**MODEL CREATION USING ARTIFICIAL INTELLEGENCE**

**Team No: 14**

**Team Name: AI Developers**

**Problem Statement:** Insurance Prediction

**Multiple linear regression:**

* R Score=78%

**Support Virtual Machine:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Model | Kernal | Degree | Gamma | C | R\_Score |
| 1 | rbf | no | no | 1000 | 0.8102064 |
| 2 | rbf | 3 | scale | 1 | -0.0833823 |
| 3 | rbf | 3 | scale | 10 | -0.032273293 |
| 4 | rbf | 3 | scale | 100 | 0.3200317832050831 |
| 5 | rbf | 3 | auto | 1 | -0.0833823 |
| 6 | rbf | 3 | auto | 0.1 | -0.089074515 |
| 7 | rbf | 3 | scale | 20 | 0.0185370198 |
| 8 | linear | 3 | auto | 0.1 | -0.0809599 |
| 9 | linear | 3 | auto | 10 | 0.46246841 |
| 10 | linear | 3 | auto | 1 | 0.010102665316081394 |
| 11 | linear | 3 | auto | 5 | 0.25231679915040206 |
| 12 | linear | 3 | scale | 1 | 0.010102665316081394 |
| 13 | linear | 3 | scale | 5 | 0.25231679915040206 |
| 14 | linear | 3 | scale | 10 | 0.462468414233968 |
| 15 | linear | 3 | scale | 1000 | 0.7649311738596909 |
| 16 | poly | 3 | scale | 0.1 | -0.08830237655410711 |
| 17 | poly | 3 | scale | 1 | -0.07569965570860893 |
| 18 | poly | 3 | scale | 5 | -0.022752298301248697 |
| 19 | poly | 3 | scale | 10 | 0.038716222760231456 |
| 20 | poly | 3 | scale | 1000 | 0.8566487675946569 |
| 21 | poly | 3 | auto | 0.1 | -0.08830237655410711 |
| 22 | poly | 3 | auto | 1 | -0.07569965570860893 |
| 23 | poly | 3 | auto | 5 | -0.022752298301248697 |
| 24 | poly | 3 | auto | 10 | 0.038716222760231456 |
| 25 | poly | 3 | auto | 100 | 0.6179569624059795 |
| 26 | poly | 3 | auto | 1000 | 0.8566487675946569 |
| 27 | sigmoid | 3 | auto | 0.1 | -0.08826991450485111 |
| 28 | sigmoid | 3 | auto | 1 | -0.07542924281107188 |
| 29 | sigmoid | 3 | auto | 10 | 0.03930714378274347 |
| 30 | sigmoid | 3 | auto | 1000 | 0.28747069486978327 |

**R\_Score : 85%**

**Random Forest:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Model | n\_estimators | random\_state | criterion | R\_Score |
| 1 | 50 | 0 | null | 0.8498329315421834 |
| 2 | 50 | 0 | Absolute\_error | 0.8526655993519747 |
| 3 | 50 | 0 | Friegman\_mse | 0.8500716139332296 |
| 4 | 50 | 0 | poisson | 0.8491075958392151 |
| 5 | 100 | 0 | Absolute\_error | 0.8520093621081837 |
| 6 | 100 | 0 | Square\_error | 0.8538307913484513 |
| 7 | 1000 | 0 | Square\_error | 0.8541778123151671 |

**Decision Tree Regression:**

|  |  |  |  |
| --- | --- | --- | --- |
| S.NO | CRITERION | SPLITTER | R\_Score |
| 1 | Friedman\_mse | random | 68% |
| 2 | Friedman\_mse | best | 70% |
| 3 | Squared\_error | random | 71% |
| 4 | Squared\_error | best | 69% |
| 5 | Absolute\_error | Random | 73% |
| 6 | Absolute\_error | Best | 66% |
| 7 | poisson | Random | 74% |
| 8 | poisson | Best | 72% |

R\_Score=74%

**Conclusion:**

Therefore, The Model 2 in Random forest regression is the best suitable algorithm as the r score value is the possible nearest to 1 as it denotes a good model.