

## C5T3

```
require(pacman)
```

```
## Loading required package: pacman
```

```
pacman::p_load(pacman, dplyr, GGally, ggplot2, ggrepel, patchwork, gifski, ggforce, ggthemes, maps, sf
```

## Importing and Feature Selection

First step is to import the data and select the features that only apply to each phone.

### ###Original Data

```
df_iphone <- import("iphone_smallmatrix_labeled_8d.csv")
df_samsung <- import("galaxy_smallmatrix_labeled_9d.csv")
```

### Histogram for EDA

```
#plot_ly(df_iphone, x= ~df_iphone$iphonesentiment, type='histogram')
#plot_ly(df_samsung, x= ~df_samsung$galaxysentiment, type='histogram')
```

Where:

0: Sentiment Unclear

1: very negative

2: somewhat negative

3: neutral

4: somewhat positive

5: very positive

### Domain Expertise Feature Selection

```
df_iphoneDE <- select(df_iphone, c(ios, iphonecampos, iphonecamneg, iphonecamunc, iphonedispos, iphoned
```

```
df_samsungDE <- select(df_samsung, c(googleandroid, samsungcampos, samsungcamneg, samsungcamunc, samsun
```

### Correlation Feature Selection

```
Corrmatrix = cor(df_iphone)
Corrmatrix2 = cor(df_samsung)
```

```
#findCorrelation(Corrmatrx, cutoff = .8, verbose = TRUE, names = TRUE)
#findCorrelation(Corrmatrx2, cutoff = .8, verbose = TRUE, names = TRUE)
```

```
df_iphoneCOR <- select(df_iphone, c(samsungdisneg, samsungperneg, samsungdispos, htcdisneg,googleperneg,
iphonedispos,sonydispos, iosperunc, iosperneg, ios, htcphone,iphonesentiment))
```

```
df_samsungCOR <- select(df_samsung,c(samsungdisneg,samsungperneg,samsungdispos,htcdisneg,googleperneg,g
```

###NZV Feature Selection

Near zero variance feature selection

```
nzv_iphone <- nearZeroVar(df_iphone, saveMetrics = FALSE)
nzv_samsung <- nearZeroVar(df_samsung, saveMetrics = FALSE)
```

```
df_iphoneNZV <- df_iphone[,-nzv_iphone]
df_samsungNZV <- df_samsung[,-nzv_samsung]
```

```
#str(df_iphoneNZV)
#str(df_samsungNZV)
```

## RFE Feature Selection

Let's sample the data before using RFE

```
set.seed(123)
iphoneSample <- df_iphone[sample(1:nrow(df_iphone), 1000, replace=FALSE),]
samsungSample <- df_samsung[sample(1:nrow(df_samsung), 1000, replace=FALSE),]
```

Set up rfeControl with randomforest, repeated cross validation and no updates

```
ctrl <- rfeControl(functions = rfFuncs, method = "repeatedcv", repeats = 5, verbose = FALSE)
```

```
#cl <- makeCluster(7)
#registerDoParallel(cl)
```

```
# Use rfe and omit the response variable (attribute 59 iphonesentiment)
rfeResults_iphone <- rfe(iphoneSample[,1:58], iphoneSample$iphonesentiment, sizes=(1:58), rfeControl=ctrl)
rfeResults_samsung <- rfe(samsungSample[,1:58], samsungSample$galaxysentiment, sizes=(1:58), rfeControl=ctrl)
```

```
# Get results
rfeResults_iphone
```

```
##
## Recursive feature selection
##
## Outer resampling method: Cross-Validated (10 fold, repeated 5 times)
##
## Resampling performance over subset size:
##
## Variables RMSE Rsquared MAE RMSESD RsquaredSD MAESD Selected
##          1 1.466   0.3134 1.1033 0.1122   0.09334 0.07898
##          2 1.468   0.3226 1.1388 0.1115   0.09613 0.07982
```

##	3	1.477	0.3208	1.1546	0.1046	0.09213	0.07386
##	4	1.483	0.3234	1.1625	0.1034	0.09099	0.07520
##	5	1.450	0.3594	1.1387	0.1117	0.10835	0.07871
##	6	1.374	0.3946	1.0135	0.1347	0.11715	0.09005
##	7	1.363	0.4053	1.0017	0.1295	0.11419	0.08287
##	8	1.353	0.4135	0.9947	0.1333	0.12050	0.08360
##	9	1.331	0.4293	0.9408	0.1395	0.11968	0.08825
##	10	1.332	0.4287	0.9418	0.1391	0.11953	0.08669
##	11	1.332	0.4290	0.9428	0.1401	0.11990	0.08811
##	12	1.334	0.4273	0.9236	0.1465	0.12355	0.09411
##	13	1.331	0.4294	0.9254	0.1422	0.12091	0.09171
##	14	1.330	0.4309	0.9275	0.1431	0.12096	0.09096
##	15	1.329	0.4316	0.9152	0.1444	0.12037	0.09322
##	16	1.326	0.4347	0.9165	0.1434	0.12071	0.09179
##	17	1.322	0.4375	0.9187	0.1439	0.12112	0.09154
##	18	1.321	0.4388	0.9079	0.1447	0.12095	0.09280
##	19	1.320	0.4392	0.9109	0.1445	0.12070	0.09182
##	20	1.321	0.4380	0.9164	0.1443	0.12126	0.09171
##	21	1.322	0.4378	0.9088	0.1464	0.12207	0.09374
##	22	1.322	0.4372	0.9123	0.1449	0.12129	0.09233
##	23	1.323	0.4366	0.9160	0.1467	0.12262	0.09354
##	24	1.323	0.4366	0.9098	0.1453	0.12155	0.09294
##	25	1.322	0.4371	0.9115	0.1444	0.12116	0.09243
##	26	1.323	0.4365	0.9149	0.1439	0.12102	0.09186
##	27	1.323	0.4365	0.9089	0.1454	0.12175	0.09303
##	28	1.324	0.4360	0.9111	0.1448	0.12141	0.09322
##	29	1.322	0.4378	0.9127	0.1444	0.12068	0.09227
##	30	1.323	0.4370	0.9082	0.1452	0.12140	0.09303
##	31	1.322	0.4373	0.9101	0.1446	0.12087	0.09194
##	32	1.323	0.4371	0.9121	0.1441	0.12059	0.09159
##	33	1.323	0.4374	0.9078	0.1447	0.12058	0.09243
##	34	1.323	0.4369	0.9103	0.1455	0.12150	0.09258
##	35	1.323	0.4370	0.9121	0.1443	0.12082	0.09221
##	36	1.322	0.4377	0.9075	0.1449	0.12103	0.09268
##	37	1.322	0.4374	0.9090	0.1445	0.12086	0.09229
##	38	1.322	0.4373	0.9112	0.1446	0.12109	0.09195
##	39	1.323	0.4368	0.9075	0.1447	0.12123	0.09305
##	40	1.323	0.4367	0.9087	0.1457	0.12178	0.09340
##	41	1.322	0.4377	0.9103	0.1444	0.12081	0.09243
##	42	1.323	0.4371	0.9072	0.1456	0.12160	0.09347
##	43	1.322	0.4377	0.9085	0.1455	0.12190	0.09403
##	44	1.322	0.4373	0.9103	0.1436	0.12059	0.09202
##	45	1.323	0.4368	0.9077	0.1446	0.12097	0.09277
##	46	1.322	0.4374	0.9085	0.1453	0.12126	0.09362
##	47	1.323	0.4368	0.9106	0.1448	0.12128	0.09303
##	48	1.322	0.4374	0.9067	0.1444	0.12110	0.09267
##	49	1.322	0.4376	0.9088	0.1448	0.12114	0.09254
##	50	1.321	0.4380	0.9093	0.1450	0.12148	0.09264
##	51	1.321	0.4382	0.9067	0.1445	0.12106	0.09303
##	52	1.322	0.4372	0.9088	0.1452	0.12171	0.09312
##	53	1.322	0.4373	0.9093	0.1450	0.12150	0.09238
##	54	1.323	0.4369	0.9078	0.1453	0.12154	0.09413
##	55	1.323	0.4370	0.9093	0.1441	0.12066	0.09295
##	56	1.322	0.4375	0.9083	0.1450	0.12129	0.09301

