Diabetes

Obtenção dos dados

```
diabetes <- read.csv(
  file = "C:/Users/FAK/OneDrive/Documentos/Ciencia_de_Dados_e_IA/2_Semestre/R/diabetes.csv"
)

head(diabetes[1:6])
```

```
##   Pregnancies Glucose BloodPressure SkinThickness Insulin  BMI
## 1           6     148            72            35       0 33.6
## 2           1      85            66            29       0 26.6
## 3           8     183            64             0       0 23.3
## 4           1      89            66            23      94 28.1
## 5           0     137            40            35     168 43.1
## 6           5     116            74             0       0 25.6
```

Preparação dos dados

```
diabetes$Outcome <- as.factor(diabetes$Outcome)


library(dplyr)

diabetes2 <- diabetes %>%
  filter(Insulin <= 250)
```

Construção do modelo

Divisão dos dados

```
library(caTools)

set.seed(123)
index = sample.split(diabetes2$Pregnancies, SplitRatio = .70)

train = subset(diabetes2, index == TRUE)
test  = subset(diabetes2, index == FALSE)
```

Construção do modelo

Treinamento

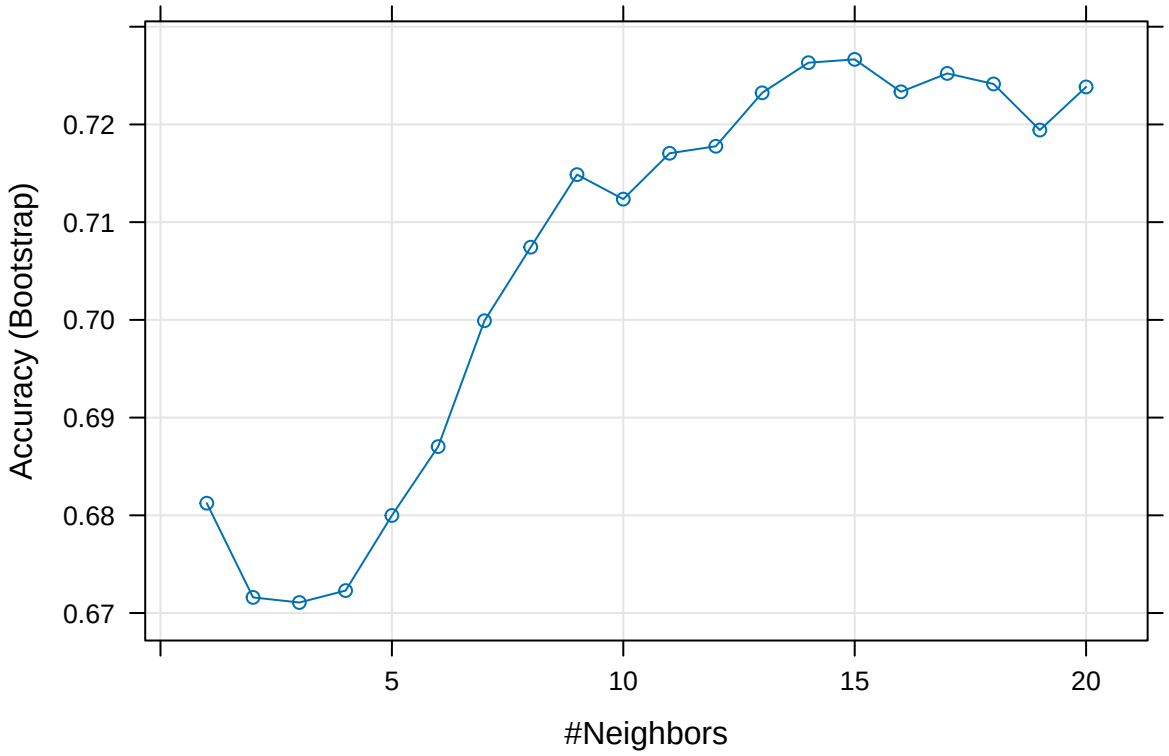
```
library(caret)
library(e1071)
set.seed(321)

modelo2 <- train(
  Outcome ~., data = train, method = "knn",
   tuneGrid = expand.grid(k = c(1:20)))

modelo2$results
```

```
##     k  Accuracy     Kappa AccuracySD    KappaSD
## 1   1 0.6812417 0.2672857 0.02508823 0.05209127
## 2   2 0.6716012 0.2472091 0.02580538 0.05823044
## 3   3 0.6710795 0.2489375 0.03062290 0.06158122
## 4   4 0.6722990 0.2491852 0.03564545 0.07270520
## 5   5 0.6799853 0.2612326 0.03497202 0.06965532
## 6   6 0.6870351 0.2709889 0.03054408 0.06678610
## 7   7 0.6999105 0.2964678 0.03056224 0.06822750
## 8   8 0.7074421 0.3111849 0.02730385 0.05911386
## 9   9 0.7148655 0.3248247 0.02833120 0.06396979
## 10 10 0.7123562 0.3190123 0.02767569 0.05331421
## 11 11 0.7170498 0.3242597 0.02662759 0.05107199
## 12 12 0.7177685 0.3244747 0.02838302 0.05985968
## 13 13 0.7232339 0.3333408 0.02569841 0.05320402
## 14 14 0.7263198 0.3394999 0.02475220 0.05764762
## 15 15 0.7266595 0.3382824 0.02343778 0.05097264
## 16 16 0.7233392 0.3290788 0.02802407 0.06015891
## 17 17 0.7252203 0.3322175 0.02981879 0.06615667
## 18 18 0.7241440 0.3293330 0.02531860 0.05483174
## 19 19 0.7194279 0.3155865 0.02362044 0.04931024
## 20 20 0.7238362 0.3249042 0.02649810 0.05972954
```

```
modelo2$bestTune
```

```
##     k
## 15 15
```

```
plot(modelo2)
```



