

WIFI LOCATIONING PREDICTIVE ALGORITHMS

PERFORMANCE METRICS EVALUATION

1. Performance metrics summary for WIFI locationing algorithms.

Three algorithms from the caret package and Random Forest algorithm from the randomForest package have been investigated. Accuracy and Kappa scores are approximately the same for each algorithm. Random Forest has higher Accuracy and Kappa score compared to other algorithms.

```
Console Terminal x Jobs x
C:/Users/Light/Desktop/Data_Analytics/Course4/Task3/C4T3/
> RFFit2<-train(SpecLocation~.,data=trainSet,method="rf",ctrl=ctrl)
> resamp<-resamples(list(C50=CFiveFit1,KNN=KNNFit, CART=RFFit2))
> summary(resamp)

Call:
summary.resamples(object = resamp)

Models: C50, KNN, CART
Number of resamples: 10

Accuracy
      Min.    1st Qu.    Median      Mean   3rd Qu.      Max. NA's
C50  0.6163207 0.6225412 0.6258032 0.6273099 0.6307305 0.6423462    0
KNN  0.6318083 0.6400000 0.6522356 0.6486304 0.6568557 0.6671418    1
CART 0.6630277 0.6691867 0.6776546 0.6776961 0.6858279 0.6956835    0

Kappa
      Min.    1st Qu.    Median      Mean   3rd Qu.      Max. NA's
C50  0.6157568 0.6219891 0.6252520 0.6267631 0.6301964 0.6418191    0
KNN  0.6312702 0.6394695 0.6517329 0.6481170 0.6563451 0.6666539    1
CART 0.6625202 0.6686800 0.6771718 0.6772106 0.6853562 0.6952176    0

> |
```

```
79:1 (Top Level) R Script
C:/Users/Light/Desktop/Data_Analytics/Course4/Task3/C4T3/

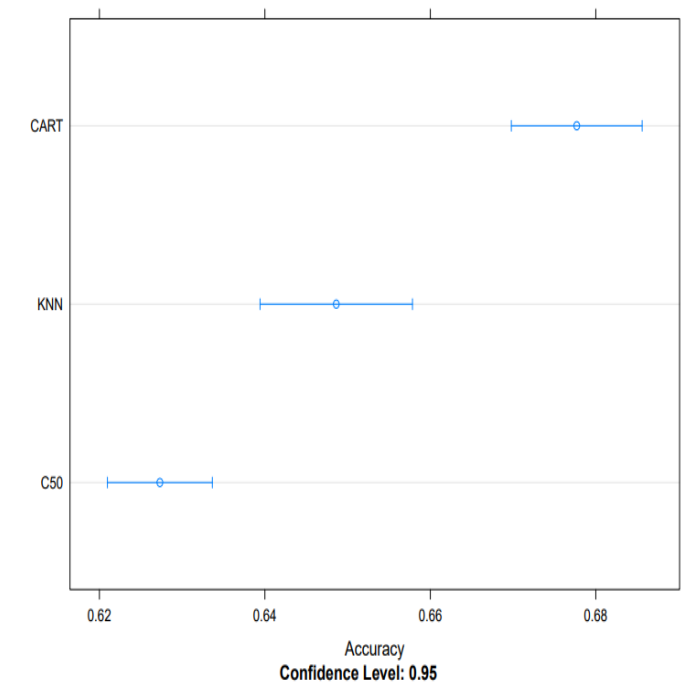
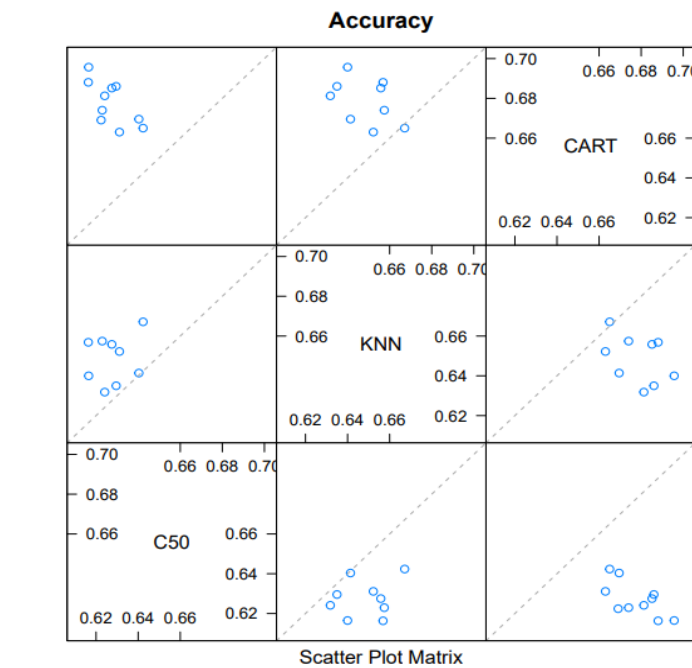
Accuracy
      Min.    1st Qu.    Median      Mean   3rd Qu.      Max. NA's
C50  0.6135402 0.6191242 0.6278301 0.629483 0.6382468 0.6494624    0
KNN  0.6314655 0.6426791 0.6485915 0.648005 0.6553736 0.6593015    0

Kappa
      Min.    1st Qu.    Median      Mean   3rd Qu.      Max. NA's
C50  0.6129884 0.6185759 0.6272815 0.6289417 0.6377120 0.6489517    0
KNN  0.6309333 0.6421605 0.6480883 0.6474967 0.6548762 0.6588030    0

> #Model eval
> preds<-predict(RFFit,newdata=testSet)
> postResample(pred=preds,obs=testSet$SpecLocation)
Accuracy      Kappa
0.7214081 0.7209890
> summary(postResample(pred=preds,obs=testSet$SpecLocation))
      Min.    1st Qu.    Median      Mean   3rd Qu.      Max.
0.7210  0.7211  0.7212  0.7212  0.7213  0.7214
> |
```

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2. Performance metric charts by Accuracy and Kappa score for WIFI locationing algorithms.
Random Forest is not included as it is not a part of the caret package.



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