\*

```
##          57 1.324    0.4360 0.9075 0.1454    0.12134 0.09452
##          58 1.324    0.4358 0.9081 0.1449    0.12110 0.09345
##
## The top 5 variables (out of 19):
##    iphone, googleandroid, iphonedispos, iphonedisneg, samsunggalaxy
```

```
rfeResults_samsung
```

```
##
## Recursive feature selection
##
## Outer resampling method: Cross-Validated (10 fold, repeated 5 times)
##
## Resampling performance over subset size:
##
## Variables  RMSE Rsquared    MAE  RMSESD RsquaredSD  MAESD Selected
##          1 1.505    0.2850 1.1482 0.11496    0.0983 0.06874
##          2 1.490    0.3064 1.1697 0.11758    0.1084 0.07074
##          3 1.459    0.3512 1.1530 0.10984    0.1025 0.06762
##          4 1.453    0.3643 1.1515 0.10290    0.1071 0.06389
##          5 1.468    0.3624 1.1691 0.09835    0.1090 0.06340
##          6 1.408    0.3753 1.0537 0.12600    0.1078 0.07766
##          7 1.403    0.3797 1.0448 0.12597    0.1090 0.07650
##          8 1.398    0.3850 1.0367 0.12786    0.1114 0.07698
##          9 1.391    0.3889 0.9973 0.13276    0.1106 0.07997
##         10 1.385    0.3947 0.9936 0.13332    0.1085 0.08100
##         11 1.384    0.3958 0.9936 0.13090    0.1081 0.07983
##         12 1.383    0.3961 0.9768 0.13262    0.1080 0.08138
##         13 1.379    0.3995 0.9741 0.13122    0.1066 0.07976
##         14 1.378    0.3997 0.9745 0.13071    0.1056 0.07990      *
##         15 1.386    0.3929 0.9700 0.13201    0.1054 0.08332
##         16 1.385    0.3935 0.9702 0.13109    0.1045 0.08213
##         17 1.385    0.3936 0.9714 0.13061    0.1039 0.08307
##         18 1.390    0.3901 0.9683 0.13202    0.1046 0.08482
##         19 1.390    0.3903 0.9707 0.13269    0.1059 0.08516
##         20 1.389    0.3916 0.9726 0.13385    0.1068 0.08504
##         21 1.393    0.3882 0.9693 0.13386    0.1062 0.08627
##         22 1.391    0.3895 0.9704 0.13425    0.1070 0.08497
##         23 1.390    0.3906 0.9711 0.13496    0.1074 0.08614
##         24 1.393    0.3878 0.9684 0.13507    0.1070 0.08601
##         25 1.393    0.3880 0.9697 0.13513    0.1079 0.08628
##         26 1.391    0.3899 0.9697 0.13618    0.1079 0.08648
##         27 1.394    0.3878 0.9670 0.13542    0.1070 0.08716
##         28 1.392    0.3885 0.9679 0.13558    0.1076 0.08721
##         29 1.391    0.3900 0.9676 0.13455    0.1069 0.08651
##         30 1.393    0.3885 0.9655 0.13499    0.1070 0.08593
##         31 1.394    0.3879 0.9669 0.13434    0.1064 0.08498
##         32 1.391    0.3901 0.9667 0.13347    0.1061 0.08457
##         33 1.393    0.3884 0.9646 0.13261    0.1051 0.08368
##         34 1.392    0.3893 0.9649 0.13327    0.1058 0.08526
##         35 1.390    0.3909 0.9656 0.13337    0.1059 0.08464
##         36 1.393    0.3891 0.9644 0.13329    0.1056 0.08380
##         37 1.390    0.3908 0.9630 0.13386    0.1060 0.08491
##         38 1.390    0.3908 0.9649 0.13342    0.1055 0.08452
```

```
##          39 1.391    0.3907 0.9622 0.13407      0.1060 0.08533
##          40 1.391    0.3909 0.9634 0.13448      0.1060 0.08476
##          41 1.389    0.3917 0.9637 0.13490      0.1070 0.08579
##          42 1.390    0.3911 0.9613 0.13471      0.1059 0.08498
##          43 1.390    0.3911 0.9632 0.13351      0.1059 0.08419
##          44 1.389    0.3918 0.9629 0.13414      0.1062 0.08535
##          45 1.390    0.3912 0.9616 0.13456      0.1063 0.08567
##          46 1.389    0.3922 0.9617 0.13489      0.1066 0.08546
##          47 1.389    0.3921 0.9626 0.13379      0.1052 0.08440
##          48 1.390    0.3916 0.9615 0.13525      0.1069 0.08562
##          49 1.389    0.3918 0.9626 0.13496      0.1066 0.08533
##          50 1.389    0.3922 0.9631 0.13369      0.1056 0.08427
##          51 1.390    0.3915 0.9614 0.13462      0.1065 0.08534
##          52 1.389    0.3919 0.9621 0.13478      0.1062 0.08480
##          53 1.388    0.3928 0.9624 0.13447      0.1062 0.08478
##          54 1.390    0.3911 0.9618 0.13518      0.1064 0.08547
##          55 1.389    0.3922 0.9619 0.13586      0.1073 0.08633
##          56 1.388    0.3929 0.9615 0.13619      0.1073 0.08577
##          57 1.388    0.3928 0.9598 0.13562      0.1072 0.08493
##          58 1.385    0.3955 0.9582 0.13621      0.1081 0.08555
##
## The top 5 variables (out of 14):
##      iphone, googleandroid, samsunggalaxy, iphonedispos, iphonecamunc
```

```
#plot(rfeResults_iphone, type=c("g", "o"))
#plot(rfeResults_samsung, type=c("g", "o"))
```

```
# create new data set with rfe recommended features
df_iphoneRFE <- df_iphone[,predictors(rfeResults_iphone)]
df_samsungRFE <- df_samsung[,predictors(rfeResults_samsung)]

# add the dependent variable to iphoneRFE
df_iphoneRFE$iphonesentiment <- df_iphone$iphonesentiment
df_samsungRFE$galaxysentiment <- df_samsung$galaxysentiment
```

