**Find following the machine learning regression method using R2 value.**

**1.Multiple linear regression (R2-Value =** 0.9358680970046241**)**

2.Support vector machine

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S.No | Hyper  Parameter  (R2Value) | Linear  (R2Value) | RBF (NON-Linear) (R2Value) | Sigmoid  (R2Value) | Ploy  (R2Value) |
| 1 | **C10** | **-2.4372** | **-0.0568** | **-0.0547** | **-0.0536** |
| 2 | **C100** | **-357.0795** | **-0.0507** | **-0.0304** | **-0.0198** |
| 3 | **C500** | **Not supported** | **-0.0243** | **0.0705** | **0.1146** |
| 4 | **C1000** | **-36014.0205** | **0.0067** | **0.1850** | **0.2661** |
| 5 | C2000 | **Not supported** | **0.0675** | **0.3970** | **0.4810** |
| 6 | C3000 | **Not supported** | **0.1232** | **0.5913** | **0.6370** |

The SVM Regression use **R2-Value**(Lenear(POLY)And Hyper Parameter(C3000))=0.6370

3.Decission Tree

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sl.No | **Criterion** | **Max\_features** | ***Splitter*** | **R2-Value** |
| 1 | Mse | **Non** | **best** | **0.9230** |
| 2 | Mse | **Non** | ***random*** | **0.8573** |
| 3 | Mse | **auto** | **best** | **0.9102** |
| 4 | Mse | ***sqrt*** | **best** | **0.7024** |
| 5 | Mse | ***log2*** | **best** | **0.3492** |
| 6 | Mse | **auto** | ***random*** | **0.8431** |
| 7 | Mse | ***sqrt*** | ***random*** | **0.8858** |
| 8 | Mse | ***log2*** | ***random*** | **0.9020** |
| 9 | Mae | **auto** | **best** | **0.9244** |
| 10 | Mae | ***sqrt*** | **best** | **0.8642** |
| 11 | Mae | ***log2*** | ***best*** | **0.9256** |
| 12 | Mae | **auto** | ***random*** | **0.9429** |
| 13 | Mae | ***log2*** | ***random*** | **-0.4972** |
| 14 | Mae | ***sqrt*** | ***random*** | **0.1937** |
| 15 | **poisson** | **auto** | **best** | **0.7623** |
| 16 | **poisson** | ***sqrt*** | **best** | **0.1558** |
| 17 | **poisson** | ***log2*** | **best** | **0.5959** |
| 18 | **poisson** | **auto** | ***random*** | **0.5294** |
| 19 | **poisson** | ***sqrt*** | ***random*** | **0.4560** |
| 20 | **poisson** | ***log2*** | ***random*** | **0.2953** |

The Decision Tree Regression use **R2-Value (Mae, auto, *random*)=0.9429**