

Random Forest for predicting the Success Rate Levels 0-1

```
##
## Successful Unsuccessful
##      108      228
```

Randomforest base model

```
##
## Call:
## randomForest(formula = SR ~ NP + H + AGR + TA + NASA + RS, data = train,      proximity = TRUE)
##           Type of random forest: classification
##           Number of trees: 500
## No. of variables tried at each split: 2
##
##           OOB estimate of  error rate: 29%
## Confusion matrix:
##           Successful Unsuccessful class.error
## Successful           23           47  0.6714286
## Unsuccessful          20          141  0.1242236
```

Randomforest extended model

```
##
## Call:
##  randomForest(formula = SR ~ NASA + H + NP + NT + AGR + TA + EM +      DWH + DS + Rank + WH, data =
##                Type of random forest: classification
##                Number of trees: 500
## No. of variables tried at each split: 3
##
##                OOB estimate of  error rate: 25.11%
## Confusion matrix:
##                Successful Unsuccessful class.error
## Successful           26           44 0.62857143
## Unsuccessful         14          147 0.08695652
```

Prediction on test data

```
## Confusion Matrix and Statistics
##
##               Reference
## Prediction    Successful Unsuccessful
##   Successful         15          4
##   Unsuccessful        23         63
##
##               Accuracy : 0.7429
##               95% CI : (0.6483, 0.8232)
##   No Information Rate : 0.6381
##   P-Value [Acc > NIR] : 0.014831
##
##               Kappa : 0.3757
##
##   McNemar's Test P-Value : 0.000532
##
##               Sensitivity : 0.3947
##               Specificity : 0.9403
##               Pos Pred Value : 0.7895
##               Neg Pred Value : 0.7326
##               Prevalence : 0.3619
##               Detection Rate : 0.1429
##   Detection Prevalence : 0.1810
##               Balanced Accuracy : 0.6675
##
##   'Positive' Class : Successful
##
```

Sensitivity-Specificity-Precision-Recall-F1

##	Sensitivity	Specificity	Pos Pred Value
##	0.3947368	0.9402985	0.7894737
##	Neg Pred Value	Precision	Recall
##	0.7325581	0.7894737	0.3947368
##	F1	Prevalence	Detection Rate
##	0.5263158	0.3619048	0.1428571
##	Detection Prevalence	Balanced Accuracy	
##	0.1809524	0.6675177	

Multi-class area under the curve: 0.6771