## All Data Sets

df\_iphone Original Data

df\_samsung

df\_iphoneDE Domain Expertise

df\_samsungDE

df\_iphoneCOR Correlation

df\_samsungCOR

df\_iphoneNZV Near zero variance feature selection

df\_samsungNZV

df\_iphoneRFE Recursive Feature Elimination

df\_samsungRFE

```
df_iphone$iphonesentiment <- factor(df_iphone$iphonesentiment)
df_samsung$galaxysentiment <- factor(df_samsung$galaxysentiment)
```

```

df_iphoneDE$iphonesentiment <- factor(df_iphoneDE$iphonesentiment)
df_samsungDE$galaxysentiment <- factor(df_samsungDE$galaxysentiment)

df_iphoneCOR$iphonesentiment <- factor(df_iphoneCOR$iphonesentiment)
df_samsungCOR$galaxysentiment <- factor(df_samsungCOR$galaxysentiment)

df_iphoneNZV$iphonesentiment <- factor(df_iphoneNZV$iphonesentiment)
df_samsungNZV$galaxysentiment <- factor(df_samsungNZV$galaxysentiment)

df_iphoneRFE$iphonesentiment <- factor(df_iphoneRFE$iphonesentiment)
df_samsungRFE$galaxysentiment <- factor(df_samsungRFE$galaxysentiment)

```

## Model Development

Models with non-feature selected datasets and then feature selected data sets. C5.0, Random Forest, SVM, kkn

```

set.seed(123)

#iPhone

inTrain <- createDataPartition(df_iphone$iphonesentiment, p=.70, list = FALSE)
training_iphone <- df_iphone[ inTrain,]
testing_iphone <- df_iphone[-inTrain,]

inTrain <- createDataPartition(df_iphoneDE$iphonesentiment, p=.70, list = FALSE)
training_iphoneDE <- df_iphoneDE[ inTrain,]
testing_iphoneDE <- df_iphoneDE[-inTrain,]

inTrain <- createDataPartition(df_iphoneCOR$iphonesentiment, p=.70, list = FALSE)
training_iphoneCOR <- df_iphoneCOR[ inTrain,]
testing_iphoneCOR <- df_iphoneCOR[-inTrain,]

inTrain <- createDataPartition(df_iphoneNZV$iphonesentiment, p=.70, list = FALSE)
training_iphoneNZV <- df_iphoneNZV[ inTrain,]
testing_iphoneNZV <- df_iphoneNZV[-inTrain,]

inTrain <- createDataPartition(df_iphoneRFE$iphonesentiment, p=.70, list = FALSE)
training_iphoneRFE <- df_iphoneRFE[ inTrain,]
testing_iphoneRFE <- df_iphoneRFE[-inTrain,]

#Samsung

inTrain <- createDataPartition(df_samsung$galaxysentiment, p=.70, list = FALSE)
training_samsung <- df_samsung[ inTrain,]
testing_samsung <- df_samsung[-inTrain,]

inTrain <- createDataPartition(df_samsungDE$galaxysentiment, p=.70, list = FALSE)
training_samsungDE <- df_samsungDE[ inTrain,]
testing_samsungDE <- df_samsungDE[-inTrain,]

inTrain <- createDataPartition(df_samsungCOR$galaxysentiment, p=.70, list = FALSE)

```

```

training_samsungCOR <- df_samsungCOR[ inTrain,]
testing_samsungCOR  <- df_samsungCOR[-inTrain,]

inTrain <- createDataPartition(df_samsungNZV$galaxysentiment, p=.70, list = FALSE)
training_samsungNZV <- df_samsungNZV[ inTrain,]
testing_samsungNZV  <- df_samsungNZV[-inTrain,]

inTrain <- createDataPartition(df_samsungRFE$galaxysentiment, p=.70, list = FALSE)
training_samsungRFE <- df_samsungRFE[ inTrain,]
testing_samsungRFE  <- df_samsungRFE[-inTrain,]

```

####Original Data Models

```

#cl <- makeCluster(7)
#registerDoParallel(cl)

ctrl <- trainControl(method = "repeatedcv", number = 5, repeats = 3)

RF_iphone_Original <- train(iphonesentiment~., data = training_iphone, method = "rf",trControl=ctrl, tu
RF_samsung_Original <- train(galaxysentiment~., data = training_samsung, method = "rf",trControl=ctrl, 

SVM_iphone_Original <- train(iphonesentiment~., data = training_iphone, method = "svmLinear",trControl=
SVM_samsung_Original <- train(galaxysentiment~., data = training_samsung, method = "svmLinear",trControl=

C50_iphone_Original <- train(iphonesentiment~., data = training_iphone,method="C5.0",trControl=ctrl, tu

```

```

## Warning: 'trials' should be <= 5 for this object. Predictions generated using 5
## trials

```

```

## Warning: 'trials' should be <= 6 for this object. Predictions generated using 6
## trials

