Regression Algorithm Assignment

1.Machine Learning Supervised Learning Regression

2. 1338 Rows & 6 Columns

3. String to Number: Ordinal Data

4. r\_Score Values:

A. Multiple Linear Regression: r\_Score Value: 0.7894

B. Support Vector Machine:

|  |  |  |
| --- | --- | --- |
| Kernel | C | r\_Score |
| Rbf | 10 | -0.0322 |
| Rbf | 100 | 0.3200 |
| Linear | 10 | 0.4624 |
| Linear | 100 | 0.6288 |
| Poly | 10 | 0.0387 |
| Poly | 100 | 0.6179 |
| Sigmoid | 10 | 0.0393 |
| sigmoid | 100 | 0.5276 |

C. Decision Tree:

|  |  |  |  |
| --- | --- | --- | --- |
| Criterion | Splitter | Max\_Features | r\_Score |
| Squared\_error | Best | None | 0.6811 |
| Friedman\_mse | Best | None | 0.6876 |
| Absolute Error | Best | None | 0.6861 |
| Poisson | Best | None | 0.6715 |
| Poisson | Random | None | 0.6626 |
| Poisson | Random | Auto | 0.6339 |
| Absolute Error | Random | Auto | 0.6834 |
| Friedman\_mse | Random | Auto | 0.6801 |
| Squared\_error | Random | Auto | 0.7340 |
| Squared\_error | Best | Auto | 0.6910 |
| Friedman\_mse | Best | Auto | 0.6856 |
| Absolute Error | Best | Auto | 0.6775 |
| Poisson | Best | Auto | 0.6785 |
| Poisson | Best | Sqrt | 0.6127 |
| Absolute Error | Best | Sqrt | 0.7253 |
| Friedman\_mse | Best | Sqrt | 0.6654 |
| Squared\_error | Best | Sqrt | 0.6882 |
| Squared\_error | Random | Log2 | 0.7279 |
| Friedman\_mse | Random | Log2 | 0.6970 |
| Absolute Error | Random | Log2 | 0.6956 |
| Poisson | Random | Log2 | 0.6391 |

D. Random Forest:

|  |  |  |  |
| --- | --- | --- | --- |
| N\_estimators | Criterion | Random\_State | R\_Score |
| 100 | Squared\_error | 0 | 0.8539 |
| 200 | Squared\_error | 0 | 0.8525 |
| 50 | Squared\_error | 50 | 0.8540 |
| 100 | Absolute Error | 50 | 0.8549 |
| 200 | Absolute Error | 50 | 0.8539 |
| 200 | Absolute Error | 100 | 0.8553 |
| 100 | Squared\_error | 50 | 0.8576 |
| 200 | Friedman\_mse | 100 | 0.8551 |
| 100 | Friedman\_mse | 100 | 0.8537 |
| 100 | Poisson | 100 | 0.8329 |
| 200 | Poisson | 100 | 0.8373 |
| 200 | Poisson | 50 | 0.8311 |

5. Best Model is Random Forest(r\_Score) : 0.8576