HW3.R

Fumonchu

2021-10-14

Company : Stevens Project : HW3 Purpose : HW3 First Name : David Last Name : Fu CWID : 10471854 Date : October 14, 2021

Homework 3

```
rm(list=ls())
library(kknn)
set.seed(513)
```

```
cancerData=read.csv("C:/Users/Fumonchu/Documents/GitHub/School/CS513/HW3/breast-cancer-wisconsi
n.csv", header=TRUE)
cancerData$F6 <- as.numeric(cancerData$F6)
```

```
## Warning: NAs introduced by coercion
```

```
cancerData <- cancerData[rowSums(is.na(cancerData)) == 0,]
summary(cancerData)
```

```
##      Sample               F1               F2               F3
##  Min.   :   63375   Min.   : 1.000   Min.   : 1.000   Min.   : 1.000
##  1st Qu.:  877617   1st Qu.: 2.000   1st Qu.: 1.000   1st Qu.: 1.000
##  Median : 1171795   Median : 4.000   Median : 1.000   Median : 1.000
##  Mean   : 1076720   Mean   : 4.442   Mean   : 3.151   Mean   : 3.215
##  3rd Qu.: 1238705   3rd Qu.: 6.000   3rd Qu.: 5.000   3rd Qu.: 5.000
##  Max.   :13454352   Max.   :10.000   Max.   :10.000   Max.   :10.000
##        F4              F5               F6               F7
##  Min.   : 1.00   Min.   : 1.000   Min.   : 1.000   Min.   : 1.000
##  1st Qu.: 1.00   1st Qu.: 2.000   1st Qu.: 1.000   1st Qu.: 2.000
##  Median : 1.00   Median : 2.000   Median : 1.000   Median : 3.000
##  Mean   : 2.83   Mean   : 3.234   Mean   : 3.545   Mean   : 3.445
##  3rd Qu.: 4.00   3rd Qu.: 4.000   3rd Qu.: 6.000   3rd Qu.: 5.000
##  Max.   :10.00   Max.   :10.000   Max.   :10.000   Max.   :10.000
##        F8              F9            Class
##  Min.   : 1.00   Min.   : 1.000   Min.   :2.0
##  1st Qu.: 1.00   1st Qu.: 1.000   1st Qu.:2.0
##  Median : 1.00   Median : 1.000   Median :2.0
##  Mean   : 2.87   Mean   : 1.603   Mean   :2.7
##  3rd Qu.: 4.00   3rd Qu.: 1.000   3rd Qu.:4.0
##  Max.   :10.00   Max.   :10.000   Max.   :4.0
```

```
idx<-sort(sample(nrow(cancerData),as.integer(.70*nrow(cancerData))))

training<-cancerData[idx,]

test<-cancerData[-idx,]

predict_k3 <- kknn(formula=Class~., training, test[,-11], k=3, kernel ="rectangular")

fit3 <- fitted(predict_k3)
table(Actual=test$Class,Fitted=fit3)
```

```
##       Fitted
## Actual   2 2.66666666666667 3.33333333333333   4
##      2 136                2                0   2
##      4   2                2                6  55
```

```
predict_k5 <- kknn(formula=Class~., training, test[,-11], k=5, kernel ="rectangular")

fit5 <- fitted(predict_k5)
table(Actual=test$Class,Fitted=fit5)
```

```
##       Fitted
## Actual   2 2.4 2.8 3.2 3.6   4
##      2 135   1   1   1   0   2
##      4   2   0   1   2  10  50
```

```
predict_k10 <- kknn(formula=Class~., training, test[,-11], k=10, kernel ="rectangular")

fit10 <- fitted(predict_k10)
table(Actual=test$Class,Fitted=fit10)
```

```
##       Fitted
## Actual   2 2.2 2.4 2.6 2.8 3.2 3.4 3.6 3.8   4
##      2 134   1   1   0   1   1   0   2   0   0
##      4   2   0   0   1   0   2   1   4  24  31
```

```
rm(list=ls())
```