```

```

## Warning: 'trials' should be <= 5 for this object. Predictions generated using 5
## trials

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## Warning: 'trials' should be <= 5 for this object. Predictions generated using 5
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## Warning: 'trials' should be <= 6 for this object. Predictions generated using 6
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```
## Warning: 'trials' should be <= 6 for this object. Predictions generated using 6
## trials

## Warning: 'trials' should be <= 7 for this object. Predictions generated using 7
## trials

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```
## Warning: 'trials' should be <= 6 for this object. Predictions generated using 6
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## Warning: 'trials' should be <= 5 for this object. Predictions generated using 5
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## Warning: 'trials' should be <= 6 for this object. Predictions generated using 6
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## Warning: 'trials' should be <= 6 for this object. Predictions generated using 6
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## Warning: 'trials' should be <= 7 for this object. Predictions generated using 7
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## Warning: 'trials' should be <= 5 for this object. Predictions generated using 5
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## Warning: 'trials' should be <= 6 for this object. Predictions generated using 6
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## trials
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## Warning: 'trials' should be <= 5 for this object. Predictions generated using 5
## trials
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## Warning: 'trials' should be <= 6 for this object. Predictions generated using 6
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## Warning: 'trials' should be <= 5 for this object. Predictions generated using 5
## trials
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## Warning: 'trials' should be <= 6 for this object. Predictions generated using 6
## trials
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## Warning: 'trials' should be <= 6 for this object. Predictions generated using 6
## trials
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## Warning: 'trials' should be <= 5 for this object. Predictions generated using 5
## trials
```

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## Warning: 'trials' should be <= 5 for this object. Predictions generated using 5
## trials
```

```
## Warning: 'trials' should be <= 5 for this object. Predictions generated using 5
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## Warning: 'trials' should be <= 5 for this object. Predictions generated using 5
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## Warning: 'trials' should be <= 5 for this object. Predictions generated using 5
## trials
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```
C50_samsung_Original <- train(galaxysentiment~., data = training_samsung,method="C5.0",trControl=ctrl, ,
```

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## Warning: 'trials' should be <= 6 for this object. Predictions generated using 6
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## trials
```

```
kknn_iphone_Original<- train(iphonesentiment~., data = training_iphone, method = "kknn", trControl = ct)
kknn_samsung_Original <- train(galaxysentiment~., data = training_samsung, method = "kknn", trControl =
```

```
###Predictions
```

```
RF_pred_iphone <- predict(RF_iphone_Original, newdata = testing_iphone)
C50_pred_iphone <- predict(C50_iphone_Original, newdata = testing_iphone)
SVM_pred_iphone <- predict(SVM_iphone_Original, newdata = testing_iphone)
KNN_pred_iphone <- predict(kknn_iphone_Original, newdata = testing_iphone)
```

```
RF_pred_samsung <- predict(RF_samsung_Original, newdata = testing_samsung)
C50_pred_samsung <- predict(C50_samsung_Original, newdata = testing_samsung)
SVM_pred_samsung <- predict(SVM_samsung_Original, newdata = testing_samsung)
KNN_pred_samsung <- predict(kknn_samsung_Original, newdata = testing_samsung)
```

*#Building a confusion matrix and using the predict function yields a similar accuracy and kappa result than the resampling function. Since resampling summarises these metrics in a simpler manner, i will use resampling but will leave this matrix as an example.*

```
cmRF_iphone <- confusionMatrix(RF_pred_iphone, testing_iphone$iphonesentiment)
cmRF_samsung <- confusionMatrix(RF_pred_samsung, testing_samsung$galaxysentiment)
```

```
cmRF_iphone
```

```
## Confusion Matrix and Statistics
```

```
##
```

```
##           Reference
```

```
## Prediction    0    1    2    3    4    5
```

```
##           0 375    0    1    0    5    7
```

```
##           1    0    0    0    0    0    0
```

```
##           2    0    0   17    0    0    0
```

```
##           3    2    0    0  182    3    3
```

```
##           4    2    0    1    1  127    2
```

```
##           5  209  117  117  173  296 2250
```

```
##
```

```

## Overall Statistics
##
##           Accuracy : 0.7586
##           95% CI : (0.7448, 0.772)
##       No Information Rate : 0.5815
##       P-Value [Acc > NIR] : < 2.2e-16
##
##           Kappa : 0.5209
##
## Mcnemar's Test P-Value : NA
##
## Statistics by Class:
##
##           Class: 0 Class: 1 Class: 2 Class: 3 Class: 4 Class: 5
## Sensitivity      0.63776 0.00000 0.12500 0.51124 0.29466 0.9947
## Specificity      0.99606 1.00000 1.00000 0.99774 0.99827 0.4398
## Pos Pred Value   0.96649      NaN 1.00000 0.95789 0.95489 0.7116
## Neg Pred Value   0.93918 0.96992 0.96927 0.95297 0.91908 0.9835
## Prevalence       0.15116 0.03008 0.03496 0.09152 0.11080 0.5815
## Detection Rate   0.09640 0.00000 0.00437 0.04679 0.03265 0.5784
## Detection Prevalence 0.09974 0.00000 0.00437 0.04884 0.03419 0.8129
## Balanced Accuracy 0.81691 0.50000 0.56250 0.75449 0.64646 0.7172

```

cmRF\_samsung

```

## Confusion Matrix and Statistics
##
##           Reference
## Prediction    0    1    2    3    4    5
##           0 349    2    1    3    5   32
##           1    0    0    1    0    1    0
##           2    0    0   21    1    1    2
##           3    3    2    1  154    1    8
##           4    5    1    0    3  118    8
##           5  151  109  111  191  299 2287
##
## Overall Statistics
##
##           Accuracy : 0.7567
##           95% CI : (0.7428, 0.7701)
##       No Information Rate : 0.6037
##       P-Value [Acc > NIR] : < 2.2e-16
##
##           Kappa : 0.501
##
## Mcnemar's Test P-Value : < 2.2e-16
##
## Statistics by Class:
##
##           Class: 0 Class: 1 Class: 2 Class: 3 Class: 4 Class: 5
## Sensitivity      0.68701 0.0000000 0.155556 0.43750 0.27765 0.9786
## Specificity      0.98721 0.9994677 0.998929 0.99574 0.99507 0.4387
## Pos Pred Value   0.89031 0.0000000 0.840000 0.91124 0.87407 0.7265
## Neg Pred Value   0.95430 0.9705350 0.970359 0.94652 0.91783 0.9308

```

```
## Prevalence      0.13123 0.0294498 0.034875 0.09093 0.10979 0.6037
## Detection Rate  0.09016 0.0000000 0.005425 0.03978 0.03048 0.5908
## Detection Prevalence 0.10127 0.0005167 0.006458 0.04366 0.03487 0.8132
## Balanced Accuracy 0.83711 0.4997338 0.577242 0.71662 0.63636 0.7087
```

```
ModelData_samsung <- resamples(list(RF_iphone = RF_iphone_Original, KKNn_iphone = kkn_n_iphone_Original,
summary(ModelData_samsung)
```

