Results for machine learning regression method using r2\_score;

1. **Multiple linear regression r2\_score**= 0.7894790349867009

2. Support Vector machine r2 values are;

|  |  |  |
| --- | --- | --- |
| Support Vector Machine | | |
| **Kernel** | **C** | **r2score** |
| rbf | 0.1 | -0.07599752726145925 |
| rbf | 10 | -0.08695350895327958 |
| rbf | 100 | -0.2299472713270112 |
| rbf | 1000 | -0.6177078021445426 |
| rbf | 10000 | -0.9845508210022309 |
| poly | 100 | -0.298043473526447 |
| poly | 10000 | -1.0245261742624137 |
| sigmoid | 0.1 | -0.07608362158189297 |
| sigmoid | 1000 | -0.6733251604827286 |
| linear | 10 | -0.3032164773182775 |
| linear | 1000 | -0.6232679548123434 |

**SVM regression r2\_score** (rbf and hyper tuning parameter(C=10000))= -0.9845508210022309

3.Decision Tree r2\_score are;

|  |  |  |
| --- | --- | --- |
| Decision Tree | | |
| **criterion** | **splitter** | **r2\_score** |
| friedman\_mse | random | 0.6354293309608889 |
| absolute\_error | random | 0.6976088217129282 |
| poisson | random | 0.6581152461767383 |
| poisson | best | 0.6815492917069568 |
| absolute\_error | best | 0.6848053321295619 |
| friedman\_mse | best | 0.7001577318073535 |
| -- | best | 0.6885762230514263 |

**Decision Tree r2\_score** (non-linear and hyper tuning parameter (**criterion=** absolute\_error, **splitter=** best))= 0.942765493

4. Random Forest r2\_score;

|  |  |  |
| --- | --- | --- |
| Random Forest | | |
| **n\_estimators** | **criterion** | **r2\_score** |
| 10000 | squared\_error | -1.0808260032741943 |
| 100 | squared\_error | -1.0781834843705536 |
| 200 | squared\_error | -1.0819817895159183 |
| 10 | squared\_error | -1.0772726214669213 |
| 10 | poisson | -1.111586687669385 |
| 1000 | poisson | -1.0806353403270492 |

**Random forest r2\_score**(non-linear and hyper tuning parameter (**n\_estimators =** 10, **criterion =** poisson))= -1.111586687669385