. | C=10 | 0.4624 | -0.0322 | 0.0387 | 0.0393 |
| 2. | C=100 | 0.6288 | 0.3200 | 0.6179 | 0.5276 |
| 3. | C=500 | 0.7631 | 0.6642 | 0.8263 | 0.4446 |
| 4. | C=1000 | 0.7649 | 0.8102 | 0.8566 | 0.2874 |
| 5. | C=2000 | 0.7440 | 0.8547 | 0.8605 | -0.5939 |
| 6. | C=3000 | 0.7414 | 0.8663 | 0.8598 | -2.1244 |

In **SVM** Regression use R2 value (**Hyper Parameter C=3000, rbf (non-linear)**) = **0.8663**

1. **Decision Tree:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.NO** | **Criterion** | **Splitter** | **Max\_features** | **R\_value** |
| 1. | squared\_error | best | sqrt | 0.7442 |
| 2. | squared\_error | best | Log2 | 0.7087 |
| 3. | squared\_error | best | none | 0.6954 |
| 4. | squared\_error | random | None | 0.7153 |
| 5. | squared\_error | random | Sqrt | 0.6899 |
| 6. | squared\_error | random | Log2 | 0.6541 |
| 7. | friedman\_mse | best | none | 0.7172 |
| 8. | friedman\_mse | best | Sqrt | 0.6877 |
| 9. | friedman\_mse | best | Log2 | 0.7320 |
| 10. | friedman\_mse | Random | None | 0.7884 |
| 11. | friedman\_mse | random | Sqrt | 0.7169 |
| 12. | friedman\_mse | Random | Log2 | 0.6006 |
| 13. | absolute\_error | Best | Sqrt | 0.7335 |
| 14. | absolute\_error | Best | Log2 | 0.6938 |
| 15. | absolute\_error | Best | None | 0.6899 |
| 16. | absolute\_error | Random | Sqrt | 0.7187 |
| 17. | absolute\_error | Random | Log2 | 0.7812 |
| 18. | absolute\_error | random | None | 0.7289 |
| 19. | Poisson | Best | None | 0.7202 |
| 20. | Poisson | Best | Log2 | 0.7073 |
| 21. | Poisson | best | Sqrt | 0.7159 |
| 22. | Poisson | Random | Log2 | 0.6731 |
| 23. | Poisson | Random | Sqrt | 0.7179 |
| 24. | Poisson | Random | none | 0.7635 |

In **Decision Tree** Regression use R2 value using parameter (**Criterion: friedman\_mse, Splitter: ramdom, max\_features: None**) = **0.7884**

**4. Random Forest:**

|  |  |  |  |
| --- | --- | --- | --- |
| **S.no** | **n\_estimators** | **criterion** | **R\_Value** |
| 1. | 10 | squared\_error | 0.8330 |
| 2. | 10 | absolute\_error | 0.8350 |
| 3. | 10 | friedman\_mse | 0.8331 |
| 4. | 10 | Poisson | 0.8313 |
| 5. | 30 | squared\_error | 0.8509 |
| 6. | 30 | absolute\_error | 0.8539 |
| 7. | 30 | friedman\_mse | 0.8512 |
| 8. | 30 | poisson | 0.8486 |
| 9. | 50 | squared\_error | 0.8498 |
| 10. | 50 | absolute\_error | 0.8526 |
| 11. | 50 | friedman\_mse | 0.8500 |
| 12. | 50 | Poisson | 0.8491 |
| 13. | 100 | squared\_error | 0.8538 |
| 14. | 100 | absolute\_error | 0.8520 |
| 15. | 100 | friedman\_mse | 0.8540 |
| 16. | 100 | poisson | 0.8526 |

In **Random Forest regression** check the R2 value using parameter (**n\_estimators:100, criterion:friedman\_mse**) = **0.8540**