**To find following the machine learning regression method using in r2 value**

**Customer Requirement is Insurance Charges Prediction.**

**1.MULTIPLE LINEAR REGRESSION**

**R²value=** 0.78913454847886

**2. SUPPORT VECTOR MACHINE:**

**SVR(kernel=** **"rbf",C=10000) = 0.8780047074440409**

**3.DECISION TREE:**

**i.**

|  |  |  |  |
| --- | --- | --- | --- |
| **SL.NO** | **CRITERION** | **SPLITTER** | **R\_VALUE** |
| 01. | Squared error | Best | 0.6883908191578559 |
| 02. | Friedman\_mse | Best | 0.6947229954874397 |
| 03. | Absolute error | Best | 0.7256157571187167 |
| 04. | Poisson | Best | 0.681133272801491 |
| 05. | Squared error | Random | 0.7584876928301207 |
| 06. | Friedman\_mse | Random | 0.7113158437852314 |
| 07. | Absolute error | Random | 0.7307449040119351 |
| 08. | Poisson | Random | 0.7036416536724851 |

**ii.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SL.NO** | **CRITERION** | **SPLITTER** | **MAX\_FEATURES** | **R\_VALUE** |
| 01. | Squared error | Best | sqrt | 0.7707800713119641 |
| 02. | Squared error | Best | log2 | 0.7614300534063496 |
| 03. | Friedman\_mse | Best | sqrt | 0.7445140572039232 |
| 04. | Friedman\_mse | Best | log2 | 0.6550595115312327 |
| 05. | Absolute error | Best | sqrt | 0.6796749073935946 |
| 06. | Absolute error | Best | log2 | 0.7114261542959275 |
| 07. | Poisson | Best | sqrt | 0.6472164304876127 |
| 08. | Poisson | Best | log2 | 0.6886508984873159 |
| 09. | Squared error | Random | sqrt | 0.71627952103802 |
| 10. | Squared error | Random | log2 | 0.6799131775438025 |
| 11. | Friedman\_mse | Random | sqrt | 0.624486713670842 |
| 12. | Friedman\_mse | Random | log2 | 0.6782144931247716 |
| 13. | Absolute error | Random | sqrt | 0.59835828495019 |
| 14. | Absolute error | Random | log2 | 0.6342130151276348 |
| 15. | Poisson | Random | sqrt | 0.6958752685032943 |
| 16. | Poisson | Random | log2 | 0.6003749187441639 |

**Decision Tree Maximum output in this Dataset:**

**Decision Tree (criterion='squared\_error', splitter='Best', max\_feature='sqrt') =** 0.7707800713119641

**Best Output in this Dataset:**

**Support Vector Machine:** **(Hyper Tuning Parameter)**

**SVR(kernel=** **"rbf",C=10000) = 0.8780047074440409**