decision tree

max depth is 40

accuracy is 0.928

precision 0.927 recall 0.930 score 0.928 ROC\_AUC 0.929

max depth is 80

accuracy is 0.928

precision 0.926 recall 0.930 score 0.928 ROC\_AUC 0.929

max depth is 120

accuracy is 0.928

precision 0.925 recall 0.931 score 0.928 ROC\_AUC 0.929

max depth is 160

accuracy is 0.927

precision 0.924 recall 0.931 score 0.928 ROC\_AUC 0.928

random forest

number of estimators is 16 max\_depth is 16

accuracy is 0.942

precision 0.953 recall 0.931 score 0.942 ROC\_AUC 0.983

number of estimators is 16 max\_depth is 32

accuracy is 0.949

precision 0.957 recall 0.941 score 0.949 ROC\_AUC 0.986

number of estimators is 16 max\_depth is 48

accuracy is 0.949

precision 0.958 recall 0.939 score 0.949 ROC\_AUC 0.985

number of estimators is 16 max\_depth is 64

accuracy is 0.949

precision 0.958 recall 0.938 score 0.948 ROC\_AUC 0.985

number of estimators is 16 max\_depth is 80

accuracy is 0.948

precision 0.957 recall 0.939 score 0.948 ROC\_AUC 0.985

number of estimators is 16 max\_depth is 96

accuracy is 0.948

precision 0.958 recall 0.938 score 0.948 ROC\_AUC 0.985

number of estimators is 16 max\_depth is 112

accuracy is 0.948

precision 0.959 recall 0.937 score 0.948 ROC\_AUC 0.985

number of estimators is 16 max\_depth is 128

accuracy is 0.949

precision 0.960 recall 0.938 score 0.949 ROC\_AUC 0.985

number of estimators is 24 max\_depth is 16

accuracy is 0.943

precision 0.953 recall 0.931 score 0.942 ROC\_AUC 0.984

number of estimators is 24 max\_depth is 32

accuracy is 0.950

precision 0.956 recall 0.942 score 0.949 ROC\_AUC 0.986

number of estimators is 24 max\_depth is 48

accuracy is 0.951

precision 0.959 recall 0.942 score 0.950 ROC\_AUC 0.986

number of estimators is 24 max\_depth is 64

accuracy is 0.950

precision 0.958 recall 0.941 score 0.950 ROC\_AUC 0.986

number of estimators is 24 max\_depth is 80

accuracy is 0.950

precision 0.957 recall 0.941 score 0.949 ROC\_AUC 0.986

number of estimators is 24 max\_depth is 96

accuracy is 0.950

precision 0.957 recall 0.942 score 0.949 ROC\_AUC 0.986

number of estimators is 24 max\_depth is 112

accuracy is 0.950

precision 0.957 recall 0.942 score 0.949 ROC\_AUC 0.986

number of estimators is 24 max\_depth is 128

accuracy is 0.950

precision 0.959 recall 0.941 score 0.950 ROC\_AUC 0.986

number of estimators is 32 max\_depth is 16

accuracy is 0.943

precision 0.955 recall 0.930 score 0.942 ROC\_AUC 0.984

number of estimators is 32 max\_depth is 32

accuracy is 0.951

precision 0.958 recall 0.944 score 0.951 ROC\_AUC 0.987

number of estimators is 32 max\_depth is 48

accuracy is 0.951

precision 0.958 recall 0.943 score 0.950 ROC\_AUC 0.987

number of estimators is 32 max\_depth is 64

accuracy is 0.951

precision 0.957 recall 0.943 score 0.950 ROC\_AUC 0.987

number of estimators is 32 max\_depth is 80

accuracy is 0.951

precision 0.958 recall 0.943 score 0.951 ROC\_AUC 0.987

number of estimators is 32 max\_depth is 96

accuracy is 0.951

precision 0.958 recall 0.944 score 0.951 ROC\_AUC 0.987

number of estimators is 32 max\_depth is 112

accuracy is 0.951

precision 0.959 recall 0.943 score 0.951 ROC\_AUC 0.987

number of estimators is 32 max\_depth is 128

accuracy is 0.950

precision 0.958 recall 0.942 score 0.950 ROC\_AUC 0.987

number of estimators is 40 max\_depth is 16

accuracy is 0.944

precision 0.955 recall 0.932 score 0.943 ROC\_AUC 0.984

number of estimators is 40 max\_depth is 32

accuracy is 0.952

precision 0.958 recall 0.945 score 0.951 ROC\_AUC 0.988

number of estimators is 40 max\_depth is 48

accuracy is 0.951

precision 0.958 recall 0.944 score 0.951 ROC\_AUC 0.987

number of estimators is 40 max\_depth is 64

accuracy is 0.951

precision 0.958 recall 0.944 score 0.951 ROC\_AUC 0.987

number of estimators is 40 max\_depth is 80

accuracy is 0.952

precision 0.959 recall 0.944 score 0.951 ROC\_AUC 0.987

number of estimators is 40 max\_depth is 96

accuracy is 0.951

precision 0.957 recall 0.944 score 0.951 ROC\_AUC 0.987

number of estimators is 40 max\_depth is 112

accuracy is 0.951

precision 0.958 recall 0.944 score 0.951 ROC\_AUC 0.987

number of estimators is 40 max\_depth is 128

accuracy is 0.951

precision 0.958 recall 0.944 score 0.951 ROC\_AUC 0.987

number of estimators is 48 max\_depth is 16

accuracy is 0.944

precision 0.955 recall 0.932 score 0.943 ROC\_AUC 0.984

number of estimators is 48 max\_depth is 32

accuracy is 0.952

precision 0.958 recall 0.945 score 0.952 ROC\_AUC 0.988

number of estimators is 48 max\_depth is 48

