**1.SVM linear**

Confusion Matrix and Statistics

Reference

Prediction 0 1

0 798 61

1 38 482

Accuracy : 0.9282

95% CI : (0.9133, 0.9413)

No Information Rate : 0.6062

P-Value [Acc > NIR] : < 2e-16

Kappa : 0.8485

Mcnemar's Test P-Value : 0.02703

Sensitivity : 0.9545

Specificity : 0.8877

Pos Pred Value : 0.9290

Neg Pred Value : 0.9269

Prevalence : 0.6062

Detection Rate : 0.5787

Detection Prevalence : 0.6229

Balanced Accuracy : 0.9211

'Positive' Class : 0

**2**.**SVM linear with cross validation**

Confusion Matrix and Statistics

Reference

Prediction 0 1

0 796 61

1 40 482

Accuracy : 0.9268

95% CI : (0.9117, 0.94)

No Information Rate : 0.6062

P-Value [Acc > NIR] : < 2e-16

Kappa : 0.8455

Mcnemar's Test P-Value : 0.04658

Sensitivity : 0.9522

Specificity : 0.8877

Pos Pred Value : 0.9288

Neg Pred Value : 0.9234

Prevalence : 0.6062

Detection Rate : 0.5772

Detection Prevalence : 0.6215

Balanced Accuracy : 0.9199

'Positive' Class : 0

The final C value used was 60.

**3**. **SVM NON LINEAR WITH TANHDOT.**

Confusion Matrix and Statistics

Reference

Prediction 0 1

0 688 138

1 148 405

Accuracy : 0.7926

95% CI : (0.7702, 0.8137)

No Information Rate : 0.6062

P-Value [Acc > NIR] : <2e-16

Kappa : 0.567

Mcnemar's Test P-Value : 0.5946

Sensitivity : 0.8230

Specificity : 0.7459

Pos Pred Value : 0.8329

Neg Pred Value : 0.7324

Prevalence : 0.6062

Detection Rate : 0.4989

Detection Prevalence : 0.5990

Balanced Accuracy : 0.7844

'Positive' Class : 0

**4.** **RANDOM FOREST.**

Confusion Matrix and Statistics

Reference

Prediction 0 1

0 814 47

1 22 496

Accuracy : 0.95

95% CI : (0.9371, 0.9609)

No Information Rate : 0.6062

P-Value [Acc > NIR] : < 2.2e-16

Kappa : 0.8943

Mcnemar's Test P-Value : 0.003861

Sensitivity : 0.9737

Specificity : 0.9134

Pos Pred Value : 0.9454

Neg Pred Value : 0.9575

Prevalence : 0.6062

Detection Rate : 0.5903

Detection Prevalence : 0.6244

Balanced Accuracy : 0.9436

'Positive' Class : 0

**4.** **RANDOM FOREST CROSS VALIDATION.**

Confusion Matrix and Statistics

Reference

Prediction 0 1

0 816 50

1 20 493

Accuracy : 0.9492

95% CI : (0.9363, 0.9602)

No Information Rate : 0.6062

P-Value [Acc > NIR] : < 2.2e-16

Kappa : 0.8926

Mcnemar's Test P-Value : 0.0005279

Sensitivity : 0.9761

Specificity : 0.9079

Pos Pred Value : 0.9423

Neg Pred Value : 0.9610

Prevalence : 0.6062

Detection Rate : 0.5917

Detection Prevalence : 0.6280

Balanced Accuracy : 0.9420

'Positive' Class : 0

The final value used for the model was mtry = 7.

**KNN**

Confusion Matrix and Statistics

Reference

Prediction 0 1

0 768 87

1 68 456

Accuracy : 0.8876

95% CI : (0.8697, 0.9038)

No Information Rate : 0.6062

P-Value [Acc > NIR] : <2e-16

Kappa : 0.7631

Mcnemar's Test P-Value : 0.1482

Sensitivity : 0.9187

Specificity : 0.8398

Pos Pred Value : 0.8982

Neg Pred Value : 0.8702

Prevalence : 0.6062

Detection Rate : 0.5569

Detection Prevalence : 0.6200

Balanced Accuracy : 0.8792

'Positive' Class : 0

optimum k value is 7.