## Original Data Results

```
##
## Call:
## summary.resamples(object = ModelData_samsung)
##
## Models: RF_iphone, KKNn_iphone, C50_iphone, SVM_iphone, RF_Samsung, KKNn_Samsung, C50_Samsung, SVM_S
## Number of resamples: 15
##
## Accuracy
##           Min.    1st Qu.    Median      Mean   3rd Qu.      Max. NA's
## RF_iphone  0.7512383 0.7630711 0.7651265 0.7677373 0.7707128 0.7853605    0
## KKNn_iphone 0.3153550 0.3254405 0.3296582 0.3298840 0.3357182 0.3390204    0
## C50_iphone  0.7612761 0.7663731 0.7720264 0.7714044 0.7756057 0.7848101    0
## SVM_iphone  0.6980198 0.7033058 0.7092511 0.7078806 0.7117712 0.7166483    0
## RF_Samsung  0.7461283 0.7481339 0.7541528 0.7531705 0.7574668 0.7605088    0
## KKNn_Samsung 0.4330752 0.7262932 0.7361726 0.7162256 0.7447463 0.7504151    0
## C50_Samsung 0.7490326 0.7623796 0.7660398 0.7647877 0.7678917 0.7757475    0
## SVM_Samsung 0.6849088 0.6890547 0.6948590 0.6973857 0.7013274 0.7369878    0
##
## Kappa
##           Min.    1st Qu.    Median      Mean   3rd Qu.      Max. NA's
## RF_iphone  0.5050341 0.5333034 0.5370318 0.5441414 0.5534725 0.5839374    0
## KKNn_iphone 0.1481770 0.1582999 0.1657682 0.1630854 0.1676524 0.1765610    0
## C50_iphone  0.5321504 0.5460562 0.5545903 0.5562851 0.5665575 0.5838654    0
## SVM_iphone  0.3857235 0.3973770 0.4126233 0.4100640 0.4210921 0.4270651    0
## RF_Samsung  0.4738695 0.4801982 0.4949022 0.4927462 0.5039474 0.5071713    0
## KKNn_Samsung 0.2112321 0.4756099 0.4877405 0.4713637 0.5016130 0.5093080    0
## C50_Samsung 0.4953246 0.5216804 0.5314455 0.5283532 0.5348727 0.5548337    0
## SVM_Samsung 0.3357427 0.3458823 0.3584282 0.3648940 0.3744993 0.4475617    0
```

```
###Feture Selected Data Set
```

### #RFE Feature Selection

```
RF_iphone_RFE <- train(iphonesentiment~., data = training_iphoneRFE, method = "rf",trControl=ctrl, tune
RF_samsung_RFE <- train(galaxysentiment~., data = training_samsungRFE, method = "rf",trControl=ctrl, tun

SVM_iphone_RFE <- train(iphonesentiment~., data = training_iphoneRFE, method = "svmLinear",trControl=ct
SVM_samsung_RFE <- train(galaxysentiment~., data = training_samsungRFE, method = "svmLinear",trControl=

C50_iphone_RFE <- train(iphonesentiment~., data = training_iphoneRFE,method="C5.0",trControl=ctrl, tune
```



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## Warning: 'trials' should be <= 6 for this object. Predictions generated using 6
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## Warning: 'trials' should be <= 5 for this object. Predictions generated using 5
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## Warning: 'trials' should be <= 7 for this object. Predictions generated using 7
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```
C50_samsung_RFE <- train(galaxysentiment~., data = training_samsungRFE,method="C5.0",trControl=ctrl, tu
```

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## Warning: 'trials' should be <= 5 for this object. Predictions generated using 5
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```

```
kknnsamsung_RFE<- train(galaxysentiment~., data = training_samsungRFE, method = "kknnsamsung_RFE", trControl = ctrl
kknnsamsung_RFE <- train(galaxysentiment~., data = training_samsungRFE, method = "kknnsamsung_RFE", trControl = c
```

```
#NZV Feature Selection
```

```

RF_iphone_NZV <- train(iphonesentiment~., data = training_iphoneNZV, method = "rf",trControl=ctrl, tune
RF_samsung_NZV <- train(galaxysentiment~., data = training_samsungNZV, method = "rf",trControl=ctrl, tune

SVM_iphone_NZV <- train(iphonesentiment~., data = training_iphoneNZV, method = "svmLinear",trControl=ctrl, tune
SVM_samsung_NZV <- train(galaxysentiment~., data = training_samsungNZV, method = "svmLinear",trControl=ctrl, tune

C50_iphone_NZV <- train(iphonesentiment~., data = training_iphoneNZV,method="C5.0",trControl=ctrl, tune

```

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## Warning: 'trials' should be <= 6 for this object. Predictions generated using 6
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```
C50_samsung_NZV <- train(galaxysentiment~., data = training_samsungNZV, method="C5.0", trControl=ctrl, tu
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```
kknns_iphone_NZV<- train(iphonesentiment~., data = training_iphoneNZV, method = "kknns", trControl = ctrl)
kknns_samsung_NZV <- train(galaxysentiment~., data = training_samsungNZV, method = "kknns", trControl = ctrl)
```

