Find the best Evaluation metrics (R2 value) by passing runtime parameters in each Algorithms,

**Source data**: “50\_Startups.csv”

**Finalized Best Model**: Multiple Linear Regression.

1. Multiple Linear Regression

R2 Value = 0.935

1. Support Vector Machine

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.No** | **kernel** | **gamma** | **R2 Value** | **Comments** |
| 1 | poly | scale | -0.0571 |  |
| 2 | poly | auto | -0.0571 |  |
| 3 | rbf | scale | -0.0574 |  |
| 4 | rbf | auto | -0.0574 |  |
| 5 | sigmoid | scale | -0.0572 |  |
| 6 | sigmoid | auto | -0.0572 |  |
| 7 | precomputed | scale |  | **ValueError**: X.shape[0] should be equal to X.shape[1] |
| 8 | precomputed | auto |  | **ValueError**: X.shape[0] should be equal to X.shape[1] |
| 9 | linear | scale |  | Longer time to execute |
| 10 | linear | auto |  | Longer time to execute |

In this Dataset, SVM algorithm didn’t fit. Have to go for other Algorithm.

1. Decision Tree Regression

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.No** | **criterion** | **splitter** | **R2 Value** | **Comments** |
|  | squared\_error | best | 0.907 | default parameters |
|  | squared\_error | random |  | Error occurs |
|  | friedman\_mse | best | 0.916 |  |
|  | friedman\_mse | random | 0.821 |  |
|  | absolute\_error | best |  | Error occurs |
|  | absolute\_error | random |  | Error occurs |
|  | poisson | best |  | Error occurs |
|  | poisson | random |  | Error occurs |

1. Random Forest

|  |  |  |  |
| --- | --- | --- | --- |
| **S.No** | **criterion** | **R2 Value** | **Comments** |
|  | squared\_error | 0.897 | default parameters |
|  | absolute\_error |  | Error occurs |
|  | friedman\_mse | 0.907 |  |
|  | poisson |  | Error occurs |