accuracy is 0.952

precision 0.958 recall 0.944 score 0.951 ROC\_AUC 0.987

number of estimators is 48 max\_depth is 64

accuracy is 0.952

precision 0.958 recall 0.944 score 0.951 ROC\_AUC 0.987

number of estimators is 48 max\_depth is 80

accuracy is 0.952

precision 0.959 recall 0.945 score 0.952 ROC\_AUC 0.987

number of estimators is 48 max\_depth is 96

accuracy is 0.952

precision 0.958 recall 0.945 score 0.951 ROC\_AUC 0.987

number of estimators is 48 max\_depth is 112

accuracy is 0.951

precision 0.958 recall 0.944 score 0.951 ROC\_AUC 0.988

number of estimators is 48 max\_depth is 128

accuracy is 0.952

precision 0.959 recall 0.944 score 0.951 ROC\_AUC 0.987

number of estimators is 56 max\_depth is 16

accuracy is 0.944

precision 0.955 recall 0.933 score 0.943 ROC\_AUC 0.984

number of estimators is 56 max\_depth is 32

accuracy is 0.952

precision 0.957 recall 0.946 score 0.951 ROC\_AUC 0.988

number of estimators is 56 max\_depth is 48

accuracy is 0.952

precision 0.957 recall 0.945 score 0.951 ROC\_AUC 0.987

number of estimators is 56 max\_depth is 64

accuracy is 0.952

precision 0.959 recall 0.945 score 0.952 ROC\_AUC 0.987

number of estimators is 56 max\_depth is 80

accuracy is 0.952

precision 0.959 recall 0.945 score 0.952 ROC\_AUC 0.987

number of estimators is 56 max\_depth is 96

accuracy is 0.952

precision 0.958 recall 0.945 score 0.952 ROC\_AUC 0.988

number of estimators is 56 max\_depth is 112

accuracy is 0.952

precision 0.958 recall 0.945 score 0.952 ROC\_AUC 0.988

number of estimators is 56 max\_depth is 128

accuracy is 0.952

precision 0.959 recall 0.945 score 0.952 ROC\_AUC 0.988

number of estimators is 64 max\_depth is 16

accuracy is 0.945

precision 0.955 recall 0.934 score 0.944 ROC\_AUC 0.985

number of estimators is 64 max\_depth is 32

accuracy is 0.952

precision 0.958 recall 0.945 score 0.952 ROC\_AUC 0.988

number of estimators is 64 max\_depth is 48

accuracy is 0.952

precision 0.958 recall 0.945 score 0.952 ROC\_AUC 0.988

number of estimators is 64 max\_depth is 64

accuracy is 0.952

precision 0.958 recall 0.945 score 0.951 ROC\_AUC 0.988

number of estimators is 64 max\_depth is 80

accuracy is 0.952

precision 0.957 recall 0.946 score 0.952 ROC\_AUC 0.988

number of estimators is 64 max\_depth is 96

accuracy is 0.952

precision 0.958 recall 0.945 score 0.952 ROC\_AUC 0.988

number of estimators is 64 max\_depth is 112

accuracy is 0.952

precision 0.958 recall 0.945 score 0.951 ROC\_AUC 0.988

number of estimators is 64 max\_depth is 128

accuracy is 0.952

precision 0.958 recall 0.946 score 0.952 ROC\_AUC 0.988

GradientBoostingClassifier

number of iterations is: 100

accuracy is 0.914

precision 0.939 recall 0.885 score 0.911 ROC\_AUC 0.969

number of iterations is: 300

accuracy is 0.919

precision 0.941 recall 0.893 score 0.916 ROC\_AUC 0.972

number of iterations is: 500

accuracy is 0.920

precision 0.941 recall 0.896 score 0.918 ROC\_AUC 0.972

number of iterations is: 700

accuracy is 0.921

precision 0.942 recall 0.898 score 0.919 ROC\_AUC 0.972

number of iterations is: 900

accuracy is 0.922

precision 0.942 recall 0.899 score 0.920 ROC\_AUC 0.973

LogisticRegressionCV

C is: 1

accuracy is 4.432

precision 0.910 recall 0.858 score 0.883 ROC\_AUC 0.936

C is: 10

accuracy is 4.486

precision 0.931 recall 0.858 score 0.893 ROC\_AUC 0.949

C is: 100

accuracy is 4.487

precision 0.932 recall 0.857 score 0.893 ROC\_AUC 0.950

decision tree

accuracy is 0.8735577471154943

error on not val 0.12642485801485137

error on val 0.13978494623655913

precision recall f1-score support

class 0 1.00 0.87 0.93 499348

class 1 0.01 0.86 0.02 651

avg / total 1.00 0.87 0.93 499999

0.868255164796

random forest

accuracy is 0.9664779329558659

error on not val 0.033481660084750516

error on val 0.06451612903225806

precision recall f1-score support

class 0 1.00 0.97 0.98 499348

class 1 0.04 0.94 0.07 651

avg / total 1.00 0.97 0.98 499999

0.982110456982

GradientBoostingClassifier

accuracy is 0.9192038384076768

error on not val 0.08083741198522874

error on val 0.04915514592933948

precision recall f1-score support

class 0 1.00 0.92 0.96 499348

class 1 0.02 0.95 0.03 651

avg / total 1.00 0.92 0.96 499999

0.983826561141

LogisticRegression

accuracy is 0.9032998065996132

error on not val 0.09667406297812348

error on val 0.11674347158218126

precision recall f1-score support

class 0 1.00 0.90 0.95 499348

class 1 0.01 0.88 0.02 651

avg / total 1.00 0.90 0.95 499999

0.968694484828