**1.Identify your problem statement**

**Need to find the insurance charges**

**2.Dataset total no of rows 5 total no of columns 24**

**3.Preproceessing method :pd.get dummies**

**4.Final model ->Random forest ->**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.No** | ***criterion*** | ***n\_estimators*** | **Max feature** | **R\_Score** |
| **1** | **friedman\_mse** | **50** | **Sqrt** | **0.86** |

**Machine learning Algorithms**

**-----------------------------------------**

**1.Multiple linear result :0.78**

**2.SVM 0.85**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | linear | Rbf | Poly | Sigmoid |
| C=10 | 0.46 | -0.032 | 0.038 | 0.039 |
| C=100 | 0.62 | 0.32 | 0.61 | 0.52 |
| C=200 | 0.63 | 0.47 | 0.75 | 0.54 |
| C=300 | 0.68 | 0.55 | 0.79 | 0.5 |
| C=400 | 0.71 | 0.61 | 0.81 | 0.51 |
| C=500 | 0.76 | 0.66 | 0.82 | 0.44 |
| C=1000 | 0.76 | 0.81 | 0.85 | 0.28 |
| C=10000 | 0.74 | 0.87 | 0.85 | -0.34 |

3.Decision Tree

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.No** | ***criterion*** | **Splitter** | **Max feature** | **R\_Score** |
| 1 | friedman\_mse | best | Sqrt | 0.73 |
| 2 | friedman\_mse | random | log2 | 0.68 |
| 3 | friedman\_mse | best | log2 | 0.76 |
| 4 | friedman\_mse | random | Sqrt | 0.64 |
| 5 | friedman\_mse | best | None | 0.69 |
| 6 | friedman\_mse | random | None | 0.71 |
| 7 | absolute\_error | best | Sqrt | 0.72 |
| 8 | absolute\_error | random | log2 | 0.69 |
| 9 | absolute\_error | best | log2 | 0.69 |
| 10 | absolute\_error | random | Sqrt | 0.72 |
| 11 | absolute\_error | best | None | 0.69 |
| 12 | absolute\_error | random | None | 0.69 |
| 13 | Poisson | best | Sqrt | 0.71 |
| 14 | Poisson | random | log2 | 0.6 |
| 15 | Poisson | best | log2 | 0.63 |
| 16 | Poisson | random | Sqrt | 0.66 |
| 17 | Poisson | best | None | 0.72 |
| 18 | Poisson | random | None | 0.72 |
| 19 | Squared Error | best | Sqrt | 0.71 |
| 20 | Squared Error | random | log2 | 0.69 |
| 21 | Squared Error | best | log2 | 0.7 |
| 22 | Squared Error | random | Sqrt | 0.65 |
| 23 | Squared Error | best | None | 0.69 |
| 24 | Squared Error | random | None | 0.7 |

Random Forest

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.No** | ***criterion*** | ***n\_estimators*** | **Max feature** | **R\_Score** |
| **1** | **friedman\_mse** | **50** | **Sqrt** | **0.86** |
| 2 | friedman\_mse | 50 | log2 | 0.85 |
| 3 | friedman\_mse | 50 | None | 0.85 |
| 4 | friedman\_mse | 100 | Sqrt | 0.86 |
| 5 | friedman\_mse | 100 | log2 | 0.86 |
| 6 | friedman\_mse | 100 | None | 0.85 |
| 7 | absolute\_error | 50 | Sqrt | 0.86 |
| 8 | absolute\_error | 50 | log2 | 0.86 |
| 9 | absolute\_error | 50 | None | 0.85 |
| 10 | absolute\_error | 100 | Sqrt | 0.86 |
| 11 | absolute\_error | 100 | log2 | 0.86 |
| 12 | absolute\_error | 100 | None | 0.85 |
| 13 | Poisson | 50 | Sqrt | 0.86 |
| 14 | Poisson | 50 | log2 | 0.86 |
| 15 | Poisson | 50 | None | 0.84 |
| 16 | Poisson | 100 | Sqrt | 0.86 |
| 17 | Poisson | 100 | log2 | 0.86 |
| 18 | Poisson | 100 | None | 0.85 |
| 19 | Squared Error | 50 | Sqrt | 0.86 |
| 20 | Squared Error | 50 | log2 | 0.86 |
| 21 | Squared Error | 50 | None | 0.84 |
| 22 | Squared Error | 100 | Sqrt | 0.86 |
| 23 | Squared Error | 100 | log2 | 0.86 |
| 24 | Squared Error | 100 | None | 0.85 |