**To find the best model by using Machine Learning Regression Algorthim by R2 Score**

1. **Multiple Linear Regression** - R2 Score Value is **0.9346154505630161**
2. **Support Vector Machine (Before Standardization)**

| **SNO** | **HYPER PARAMETER** | **LINEAR**  **r value** | **RBF**  **r value** | **POLY**  **r value** | **SIGMOID**  **r value** |
| --- | --- | --- | --- | --- | --- |
| 1 | C = 10 | -0.03964 | -0.05680 | **-0.05710** | -0.05471 |
| 2 | C = 20 | -0.02270 | -0.05612 | -0.04985 | -0.05195 |
| 3 | C = 50 | 0.02610 | -0.05409 | -0.03850 | -0.04371 |
| 4 | C = 100 | 0.10646 | -0.05072 | -0.01980 | -0.03045 |
| 5 | C = 200 | 0.24327 | -0.04402 | 0.01568 | -0.00501 |
| 6 | C = 500 | **0.59289** | -0.02432 | 0.11468 | 0.07057 |

In SVM Regression, The best model is **0.59289 by using Hyper Parameters (C= 500, Linear)**

1. **Support Vector Machine (After Standardization)**

| **SNO** | **HYPER PARAMETER** | **LINEAR**  **r value** | **RBF**  **r value** | **POLY**  **r value** | **SIGMOID**  **r value** |
| --- | --- | --- | --- | --- | --- |
| 1 | C = 10 | -0.03964 | -0.05680 | -0.05366 | -0.05471 |
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| 5 | C = 200 | 0.24327 | -0.04402 | 0.01568 | -0.00501 |
| 6 | C = 500 | **0.59289** | -0.02432 | 0.11468 | 0.07057 |

In SVM Regression, The best model is **0.59289 by using Hyper Parameters (C= 500, Linear)**

1. **Decision Tree**

| **SNO** | **Criterion** | **Splitter** | **Max\_Features** | **R Value** |
| --- | --- | --- | --- | --- |
| 1 | squared\_error | best | None | 0.91455 |
| 2 | squared\_error | random | None | 0.44574 |
| 3 | absolute\_error | best | none | 0.93619 |
| 4 | absolute\_error | random | none | 0.84430 |
| 5 | friedman\_mse | best | none | 0.93708 |
| 6 | friedman\_mse | random | none | 0.75565 |
| 7 | poisson | best | none | 0.92944 |
| 8 | poisson | random | none | 0.85863 |
| 9 | squared\_error | best | sqrt | 0.33776 |
| 10 | squared\_error | best | log2 | 0.65825 |
| 11 | squared\_error | random | sqrt | 0.17374 |
| 12 | squared\_error | random | log2 | 0.83262 |
| 13 | absolute\_error | best | sqrt | 0.37980 |
| 14 | absolute\_error | best | log2 | 0.09529 |
| 15 | absolute\_error | random | sqrt | 0.34595 |
| **16** | **absolute\_error** | **random** | **log2** | **0.95711** |
| 17 | friedman\_mse | best | sqrt | 0.88222 |
| 18 | friedman\_mse | best | log2 | -0.71947 |
| 19 | friedman\_mse | random | sqrt | 0.89787 |
| 20 | friedman\_mse | random | log2 | 0.57895 |
| 21 | poisson | best | sqrt | 0.80968 |
| 22 | poisson | best | log2 | 0.04414 |
| 23 | poisson | random | sqrt | 0.26714 |
| 24 | poisson | random | log2 | -0.36557 |

In Decision Tree Regression, The best model is **0.95711 by using Hyper Parameters (criterion = ”absolute\_error”, splitter = “random”, max\_features= "log2"**

**Best Algorithm for the Given Dataset: Decision Tree Regression.**

**Decision Tree Regression Model R Value is 0.95711**, which is comparatively good than Multiple Linear Regression Algorithm (**0.93461**) and Support Vector Machine Algorithm is not working well for this particular dataset.