**Machine Learning-Regression-R\_Score Values**

**Dataset: Insurance**

**1.Multiple Linear Regression** (R\_Score) = **0.7894790349867009**

**2.Support Vector Machine-Regression**

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| **SVM\_Regression (STD)** | | | | | |
| **SI.NO.** | **HYPER  PARAMETER** | **LINEAR** | **RBF** | **POLY** | **SIGMOID** |
| 1 | C=1.0 | -0.010102665 | -0.083382386 | -0.075699656 | -0.075429243 |
| 2 | C=10 | 0.462468414 | -0.032273294 | 0.038716223 | 0.039307144 |
| 3 | C=100 | 0.628879286 | 0.320031783 | 0.617956962 | 0.527610355 |
| 4 | C=1000 | 0.764931174 | 0.810206485 | 0.856648768 | 0.287470695 |
| 5 | C=2000 | 0.744041831 | 0.854776643 | 0.860557926 | -0.593950973 |
| 6 | C=3000 | 0.74142366 | 0.866339395 | 0.859893008 | -2.124419479 |
| 7 | C=5000 | 0.74141793 | 0.874777817 | 0.859565641 | -7.530043238 |

The SVM-Regression use RBF and C=5000 (hyper parameter)  
R\_score = **0.874777817**

**3.Decision Tree-Regression**

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| **Decision\_Tree\_Regression** | | | | |
| **SI.NO.** | **criterion** | **splitter** | **max\_features** | **R2\_Score** |
| 1 | friedman\_mse | best | None | 0.69588719 |
| 2 | friedman\_mse | random | None | 0.71220457 |
| 3 | friedman\_mse | best | sqrt | 0.70050015 |
| 4 | friedman\_mse | random | sqrt | 0.68980518 |
| 5 | friedman\_mse | best | log2 | 0.71068497 |
| 6 | friedman\_mse | random | log2 | 0.74619917 |
| 7 | squared\_error | best | None | 0.69633744 |
| 8 | squared\_error | random | None | 0.71931098 |
| 9 | squared\_error | best | sqrt | 0.60951615 |
| 10 | squared\_error | random | sqrt | 0.71931098 |
| 11 | squared\_error | best | log2 | 0.76738613 |
| 12 | squared\_error | random | log2 | 0.63676448 |
| 13 | absolute\_error | best | None | 0.69016079 |
| 14 | absolute\_error | random | None | 0.69549925 |
| 15 | absolute\_error | best | sqrt | 0.59047706 |
| 16 | absolute\_error | random | sqrt | 0.73845369 |
| 17 | absolute\_error | best | log2 | 0.719922 |
| 18 | absolute\_error | random | log2 | 0.59945579 |
| 19 | poisson | best | None | 0.71754799 |
| 20 | poisson | random | None | 0.67895904 |
| 21 | poisson | best | sqrt | 0.75134486 |
| 22 | poisson | random | sqrt | 0.70693081 |
| 23 | poisson | best | log2 | 0.75547955 |
| 24 | poisson | random | log2 | 0.6743258 |

The Decision Tree use **criterion=** squared\_error , **splitter=** best**,** **max\_features**= log2

R\_score =**0.76738613**

**4.Random Forest**

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| **Random\_Forest** | | | | |
| **SI.NO.** | **criterion** | ***n\_estimators*** | **max\_features** | **R2\_Score** |
| 1 | squared\_error | 10 | sqrt | 0.853671439 |
| 2 | squared\_error | 50 | sqrt | 0.865042286 |
| 3 | squared\_error | 100 | sqrt | 0.868506878 |
| 4 | squared\_error | 10 | log2 | 0.844538356 |
| 5 | squared\_error | 50 | log2 | 0.865189498 |
| 6 | squared\_error | 100 | log2 | 0.870743523 |
| 7 | squared\_error | 10 | None | 0.837679284 |
| 8 | squared\_error | 50 | None | 0.853817835 |
| 9 | squared\_error | 100 | None | 0.854961572 |
| 10 | absolute\_error | 10 | sqrt | 0.864278209 |
| 11 | absolute\_error | 50 | sqrt | 0.870360398 |
| 12 | absolute\_error | 100 | sqrt | 0.872352051 |
| 13 | absolute\_error | 10 | log2 | 0.85979989 |
| 14 | absolute\_error | 50 | log2 | 0.872264686 |
| 15 | absolute\_error | 100 | log2 | 0.868086959 |
| 16 | absolute\_error | 10 | None | 0.845056409 |
| 17 | absolute\_error | 50 | None | 0.855506593 |
| 18 | absolute\_error | 100 | None | 0.854925901 |
| 19 | friedman\_mse | 10 | sqrt | 0.850876844 |
| 20 | friedman\_mse | 50 | sqrt | 0.873260014 |
| 21 | friedman\_mse | 100 | sqrt | 0.873410969 |
| 22 | friedman\_mse | 10 | log2 | 0.844100539 |
| 23 | friedman\_mse | 50 | log2 | 0.868782416 |
| 24 | friedman\_mse | 100 | log2 | 0.869824005 |
| 25 | friedman\_mse | 10 | None | 0.819785501 |
| 26 | friedman\_mse | 50 | None | 0.847562523 |
| 27 | friedman\_mse | 100 | None | 0.853352006 |
| 28 | poisson | 10 | sqrt | 0.861795051 |
| 29 | poisson | 50 | sqrt | 0.872890401 |
| 30 | poisson | 100 | sqrt | 0.870791136 |
| 31 | poisson | 10 | log2 | 0.855738714 |
| 32 | poisson | 50 | log2 | 0.869570412 |
| 33 | poisson | 100 | log2 | 0.872498264 |
| 34 | poisson | 10 | None | 0.845554692 |
| 35 | poisson | 50 | None | 0.855578956 |
| 36 | poisson | 100 | None | 0.854804434 |

The Random Forest use **criterion=** friedman\_mse, **n\_estimators**=100, **max\_features**= sqrt

R\_score =**0.873410969**