**MACHINE LEARNING**

**SUPERVISED LEARNIG**

**REGRESSION METHOD**

**1.Single Linear Regression (R2 value=0.7894)**

**2.Multiple Linear Regression(R2 value=0.7894)**

**3.Support Vector Machine R2 VALUE=0.5939**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| s.no | Hyper Parameter | Linear(r value) | Rbf(non linear)  (r value) | Poly(r value) | Sigmoid(r value) |
| 1 | C10 | 0.4624 | -0.0322 | 0.0387 | 0.0393 |
| 2 | C100 | 0.6288 | 0.3200 | 0.6179 | 0.5276 |
| 3 | C500 | 0.7631 | 0.6642 | 0.8263 | 0.4446 |
| 4 | C1000 | 0.7649 | 0.8102 | 0.8566 | 0.2874 |
| 5 | C2000 | 0.7440 | 0.8547 | 0.8605 | 0.5939 |
| 6 | C3000 | 0.7414 | 0.8663 | 0.8598 | -2.1244 |

**3.Decision Tree R2 VALUE=0.7513**

|  |  |  |  |
| --- | --- | --- | --- |
| S.no | Criterion | Spiliter | R Value |
| 1 | Friedman\_mse | best | 0.6952 |
| 2 | Friedman-mse | random | 0.7252 |
| 3 | Absolute\_error | Random | 0.7208 |
| 4 | Absolute\_error | best | 0.6796 |
| 5 | Poisson | Random | 0.7325 |
| 6 | poisson | Best | 0.6732 |
| 7 | Squard\_error | Random | 0.7513 |
| 8 | Squard\_error | best | 0.6974 |

**4.Random Forest R2 VALUE=0.8710**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S.no | Criterion | Max Features | N\_Estimators | R Value |
| 1 | Squared\_error | sqrt | 10 | 0.8520 |
| 2 | Squared\_error | Sqrt | 100 | 0.8710 |
| 3 | Sqared\_error | Log2 | 10 | 0.8520 |
| 4 | Squared\_error | Log2 | 100 | 0.8710 |
| 5 | Absolute\_error | sqrt | 10 | 0.8574 |
| 6 | Absolute\_error | Sqrt | 100 | 0.8710 |
| 7 | Absolute\_error | Log2 | 10 | 0.8574 |
| 8 | Absolute\_error | Log2 | 100 | 0.8710 |
| 9 | Friedman\_mse | Sqrt | 10 | 08502 |
| 10 | Friedman\_mse | Sqrt | 100 | 0.8710 |
| 11 | Friedman \_mse | Log2 | 10 | 0.8502 |
| 12 | Friedman\_mse | Log2 | 100 | 0.8710 |

**The final machine learning best method of regression: Random Forest ( R2 VALUE)=0.8710**