### *#COR Feature Selection*

```
RF_iphone_COR <- train(iphonesentiment~., data = training_iphoneCOR, method = "rf",trControl=ctrl, tuneGrid=tuneRF)
RF_samsung_COR <- train(galaxysentiment~., data = training_samsungCOR, method = "rf",trControl=ctrl, tuneGrid=tuneRF)

SVM_iphone_COR <- train(iphonesentiment~., data = training_iphoneCOR, method = "svmLinear",trControl=ctrl, tuneGrid=tuneSVM)
SVM_samsung_COR <- train(galaxysentiment~., data = training_samsungCOR, method = "svmLinear",trControl=ctrl, tuneGrid=tuneSVM)

C50_iphone_COR <- train(iphonesentiment~., data = training_iphoneCOR,method="C5.0",trControl=ctrl, tuneGrid=tuneC50)
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```
C50_samsung_COR <- train(galaxysentiment~., data = training_samsungCOR, method="C5.0", trControl=ctrl, tu
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kknns_iphone_COR<- train(iphonesentiment~., data = training_iphoneCOR, method = "kknns", trControl = ctrl
kknns_samsung_COR <- train(galaxysentiment~., data = training_samsungCOR, method = "kknns", trControl = c

#DE Feature Selection

RF_iphone_DE <- train(iphonesentiment~., data = training_iphoneDE, method = "rf",trControl=ctrl, tuneLe
RF_samsung_DE <- train(galaxysentiment~., data = training_samsungDE, method = "rf",trControl=ctrl, tuneLe

SVM_iphone_DE <- train(iphonesentiment~., data = training_iphoneDE, method = "svmLinear",trControl=ctrl
SVM_samsung_DE <- train(galaxysentiment~., data = training_samsungDE, method = "svmLinear",trControl=ct

C50_iphone_DE <- train(iphonesentiment~., data = training_iphoneDE,method="C5.0",trControl=ctrl, tuneLe

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## trials

## Warning: 'trials' should be <= 4 for this object. Predictions generated using 4
## trials

## Warning: 'trials' should be <= 4 for this object. Predictions generated using 4
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## Warning: 'trials' should be <= 4 for this object. Predictions generated using 4
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## Warning: 'trials' should be <= 3 for this object. Predictions generated using 3
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## Warning: 'trials' should be <= 3 for this object. Predictions generated using 3
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## Warning: 'trials' should be <= 3 for this object. Predictions generated using 3
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## Warning: 'trials' should be <= 4 for this object. Predictions generated using 4
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## Warning: 'trials' should be <= 4 for this object. Predictions generated using 4
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## Warning: 'trials' should be <= 4 for this object. Predictions generated using 4
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## Warning: 'trials' should be <= 4 for this object. Predictions generated using 4
## trials

## Warning: 'trials' should be <= 5 for this object. Predictions generated using 5
## trials

## Warning: 'trials' should be <= 4 for this object. Predictions generated using 4
## trials

C50_samsung_DE <- train(galaxysentiment~., data = training_samsungDE, method="C5.0", trControl=ctrl, tune

## Warning: 'trials' should be <= 4 for this object. Predictions generated using 4
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## Warning: 'trials' should be <= 4 for this object. Predictions generated using 4
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## Warning: 'trials' should be <= 4 for this object. Predictions generated using 4
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## Warning: 'trials' should be <= 4 for this object. Predictions generated using 4
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## Warning: 'trials' should be <= 4 for this object. Predictions generated using 4
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## Warning: 'trials' should be <= 4 for this object. Predictions generated using 4
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## Warning: 'trials' should be <= 4 for this object. Predictions generated using 4
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## Warning: 'trials' should be <= 4 for this object. Predictions generated using 4
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## Warning: 'trials' should be <= 4 for this object. Predictions generated using 4
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## Warning: 'trials' should be <= 4 for this object. Predictions generated using 4
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## Warning: 'trials' should be <= 4 for this object. Predictions generated using 4
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## Warning: 'trials' should be <= 4 for this object. Predictions generated using 4
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## Warning: 'trials' should be <= 4 for this object. Predictions generated using 4
## trials
```

```
## Warning: 'trials' should be <= 4 for this object. Predictions generated using 4
## trials
```

```
kknnp_iphone_DE<- train(iphonesentiment~., data = training_iphoneDE, method = "kknnp", trControl = ctrl,
kknnp_samsung_DE <- train(galaxysentiment~., data = training_samsungDE, method = "kknnp", trControl = ctrl)
```

```
#####All Results
```

```
ModelData_All_iPhone <- resamples(list(RF_iphone=RF_iphone_Original,
RF_iphone_DE=RF_iphone_DE,
RF_iphone_COR=RF_iphone_COR,
RF_iphone_NZV=RF_iphone_NZV,
RF_iphone_RFE=RF_iphone_RFE,

C50_iphone=C50_iphone_Original,
C50_iphone_DE=C50_iphone_DE,
C50_iphone_COR=C50_iphone_COR,
C50_iphone_NZV=C50_iphone_NZV,
C50_iphone_RFE=C50_iphone_RFE,

SVM_iphone=SVM_iphone_Original,
SVM_iphone_DE=SVM_iphone_DE,
SVM_iphone_COR=SVM_iphone_COR,
SVM_iphone_NZV=SVM_iphone_NZV,
SVM_iphone_RFE=SVM_iphone_RFE,

kknnp_iphone=kknnp_iphone_Original,
kknnp_iphone_DE=kknnp_iphone_DE,
kknnp_iphone_COR=kknnp_iphone_COR,
kknnp_iphone_NZV=kknnp_iphone_NZV,
kknnp_iphone_RFE=kknnp_iphone_RFE
))
```

```
ModelData_All_Samsung <- resamples(list(RF_samsung=RF_samsung_Original,
RF_samsung_DE=RF_samsung_DE,
RF_samsung_COR=RF_samsung_COR,
RF_samsung_NZV=RF_samsung_NZV,
RF_samsung_RFE=RF_samsung_RFE,

C50_samsung=C50_samsung_Original,
C50_samsung_DE=C50_samsung_DE,
C50_samsung_COR=C50_samsung_COR,
C50_samsung_NZV=C50_samsung_NZV,
C50_samsung_RFE=C50_samsung_RFE,
```

```

SVM_samsung=SVM_samsung_Original,
SVM_samsung_DE=SVM_samsung_DE,
SVM_samsung_COR=SVM_samsung_COR,
SVM_samsung_NZV=SVM_samsung_NZV,
SVM_samsung_RFE=SVM_samsung_RFE,

kknnsamsung=kknnsamsung_Original,
kknnsamsung_DE=kknnsamsung_DE,
kknnsamsung_COR=kknnsamsung_COR,
kknnsamsung_NZV=kknnsamsung_NZV,
kknnsamsung_RFE=kknnsamsung_RFE
))

