

Figure RF – Random Forest Model

```
> library(caret)
Loading required package: lattice
Loading required package: ggplot2
> set.seed(15555)
> fitModel2<-trainControl(method="cv", number=5, verbose=T)
> rffitModel2<-train(classe~.,data=dataTrain, method="rf", trControl=fitModel2, verbose=F)
Loading required package: randomForest
randomForest 4.6-12
Type rfNews() to see new features/changes/bug fixes.
+ Fold1: mtry= 2
- Fold1: mtry= 2
+ Fold1: mtry=26
- Fold1: mtry=26
+ Fold1: mtry=51
- Fold1: mtry=51
+ Fold2: mtry= 2
- Fold2: mtry= 2
+ Fold2: mtry=26
- Fold2: mtry=26
+ Fold2: mtry=51
- Fold2: mtry=51
+ Fold3: mtry= 2
- Fold3: mtry= 2
+ Fold3: mtry=26
- Fold3: mtry=26
+ Fold3: mtry=51
- Fold3: mtry=51
+ Fold4: mtry= 2
- Fold4: mtry= 2
+ Fold4: mtry=26
- Fold4: mtry=26
+ Fold4: mtry=51
- Fold4: mtry=51
+ Fold5: mtry= 2
- Fold5: mtry= 2
+ Fold5: mtry=26
- Fold5: mtry=26
+ Fold5: mtry=51
- Fold5: mtry=51
Aggregating results
Selecting tuning parameters
Fitting mtry = 26 on full training set
```

###Predicting with the Random Forest Model:

#This method is used to the clean test data. A confusion matrix,also known as a contingency table or an error matrix,is a specific table layout that allows visualization of the performance of an algorithm, typically a supervised learning one (in unsupervised learning it is usually called a matching matrix).

```
> predrf<-predict(rffitModel2, newdata=dataTest)
> confusionMatrix(predrf, dataTest$classe)
```

Confusion Matrix and Statistics

	Reference				
Prediction	A	B	C	D	E
A	1674	17	0	0	0
B	0	1115	3	0	0
C	0	6	1012	14	3
D	0	0	11	948	3

E 0 1 0 2 1076

Overall Statistics

Accuracy : 0.9898
95% CI : (0.9869, 0.9922)
No Information Rate : 0.2845
P-Value [Acc > NIR] : < 2.2e-16

Kappa : 0.9871
McNemar's Test P-Value : NA

Statistics by Class:

	Class: A	Class: B	Class: C	Class: D	Class: E
Sensitivity	1.0000	0.9789	0.9864	0.9834	0.9945
Specificity	0.9960	0.9994	0.9953	0.9972	0.9994
Pos Pred Value	0.9899	0.9973	0.9778	0.9854	0.9972
Neg Pred Value	1.0000	0.9950	0.9971	0.9967	0.9988
Prevalence	0.2845	0.1935	0.1743	0.1638	0.1839
Detection Rate	0.2845	0.1895	0.1720	0.1611	0.1828
Detection Prevalence	0.2873	0.1900	0.1759	0.1635	0.1833
Balanced Accuracy	0.9980	0.9891	0.9908	0.9903	0.9969

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