**using logrithme scale**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | accuracy | precision | recall | F1-score |
| DT | **0.7834900638750** | 0.841498552877 | 0.7834900638750 | 0.7811426799113 |
| RF | 0.7646380411639 | 0.831558792882 | 0.7646380411639 | 0.7609418612646 |
| KNN | 0.769916607523 | 0.837852989021 | 0.769916607523 | 0.766270749061 |
| XGB | 0.758915897799 | 0.830371938002 | 0.758915897799 | 0.7545460787151 |
| SVM | 0.7377572746628 | 0.794604593405 | 0.7377572746628 | 0.7344656457031 |
| LR | 0.7408179559971 | 0.797691832636 | 0.7408179559971 | 0.7376043548567 |
| NB | 0.77138041163 | 0.810130621775 | 0.7713804116394 | 0.7706352613165 |

**Without log scale**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | accuracy | precision | recall | F1-score |
| DT | 0.76210965223 | 0.804291881342 | 0.7649485450674 | 0.7640895108152 |
| RF | **0.781050390347** | 0.838522796373 | 0.7800301632363 | 0.777566181189 |
| KNN | 0.778300212916 | 0.841736226511 | 0.7783002129169 | 0.775327011797 |
| XGB | 0.753326827537 | 0.826758045244 | 0.7533268275372 | 0.7485353186893 |
| SVM | 0.7564318665 | 0.807138589895 | 0.7564318665720 | 0.7542849891465 |
| LR | 0.753592973740 | 0.803993420851 | 0.753592973740 | 0.7514261977928 |
| NB | 0.5863200851667 | 0.577344474593 | 0.5863200851667 | 0.576011761511 |

**IQR removing**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | accuracy | precision | recall | F1-score |
| DT | **0.7895227111426** | 0.8442274565479 | 0.7895227111426 | 0.7875836903717 |
| RF | 0.7651259758694 | 0.8324259609581 | 0.7651259758694 | 0.7614042059532 |
| KNN | 0.7699166075230 | 0.8378529890217 | 0.7699166075230 | 0.7662707490612 |
| XGB | 0.7589158977998 | 0.8303719380029 | 0.7589158977998 | 0.7545460787151 |
| SVM | 0.7377572746628 | 0.7946045934051 | 0.7377572746628 | 0.7344656457031 |
| LR | 0.7408179559971 | 0.7976918326363 | 0.7408179559971 | 0.7376043548567 |
| NB | 0.7713804116394 | 0.8101306217755 | 0.7713804116394 | 0.7706352613165 |

**IQR removing sans log scale**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | accuracy | precision | recall | F1-score |
| DT | 0.7661018452803 | 0.8044421633433 | 0.7661018452803 | 0.7653487997331 |
| RF | **0.7810503903477** | 0.839889694484 | 0.7810503903477 | 0.7785755306717 |
| KNN | 0.7783002129169 | 0.8417362265110 | 0.7783002129169 | 0.7753270117972 |
| XGB | 0.7533268275372 | 0.826758045244 | 0.7533268275372 | 0.7485353186893 |
| SVM | 0.7564318665720 | 0.8071385898955 | 0.756431866572 | 0.7542849891465 |
| LR | 0.753592973740 | 0.8039934208515 | 0.7535929737402 | 0.7514261977928 |
| NB | 0.5863200851667 | 0.5773444745930 | 0.586320085166 | 0.5760117615113 |

**IQR with capping**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | accuracy | precision | recall | F1-score |
| DT | 0.7482256919801 | 0.822640490404 | 0.7482256919801 | 0.743125011558 |
| RF | 0.7519073811213 | 0.8269998299949 | 0.7519073811213 | 0.7468706632994 |
| KNN | **0.7677430801987** | 0.8335896574831 | 0.7677430801987 | 0.7642495135124 |
| XGB | 0.7357611781405 | 0.8186325704853 | 0.7357611781405 | 0.7290644954837 |
| SVM | 0.7231635911994 | 0.7556522788477 | 0.7231635911994 | 0.7226785989624 |
| LR | 0.6967707594038 | 0.7450021240685 | 0.6967707594038 | 0.6936143187193 |
| NB | 0.7590046132008 | 0.8233178772898 | 0.7590046132008 | 0.7554251479155 |

**IQR capping sans log scale**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | accuracy | precision | recall | F1-score |
| DT | 0.6761444286728 | 0.6851428955156 | 0.6761444286728 | 0.6777020254598 |
| RF | 0.6444730305180 | 0.6679947627338 | 0.6444730305180 | 0.6447630954076 |
| KNN | 0.7542139815471 | 0.7950787636818 | 0.7542139815471 | 0.7530890235347 |
| XGB | 0.5847675656493 | 0.5934210615378 | 0.5847675656493 | 0.5867553748904 |
| SVM | 0.6665188076650 | 0.6981633888695 | 0.6665188076650 | 0.6655941191111 |
| LR | 0.6632806955287 | 0.6995523584833 | 0.663280695528 | 0.6614612419602 |
| NB | 0.7596699787083 | 0.8231621622690 | 0.7596699787083 | 0.7561995219586 |