```

```
summary(ModelData_All_iPhone)
```

```

##
## Call:
## summary.resamples(object = ModelData_All_iPhone)
##
## Models: RF_iphone, RF_iphone_DE, RF_iphone_COR, RF_iphone_NZV, RF_iphone_RFE, C50_iphone, C50_iphone.
## Number of resamples: 15
##
## Accuracy
##
##           Min.   1st Qu.   Median     Mean   3rd Qu.     Max.
## RF_iphone    0.7512383 0.7630711 0.7651265 0.7677373 0.7707128 0.7853605
## RF_iphone_DE 0.6466703 0.6493400 0.6525330 0.6540063 0.6582212 0.6633663
## RF_iphone_COR 0.6659329 0.6682269 0.6712555 0.6729052 0.6770374 0.6822430
## RF_iphone_NZV 0.7455947 0.7566749 0.7605944 0.7596619 0.7623899 0.7713499
## RF_iphone_RFE 0.7622455 0.7676869 0.7777778 0.7754419 0.7831591 0.7863436
## C50_iphone    0.7612761 0.7663731 0.7720264 0.7714044 0.7756057 0.7848101
## C50_iphone_DE 0.6433682 0.6470260 0.6499725 0.6501896 0.6539097 0.6569383
## C50_iphone_COR 0.6580396 0.6659328 0.6679515 0.6697854 0.6699702 0.6873968
## C50_iphone_NZV 0.7381738 0.7501378 0.7528894 0.7536813 0.7589532 0.7637665
## C50_iphone_RFE 0.7571586 0.7674098 0.7703744 0.7712928 0.7752385 0.7870116
## SVM_iphone    0.6980198 0.7033058 0.7092511 0.7078806 0.7117712 0.7166483
## SVM_iphone_DE 0.6026417 0.6056107 0.6080264 0.6077668 0.6092460 0.6148760
## SVM_iphone_COR 0.6490649 0.6530839 0.6580396 0.6567949 0.6600605 0.6655666
## SVM_iphone_NZV 0.6694169 0.6796914 0.6837184 0.6839896 0.6889617 0.6978536
## SVM_iphone_RFE 0.6820682 0.6938111 0.7066593 0.7020453 0.7084251 0.7161716
## kknnsamsung    0.3153550 0.3254405 0.3296582 0.3298840 0.3357182 0.3390204
## kknnsamsung_DE 0.2828839 0.2865403 0.2889378 0.2902137 0.2923204 0.3006608
## kknnsamsung_COR 0.1955923 0.1988433 0.2008806 0.2029060 0.2068210 0.2140892
## kknnsamsung_NZV 0.3042999 0.3181066 0.3215859 0.3200088 0.3232379 0.3316832
## kknnsamsung_RFE 0.3258118 0.3322318 0.3386564 0.3383977 0.3438790 0.3513216
##
##           NA's
## RF_iphone      0
## RF_iphone_DE    0
## RF_iphone_COR    0
## RF_iphone_NZV    0
## RF_iphone_RFE    0
## C50_iphone      0
## C50_iphone_DE    0
## C50_iphone_COR    0

```

```

## C50_iphone_NZV      0
## C50_iphone_RFE      0
## SVM_iphone          0
## SVM_iphone_DE       0
## SVM_iphone_COR      0
## SVM_iphone_NZV      0
## SVM_iphone_RFE      0
## kknns_iphone        0
## kknns_iphone_DE     0
## kknns_iphone_COR    0
## kknns_iphone_NZV    0
## kknns_iphone_RFE    0
##
## Kappa
##           Min.      1st Qu.      Median      Mean      3rd Qu.
## RF_iphone      0.50503413 0.53330345 0.53703175 0.54414137 0.55347251
## RF_iphone_DE    0.23812031 0.24644525 0.25375031 0.25789242 0.26915427
## RF_iphone_COR   0.29426599 0.30690849 0.31682169 0.31598741 0.32411972
## RF_iphone_NZV   0.50223374 0.52238423 0.53392975 0.52952284 0.53503095
## RF_iphone_RFE   0.53325457 0.54570568 0.57031259 0.56361675 0.58102236
## C50_iphone      0.53215039 0.54605616 0.55459028 0.55628515 0.56655751
## C50_iphone_DE    0.22628874 0.24042367 0.24756902 0.24880721 0.26193242
## C50_iphone_COR   0.27746119 0.29706281 0.30838977 0.31090798 0.31449905
## C50_iphone_NZV   0.48146843 0.51038636 0.51833563 0.51752022 0.52746097
## C50_iphone_RFE   0.52021021 0.54858315 0.55547807 0.55626202 0.56512380
## SVM_iphone      0.38572349 0.39737696 0.41262334 0.41006401 0.42109210
## SVM_iphone_DE    0.08503441 0.09588276 0.10230521 0.10104421 0.10663079
## SVM_iphone_COR   0.25305826 0.25879843 0.26642156 0.26780707 0.27602182
## SVM_iphone_NZV   0.31527011 0.34056407 0.34705587 0.35089802 0.36677820
## SVM_iphone_RFE   0.35277426 0.38226955 0.41039754 0.40303132 0.41812636
## kknns_iphone     0.14817704 0.15829987 0.16576820 0.16308540 0.16765245
## kknns_iphone_DE  0.10303050 0.10914614 0.11329758 0.11351840 0.11808050
## kknns_iphone_COR 0.04511463 0.04894788 0.05189835 0.05366794 0.05799584
## kknns_iphone_NZV 0.12166052 0.14118619 0.14559159 0.14342772 0.14658149
## kknns_iphone_RFE 0.15926496 0.16936078 0.17240885 0.17235099 0.17669128
##           Max. NA's
## RF_iphone      0.58393735 0
## RF_iphone_DE    0.28462243 0
## RF_iphone_COR   0.34274330 0
## RF_iphone_NZV   0.55631000 0
## RF_iphone_RFE   0.58650736 0
## C50_iphone      0.58386543 0
## C50_iphone_DE    0.26679711 0
## C50_iphone_COR   0.35004770 0
## C50_iphone_NZV   0.54267238 0
## C50_iphone_RFE   0.59203931 0
## SVM_iphone      0.42706508 0
## SVM_iphone_DE    0.11720868 0
## SVM_iphone_COR   0.29148067 0
## SVM_iphone_NZV   0.38908997 0
## SVM_iphone_RFE   0.43740892 0
## kknns_iphone     0.17656104 0
## kknns_iphone_DE  0.12530687 0
## kknns_iphone_COR 0.06635635 0