Avaliando o modelo

```
predicoes <- predict(modelo2,test)

predicoes
```

```
##   [1] 1 0 0 0 0 0 0 1 0 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1
##  [38] 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 1 0 1 0 0 0 0 0 0 0 1 0 1 0 1 1 0 0 0
##  [75] 0 0 0 0 1 0 1 1 0 0 0 0 0 0 1 0 0 0 1 1 1 0 0 1 0 0 1 0 0 0 0 1 0 0 0 0 0
## [112] 1 0 0 0 0 1 1 0 0 1 0 0 1 0 0 0 0 0 0 0 1 0 1 0 0 0 0 1 0 0 0 0 0 0 0 1 1
## [149] 0 0 1 0 0 0 1 0 1 1 0 0 1 0 0 0 0 0 0 0 0 1 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0
## [186] 0 0 0 1 0 0 0 1 1 1 0 0 1 1 0 0 1 0 1 0 0 0 0 0 0 1 1 1 0
## Levels: 0 1
```

```
?caret::confusionMatrix
confusionMatrix(predicoes, test$Outcome)
```

```
## Confusion Matrix and Statistics
##
##           Reference
## Prediction   0   1
##          0 127  35
```

```
##          1  14  38
##
##               Accuracy : 0.771
##                 95% CI : (0.7088, 0.8255)
##    No Information Rate : 0.6589
##    P-Value [Acc > NIR] : 0.0002402
##
##                  Kappa : 0.4527
##
##  Mcnemar's Test P-Value : 0.0042747
##
##             Sensitivity : 0.9007
##             Specificity : 0.5205
##          Pos Pred Value : 0.7840
##          Neg Pred Value : 0.7308
##              Prevalence : 0.6589
##          Detection Rate : 0.5935
##    Detection Prevalence : 0.7570
##       Balanced Accuracy : 0.7106
##
##        'Positive' Class : 0
##
```