

Dataset = 50_Startups.csv

Method 1: Multiple Linear Regression

R-SCORE VALUE= 0.93586

Method 2 : Support Vector Machine Regression

Using Hypertuning Parameter

| S.no | Hypertuning Parameter | Kernel=linear R2-value | Kernel=rbf R2-value | Kernel=poly R-2value | Kernel=sigmoid R2-value |
|------|-----------------------|------------------------|---------------------|----------------------|-------------------------|
| 1 | Default C=1.0 | -0.05569 | -0.0574 | -0.05710 | -0.05720 |
| 2 | C=10 | -0.0396 | - 0.0568 | -0.05366 | -0.05471 |
| 3 | C=100 | 0.10646 | -0.05072 | -0.0198 | -0.03045 |
| 4 | C=1000 | 0.7802 | 0.00676 | 0.26616 | 0.18506 |
| 5 | C=10000 | 0.92399 | 0.37189 | 0.8129 | 0.8535 |
| 6 | C=100000 | 0.93012 | 0.70856 | 0.4002 | -0.8433 |

Best R2-Score Value = Kernel='Linear' , C=100000, R2 –Value = 0.93

Method 3: Decision Tree Regression

| S.No | <i>criterion</i> | <i>splitter</i> | <i>max_features</i> | R2_Score value |
|------|-----------------------|-----------------|---------------------|----------------|
| 1. 1 | <i>squared_error</i> | <i>best</i> | <i>None</i> | 0.92714 |
| 2. 2 | | random | None | 0.921929 |
| 3. | | Best | Sqrt | 0.86532 |
| 4. | | Random | sqrt | 0.68783 |
| 5. | | best | Log2 | 0.46712 |
| 6. | | Random | Log2 | 0.70393 |
| 7. | <i>friedman_mse</i> | Best | None | 0.90892 |
| 8. | | Random | None | 0.8847580 |
| 9. | | Best | Sqrt | 0.42498 |
| 10. | | Random | sqrt | 0.48827 |
| 11. | | Best | Log2 | 0.33513 |
| 12. | | Random | Log2 | -0.15869 |
| 13. | <i>absolute_error</i> | Best | None | 0.954159 |
| 14. | | Random | None | 0.82642 |
| 15. | | Best | Sqrt | 0.8824834 |
| 16. | | Random | Sqrt | 0.542352 |
| 17. | | Best | Log2 | -0.44432 |
| 18. | | Random | Log2 | 0.74759 |

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|-----|-----------------------|--------|------|----------|
| 19. | <i>poisson</i> | Best | None | 0.91447 |
| 20. | | Random | None | 0.672449 |
| 21. | | Best | Sqrt | 0.58253 |
| 22. | | Random | Sqrt | 0.77965 |
| 23. | | Best | Log2 | 0.67822 |
| 24. | | Random | Log2 | 0.20715 |

**Best Method for Decision Tree Regressor – criterion = absolute error, splitter= best,
max- features = None**

R2-Value = 0.9541