```

```
## kknns_iphone_NZV 0.15491293    0
## kknns_iphone_RFE 0.19046869    0
```

```
summary(ModelData_All_Samsung)
```

```
##
## Call:
## summary.resamples(object = ModelData_All_Samsung)
##
## Models: RF_samsung, RF_samsung_DE, RF_samsung_COR, RF_samsung_NZV, RF_samsung_RFE, C50_samsung, C50_
## Number of resamples: 15
##
## Accuracy
##           Min.    1st Qu.    Median    Mean    3rd Qu.    Max.
## RF_samsung      0.74612832 0.7481339 0.7541528 0.7531705 0.7574668 0.7605088
## RF_samsung_DE    0.61891593 0.6216814 0.6240310 0.6244840 0.6273153 0.6318408
## RF_samsung_COR    0.67146018 0.6819698 0.6865672 0.6865434 0.6912864 0.7011621
## RF_samsung_NZV    0.74446903 0.7511753 0.7578773 0.7564892 0.7602988 0.7675706
## RF_samsung_RFE    0.74917127 0.7562258 0.7625899 0.7615421 0.7664640 0.7703376
## C50_samsung      0.74903261 0.7623796 0.7660398 0.7647877 0.7678917 0.7757475
## C50_samsung_DE    0.61615044 0.6207852 0.6225789 0.6230095 0.6260027 0.6306755
## C50_samsung_COR    0.67201327 0.6805863 0.6830752 0.6832592 0.6864802 0.6908186
## C50_samsung_NZV    0.74156060 0.7465451 0.7527655 0.7511429 0.7560169 0.7588496
## C50_samsung_RFE    0.75207526 0.7604424 0.7618785 0.7624990 0.7658282 0.7725512
## SVM_samsung      0.68490879 0.6890547 0.6948590 0.6973857 0.7013274 0.7369878
## SVM_samsung_DE    0.61946903 0.6219580 0.6227876 0.6239674 0.6255531 0.6323936
## SVM_samsung_COR    0.65837479 0.6662981 0.6729282 0.6712764 0.6768040 0.6812396
## SVM_samsung_NZV    0.67035398 0.6747854 0.6804865 0.6810088 0.6849240 0.6926479
## SVM_samsung_RFE    0.67606412 0.6813276 0.6856669 0.6857678 0.6895218 0.6946903
## kknns_samsung      0.43307522 0.7262932 0.7361726 0.7162256 0.7447463 0.7504151
## kknns_samsung_DE    0.09905921 0.1081604 0.1096346 0.2468643 0.3784524 0.6270061
## kknns_samsung_COR    0.22277501 0.6300812 0.6454646 0.5686464 0.6592920 0.6827243
## kknns_samsung_NZV    0.66961326 0.6815041 0.6941372 0.7067568 0.7369318 0.7504151
## kknns_samsung_RFE    0.44745575 0.7260918 0.7365800 0.7179213 0.7475108 0.7573245
##           NA's
## RF_samsung      0
## RF_samsung_DE    0
## RF_samsung_COR    0
## RF_samsung_NZV    0
## RF_samsung_RFE    0
## C50_samsung      0
## C50_samsung_DE    0
## C50_samsung_COR    0
## C50_samsung_NZV    0
## C50_samsung_RFE    0
## SVM_samsung      0
## SVM_samsung_DE    0
## SVM_samsung_COR    0
## SVM_samsung_NZV    0
## SVM_samsung_RFE    0
## kknns_samsung      0
## kknns_samsung_DE    0
## kknns_samsung_COR    0
## kknns_samsung_NZV    0
```



```
## kknnsamsung_RFE      0
##
## Kappa
##           Min.      1st Qu.      Median      Mean      3rd Qu.
## RF_samsung      0.473869469 0.48019816 0.49490218 0.49274619 0.50394740
## RF_samsung_DE    0.079660959 0.09079012 0.09901359 0.09821123 0.10461487
## RF_samsung_COR   0.290105854 0.30040051 0.31427157 0.31511734 0.32780999
## RF_samsung_NZV   0.476116887 0.49560318 0.50896124 0.50667590 0.51746294
## RF_samsung_RFE   0.492851699 0.50765755 0.52331318 0.52049487 0.53281853
## C50_samsung      0.495324622 0.52168042 0.53144552 0.52835320 0.53487275
## C50_samsung_DE   0.072583749 0.08306487 0.08792934 0.09026993 0.09776236
## C50_samsung_COR   0.272381775 0.29802743 0.30392642 0.30243884 0.31179133
## C50_samsung_NZV   0.470951413 0.48179074 0.50292949 0.49515456 0.50731126
## C50_samsung_RFE   0.498335191 0.51900196 0.52121094 0.52409263 0.53375786
## SVM_samsung      0.335742654 0.34588230 0.35842821 0.36489396 0.37449928
## SVM_samsung_DE   0.081599941 0.08425966 0.09057411 0.09364655 0.10057277
## SVM_samsung_COR   0.241327220 0.25940135 0.26832933 0.27006456 0.28122665
## SVM_samsung_NZV   0.286985578 0.30584755 0.31343892 0.31739635 0.32692779
## SVM_samsung_RFE   0.310955623 0.32735444 0.33933497 0.33960544 0.35203297
## kknnsamsung      0.211232069 0.47560992 0.48774051 0.47136368 0.50161297
## kknnsamsung_DE    0.001160858 0.01254186 0.01562126 0.03465302 0.05283902
## kknnsamsung_COR   0.056167492 0.23535897 0.27297130 0.24444102 0.31339420
## kknnsamsung_NZV   0.378948703 0.41912768 0.43198337 0.44205811 0.47355713
## kknnsamsung_RFE   0.213550572 0.46523441 0.48946936 0.47016315 0.50003992
##           Max. NA's
## RF_samsung      0.5071713 0
## RF_samsung_DE    0.1127324 0
## RF_samsung_COR   0.3466326 0
## RF_samsung_NZV   0.5326514 0
## RF_samsung_RFE   0.5443915 0
## C50_samsung      0.5548337 0
## C50_samsung_DE   0.1148490 0
## C50_samsung_COR   0.3191729 0
## C50_samsung_NZV   0.5144922 0
## C50_samsung_RFE   0.5522474 0
## SVM_samsung      0.4475617 0
## SVM_samsung_DE   0.1236531 0
## SVM_samsung_COR   0.2956052 0
## SVM_samsung_NZV   0.3434371 0
## SVM_samsung_RFE   0.3672941 0
## kknnsamsung      0.5093080 0
## kknnsamsung_DE    0.1036693 0
## kknnsamsung_COR   0.3363218 0
## kknnsamsung_NZV   0.4946761 0
## kknnsamsung_RFE   0.5245897 0
```

##Large Matrices

```
dfLM_iphone <- import("LargeMatrix_iphone.csv")
dfLM_samsung <- import("LargeMatrix_samsung.csv")

dfLM_iphoneRFE <- dfLM_iphone[,predictors(rfeResults_iphone)]
dfLM_iphoneRFE$iphonesentiment <- dfLM_iphone$iphonesentiment
```

```
#No feature selection for Samsung
```

```
LM_Pred_iphone <- predict(RF_iphone_RFE, newdata = dfLM_iphoneRFE)  
LM_Pred_Samsung <- predict(C50_samsung_Original, newdata = dfLM_samsung)
```

```
summary(LM_Pred_iphone)
```

```
##      0      1      2      3      4      5  
## 44727      0 3028 2049      0 15044
```

```
summary(LM_Pred_Samsung)
```

```
##      0      1      2      3      4      5  
## 39022      0 4482 2301      84 18959
```