**NEURAL NETWORKS.**

Confusion Matrix and Statistics

Reference

Prediction 0 1

0 800 54

1 36 489

Accuracy : 0.9347

95% CI : (0.9204, 0.9472)

No Information Rate : 0.6062

P-Value [Acc > NIR] : < 2e-16

Kappa : 0.8625

Mcnemar's Test P-Value : 0.07314

Sensitivity : 0.9569

Specificity : 0.9006

Pos Pred Value : 0.9368

Neg Pred Value : 0.9314

Prevalence : 0.6062

Detection Rate : 0.5801

Detection Prevalence : 0.6193

Balanced Accuracy : 0.9287

'Positive' Class : 0

**LOGISTIC REGRESSION.**

Confusion Matrix and Statistics

Reference

Prediction 0 1

0 790 46

1 56 487

Accuracy : 0.926

95% CI : (0.9109, 0.9393)

No Information Rate : 0.6135

P-Value [Acc > NIR] : <2e-16

Kappa : 0.8446

Mcnemar's Test P-Value : 0.3729

Sensitivity : 0.9338

Specificity : 0.9137

Pos Pred Value : 0.9450

Neg Pred Value : 0.8969

Prevalence : 0.6135

Detection Rate : 0.5729

Detection Prevalence : 0.6062

Balanced Accuracy : 0.9238

'Positive' Class : 0

**CART with cross validation.**

Confusion Matrix and Statistics

Reference

Prediction 0 1

0 792 100

1 44 443

Accuracy : 0.8956

95% CI : (0.8782, 0.9112)

No Information Rate : 0.6062

P-Value [Acc > NIR] : < 2.2e-16

Kappa : 0.7773

Mcnemar's Test P-Value : 4.576e-06

Sensitivity : 0.9474

Specificity : 0.8158

Pos Pred Value : 0.8879

Neg Pred Value : 0.9097

Prevalence : 0.6062

Detection Rate : 0.5743

Detection Prevalence : 0.6468

Balanced Accuracy : 0.8816

'Positive' Class : 0

The final value used for the model was cp = 0.01.

**BAGGING**

Confusion Matrix and Statistics

Reference

Prediction 0 1

0 804 59

1 32 484

Accuracy : 0.934

95% CI : (0.9196, 0.9465)

No Information Rate : 0.6062

P-Value [Acc > NIR] : < 2e-16

Kappa : 0.8606

Mcnemar's Test P-Value : 0.00642

Sensitivity : 0.9617

Specificity : 0.8913

Pos Pred Value : 0.9316

Neg Pred Value : 0.9380

Prevalence : 0.6062

Detection Rate : 0.5830

Detection Prevalence : 0.6258

Balanced Accuracy : 0.9265

'Positive' Class : 0

**GBM WITH TUNING**

Confusion Matrix and Statistics

Reference

Prediction 0 1

0 795 27

1 41 516

Accuracy : 0.9507

95% CI : (0.9379, 0.9615)

No Information Rate : 0.6062

P-Value [Acc > NIR] : <2e-16

Kappa : 0.8972

Mcnemar's Test P-Value : 0.1149

Sensitivity : 0.9510

Specificity : 0.9503

Pos Pred Value : 0.9672

Neg Pred Value : 0.9264

Prevalence : 0.6062

Detection Rate : 0.5765

Detection Prevalence : 0.5961

Balanced Accuracy : 0.9506

'Positive' Class : 0

model\_gbm2 <-gbm(X1 ~ . , cv.folds = 20, interaction.depth = 10,shrinkage =0.0205,distribution='bernoulli',data=train\_datanew1, n.trees = 1500)

**STACKING WITH SVM ON TOP**

Confusion Matrix and Statistics

Reference

Prediction 0 1

0 795 37

1 41 506

Accuracy : 0.9434

95% CI : (0.9299, 0.955)

