**To find following the machine learning regression method using in r2 value**

**Customer Requirement is Insurance Charges Prediction.**

**1.MULTIPLE LINEAR REGRESSION**

**R²value=** 0.78913454847886

**2.SUPPORT VECTOR MACHINE:**

**i. General Process:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.NO** | **LINEAR (R\_VALUE)** | **RBF(NON LINEAR) (R\_VALUE)** | **POLY**  **(R\_VALUE)** | **SIGMOID**  **(R\_VALUE)** |
| **01.** | **-0.11153645400200585** | **-0.08844250999130221** | **-0.06456982885737417** | **-0.08994346957721744** |

**ii. C\_Penalty:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S.NO** | **HYPER PARAMETER**  **(C\_VALUE)** | **LINEAR (R\_VALUE)** | **RBF (NON-LINEAR) (R\_VALUE)** | **POLY**  **(R\_VALUE)** | **SIGMOID**  **(R\_VALUE)** |
| **01.** | **0.01** | **-0.07976404743917187** | **-0.08971639718848179** | **-0.0893165934318183** | **-0.08973333276340734** |
| **02.** | **0.1** | **-0.12212950264630229** | **-0.08959641310657296** | **-0.08621827721504305** | **-0.0897653080593388** |
| **03.** | **1.0** | **-0.11153645400200585** | **-0.08844250999130221** | **-0.06456982885737417** | **-0.08994346957721744** |
| **04.** | **10** | **-0.0017019221645011573** | **-0.08188099505418855** | **-0.09309903399514141** | **-0.09093075300415654** |
| **05.** | **100** | **0.543221029625509** | **-0.12450697022511292** | **-0.099238575921484** | **-0.11850300514767609** |
| **06.** | **1000** | **0.6338676426907017** | **-0.11761756075675889** | **-0.054656238441107785** | **-1.711230670174268** |

**iii. Standardisation:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.NO** | **LINEAR (R\_VALUE)** | **RBF (NON-LINEAR) (R\_VALUE)** | **POLY**  **(R\_VALUE)** | **SIGMOID**  **(R\_VALUE)** |
| **01.** | **-0.010195463359872203** | **-0.08340516096481387** | **-0.07571733771584865** | **-0.07544638548539218** |

**iv.** **Standardisation with C\_Penalty:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S.NO** | **HYPER PARAMETER (C\_VALUE)** | **LINEAR (R\_VALUE)** | **RBF (NON-LINEAR) (R\_VALUE)** | **POLY**  **(R\_VALUE)** | **SIGMOID**  **(R\_VALUE)** |
| **01.** | **0.01** | **-0.08885182513363699** | **-0.08966633344876018** | **-0.08958902826941961** | **-0.08958575555386594** |
| **02.** | **0.1** | **-0.08097786677552232** | **-0.08909549411794226** | **-0.08832283045804035** | **-0.08829032848192808** |
| **03.** | **1.0** | **-0.010195463359872203** | **-0.08340516096481387** | **-0.07571733771584865** | **-0.07544638548539218** |
| **04.** | **10** | **0.4624263375382691** | **-0.0323806003288718** | **0.03862518745153265** | **0.03944012147190734** |
| **05.** | **100** | **0.6289632029980752** | **0.31966454505291175** | **0.6164698351109894** | **0.5268415404135779** |
| **06.** | **1000** | **0.7648394817172854** | **0.8107195705218606** | **0.8546515591431774** | **0.21204541879834615** |
| **07.** | **10000** | **0.7413290358968662** | **0.8780047074440409** | **0.8572189614898338** | **-28.341651639245722** |

**Finally SVM in linear method is correct this Dataset.**

**SVR(kernel=** **"RBF",C=10000) = 0.8780047074440409**