**IQR with removing using ID3**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | accuracy | precision | recall | F1-score |
| DT | 0.748403122782 | 0.8112899641113 | 0.7484031227821 | 0.7446756764040 |
| RF | 0.7244056068133 | 0.8041827616439 | 0.7244056068133 | 0.7175506746291 |
| KNN | 0.7226312987934 | 0.8043892965080 | 0.7226312987934 | 0.7154086749696 |
| XGB | **0.7571415897799** | 0.8133177541313 | 0.7571415897799 | 0.7544102362328 |
| SVM | 0.7392654364797 | 0.8072003111595 | 0.7392654364797 | 0.7346208124945 |
| LR | 0.7446770759403 | 0.8099956329459 | 0.7446770759403 | 0.7405420012989 |
| NB | 0.7157114975159 | 0.8003589824918 | 0.7157114975159 | 0.7076907655984 |

**IQR** with **capping using ID3**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | accuracy | precision | recall | F1-score |
| DT | 0.7488910574875 | 0.7728433419546 | 0.7488910574875 | 0.7493645323468 |
| RF | 0.7126064584811 | 0.7955281470453 | 0.7126064584811 | 0.7046587749861 |
| KNN | 0.7080819730305 | 0.8063782204902 | 0.7080819730305 | 0.6975439559175 |
| XGB | 0.7507984386089 | 0.7905027489425 | 0.7507984386089 | 0.7497575259319 |
| SVM | 0.7743523775727 | 0.7881777250015 | 0.7743523775727 | 0.7753637162221 |
| LR | 0.7742193044712 | 0.801895218403 | 0.774219304471 | 0.774422366975 |
| NB | **0.7531937544357** | 0.798588995154 | 0.7531937544357 | 0.751570651069 |

**IQR with removing using Random forest**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | accuracy | precision | recall | F1-score |
| DT | 0.6875443577004 | 0.7635322467187 | 0.6875443577004 | 0.6792230218969 |
| RF | 0.683640880056 | 0.777003815153 | 0.6836408800567 | 0.6719788055244 |
| KNN | 0.700807310149 | 0.7860517822431 | 0.7008073101490 | 0.6917737273944 |
| XGB | 0.7120298083747 | 0.8046596376343 | 0.7120298083747 | 0.7026099292140 |
| SVM | 0.742636621717 | 0.8046873699524 | 0.7426366217175 | 0.7388366599426 |
| LR | **0.7593594748048** | 0.8160722703982 | 0.7593594748048 | 0.7566203126236 |
| NB | 0.7398864442867 | 0.8120331158573 | 0.7398864442867 | 0.7347350168931 |

**IQR** with **capping using Random forest**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | accuracy | precision | recall | F1-score |
| DT | 0.7311923349893 | 0.760991444133 | 0.7311923349893 | 0.7310637836267 |
| RF | 0.702670333569 | 0.7929205173923 | 0.7026703335699 | 0.6929705797404 |
| KNN | 0.703291341376 | 0.8055537186580 | 0.7032913413768 | 0.6917852893591 |
| XGB | 0.7647267565649 | 0.7961464021413 | 0.7647267565649 | 0.7645959875325 |
| SVM | 0.7743523775727 | 0.7881777250015 | 0.7743523775727 | 0.7753637162221 |
| LR | **0.7764371894960** | 0.8031727977796 | 0.7764371894960 | 0.7767133279192 |
| NB | 0.7288857345635 | 0.8089673307040 | 0.7288857345635 | 0.7222139768391 |

**IQR with removing using RFE**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | accuracy | precision | recall | F1-score |
| DT |  |  |  |  |
| RF |  |  |  |  |
| KNN |  |  |  |  |
| XGB |  |  |  |  |
| SVM |  |  |  |  |
| LR |  |  |  |  |
| NB |  |  |  |  |

**IQR** with **capping using RFE**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | accuracy | precision | recall | F1-score |
| DT |  |  |  |  |
| RF |  |  |  |  |
| KNN |  |  |  |  |
| XGB |  |  |  |  |
| SVM |  |  |  |  |
| LR |  |  |  |  |
| NB |  |  |  |  |

**Correlation**

**0.8**

**IQR with removing outliers**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | accuracy | precision | recall | F1-score |
| DT |  |  |  |  |
| RF |  |  |  |  |
| KNN |  |  |  |  |
| XGB |  |  |  |  |
| SVM |  |  |  |  |
| LR |  |  |  |  |
| NB |  |  |  |  |

**IQR wth capping**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | accuracy | precision | recall | F1-score |
| DT |  |  |  |  |
| RF |  |  |  |  |
| KNN |  |  |  |  |
| XGB |  |  |  |  |
| SVM |  |  |  |  |
| LR |  |  |  |  |
| NB |  |  |  |  |

**Combine between random forest and RFE**

**Remove**  **IQR** and **Random Forest**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | accuracy | precision | recall | F1-score |
| DT |  |  |  |  |
| RF |  |  |  |  |
| KNN |  |  |  |  |
| XGB |  |  |  |  |
| SVM |  |  |  |  |
| LR |  |  |  |  |
| NB |  |  |  |  |

**IQR** with **capping**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | accuracy | precision | recall | F1-score |
| DT |  |  |  |  |
| RF |  |  |  |  |
| KNN |  |  |  |  |
| XGB |  |  |  |  |
| SVM |  |  |  |  |
| LR |  |  |  |  |
| NB |  |  |  |  |