No Information Rate : 0.6062

P-Value [Acc > NIR] : <2e-16

Kappa : 0.8817

Mcnemar's Test P-Value : 0.7341

Sensitivity : 0.9510

Specificity : 0.9319

Pos Pred Value : 0.9555

Neg Pred Value : 0.9250

Prevalence : 0.6062

Detection Rate : 0.5765

Detection Prevalence : 0.6033

Balanced Accuracy : 0.9414

'Positive' Class : 0

**STACKING WITH RANDOM FOREST ON TOP**

Confusion Matrix and Statistics

Reference

Prediction 0 1

0 800 34

1 36 509

Accuracy : 0.9492

95% CI : (0.9363, 0.9602)

No Information Rate : 0.6062

P-Value [Acc > NIR] : <2e-16

Kappa : 0.8937

Mcnemar's Test P-Value : 0.9049

Sensitivity : 0.9569

Specificity : 0.9374

Pos Pred Value : 0.9592

Neg Pred Value : 0.9339

Prevalence : 0.6062

Detection Rate : 0.5801

Detection Prevalence : 0.6048

Balanced Accuracy : 0.9472

'Positive' Class : 0

**MAJORITY VOTING WITH GBM,GLM AND RANDOM FOREST**

Confusion Matrix and Statistics

Reference

Prediction 0 1

0 809 34

1 27 509

Accuracy : 0.9558

95% CI : (0.9435, 0.966)

No Information Rate : 0.6062

P-Value [Acc > NIR] : <2e-16

Kappa : 0.9071

Mcnemar's Test P-Value : 0.4424

Sensitivity : 0.9677

Specificity : 0.9374

Pos Pred Value : 0.9597

Neg Pred Value : 0.9496

Prevalence : 0.6062

Detection Rate : 0.5867

Detection Prevalence : 0.6113

Balanced Accuracy : 0.9525

'Positive' Class : 0

**MAJORITY VOTING WITH RANDOM FOREST, RANDOM FOREST WITH TUNING,GBM**

Confusion Matrix and Statistics

Reference

Prediction 0 1

0 813 47

1 23 496

Accuracy : 0.9492

95% CI : (0.9363, 0.9602)

No Information Rate : 0.6062

P-Value [Acc > NIR] : < 2.2e-16

Kappa : 0.8928

Mcnemar's Test P-Value : 0.005977

Sensitivity : 0.9725

Specificity : 0.9134

Pos Pred Value : 0.9453

Neg Pred Value : 0.9557

Prevalence : 0.6062

Detection Rate : 0.5896

Detection Prevalence : 0.6236

Balanced Accuracy : 0.9430

'Positive' Class : 0

**STACKING WITH GBM ON TOP**

Confusion Matrix and Statistics

Reference

Prediction 0 1

0 800 34

1 36 509

Accuracy : 0.9492

95% CI : (0.9363, 0.9602)

No Information Rate : 0.6062

P-Value [Acc > NIR] : <2e-16

Kappa : 0.8937

Mcnemar's Test P-Value : 0.9049

Sensitivity : 0.9569

Specificity : 0.9374

Pos Pred Value : 0.9592

Neg Pred Value : 0.9339

Prevalence : 0.6062

Detection Rate : 0.5801

Detection Prevalence : 0.6048

Balanced Accuracy : 0.9472

'Positive' Class : 0

**STACKING WITH GLM ON TOP**

Confusion Matrix and Statistics

Reference

Prediction 0 1

0 793 33

1 43 510

Accuracy : 0.9449

95% CI : (0.9315, 0.9563)

No Information Rate : 0.6062

P-Value [Acc > NIR] : <2e-16

Kappa : 0.8849

Mcnemar's Test P-Value : 0.3019

Sensitivity : 0.9486

Specificity : 0.9392

Pos Pred Value : 0.9600

Neg Pred Value : 0.9222

Prevalence : 0.6062

Detection Rate : 0.5751

Detection Prevalence : 0.5990

Balanced Accuracy : 0.9439

'Positive' Class : 0