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15BCE0517

EXPERIMENT 5:

INBUILT DATA SET USED FOR CONVENIENCE AND FORMAT

GROCERY DATA SET

1)supp = 0.001, conf = 0.8

> library(arules)

> library(datasets)

> data(Groceries)

> rules <- apriori(Groceries, parameter = list(supp = 0.001, conf = 0.8))

Apriori

Parameter specification:

confidence minval smax arem aval originalSupport maxtime support minlen maxlen target ext

0.8 0.1 1 none FALSE TRUE 5 0.001 1 10 rules FALSE

Algorithmic control:

filter tree heap memopt load sort verbose

0.1 TRUE TRUE FALSE TRUE 2 TRUE

Absolute minimum support count: 9

set item appearances ...[0 item(s)] done [0.00s].

set transactions ...[169 item(s), 9835 transaction(s)] done [0.00s].

sorting and recoding items ... [157 item(s)] done [0.00s].

creating transaction tree ... done [0.01s].

checking subsets of size 1 2 3 4 5 6 done [0.02s].

writing ... [410 rule(s)] done [0.00s].

creating S4 object ... done [0.00s].> rules<-sort(rules, by="confidence", decreasing=TRUE)

**PRINT FIRST TEN RULES**

> inspect(rules[1:10])

lhs rhs support confidence lift count

[1] {rice,

sugar} => {whole milk} 0.001220132 1 3.913649 12

[2] {canned fish,

hygiene articles} => {whole milk} 0.001118454 1 3.913649 11

[3] {root vegetables,

butter,

rice} => {whole milk} 0.001016777 1 3.913649 10

[4] {root vegetables,

whipped/sour cream,

flour} => {whole milk} 0.001728521 1 3.913649 17

[5] {butter,

soft cheese,

domestic eggs} => {whole milk} 0.001016777 1 3.913649 10

[6] {citrus fruit,

root vegetables,

soft cheese} => {other vegetables} 0.001016777 1 5.168156 10

[7] {pip fruit,

butter,

hygiene articles} => {whole milk} 0.001016777 1 3.913649 10

[8] {root vegetables,

whipped/sour cream,

hygiene articles} => {whole milk} 0.001016777 1 3.913649 10

[9] {pip fruit,

root vegetables,

hygiene articles} => {whole milk} 0.001016777 1 3.913649 10

[10] {cream cheese ,

domestic eggs,

sugar} => {whole milk} 0.001118454 1 3.913649 11

**TOTAL NUMBER FO RULES**

> length(rules)

[1] 410

**2) supp = 0.005, conf = 0.7**

> rules <- apriori(Groceries, parameter = list(supp = 0.005, conf = 0.7))

Apriori

Parameter specification:

confidence minval smax arem aval originalSupport maxtime support minlen maxlen target ext

0.7 0.1 1 none FALSE TRUE 5 0.005 1 10 rules FALSE

Algorithmic control:

filter tree heap memopt load sort verbose

0.1 TRUE TRUE FALSE TRUE 2 TRUE

Absolute minimum support count: 49

set item appearances ...[0 item(s)] done [0.00s].

set transactions ...[169 item(s), 9835 transaction(s)] done [0.00s].

sorting and recoding items ... [120 item(s)] done [0.00s].

creating transaction tree ... done [0.00s].

checking subsets of size 1 2 3 4 done [0.00s].

writing ... [1 rule(s)] done [0.00s].

creating S4 object ... done [0.00s].

> rules<-sort(rules, by="confidence", decreasing=TRUE)

> inspect(rules[1:10])

Error in slot(x, s)[i] : subscript out of bounds

**PRINT the only one RULE**

> rules<-sort(rules, by="confidence", decreasing=TRUE)

> length(rules)

[1] 1

> inspect(rules)

lhs rhs support confidence lift count

[1] {tropical fruit,root vegetables,yogurt} => {whole milk} 0.00569395 0.7 2.739554 56

**3) supp = 0.01, conf = 0.5**

> rules <- apriori(Groceries, parameter = list(supp = 0.01, conf = 0.5))

Apriori

Parameter specification:

confidence minval smax arem aval originalSupport maxtime support minlen maxlen target ext

0.5 0.1 1 none FALSE TRUE 5 0.01 1 10 rules FALSE

Algorithmic control:

filter tree heap memopt load sort verbose

0.1 TRUE TRUE FALSE TRUE 2 TRUE

Absolute minimum support count: 98

set item appearances ...[0 item(s)] done [0.00s].

set transactions ...[169 item(s), 9835 transaction(s)] done [0.00s].

sorting and recoding items ... [88 item(s)] done [0.00s].

creating transaction tree ... done [0.00s].

checking subsets of size 1 2 3 4 done [0.00s].

writing ... [15 rule(s)] done [0.00s].

creating S4 object ... done [0.00s].

**PRINT FIRST TEN RULES**

> rules<-sort(rules, by="confidence", decreasing=TRUE)

> length(rules)

[1] 15

> inspect(rules)

lhs rhs support confidence lift count

[1] {citrus fruit,root vegetables} => {other vegetables} 0.01037112 0.5862069 3.029608 102

[2] {tropical fruit,root vegetables} => {other vegetables} 0.01230300 0.5845411 3.020999 121

[3] {curd,yogurt} => {whole milk} 0.01006609 0.5823529 2.279125 99

[4] {other vegetables,butter} => {whole milk} 0.01148958 0.5736041 2.244885 113

[5] {tropical fruit,root vegetables} => {whole milk} 0.01199797 0.5700483 2.230969 118

[6] {root vegetables,yogurt} => {whole milk} 0.01453991 0.5629921 2.203354 143

[7] {other vegetables,domestic eggs} => {whole milk} 0.01230300 0.5525114 2.162336 121

[8] {yogurt,whipped/sour cream} => {whole milk} 0.01087951 0.5245098 2.052747 107

[9] {root vegetables,rolls/buns} => {whole milk} 0.01270971 0.5230126 2.046888 125

[10] {pip fruit,other vegetables} => {whole milk} 0.01352313 0.5175097 2.025351 133

[11] {tropical fruit,yogurt} => {whole milk} 0.01514997 0.5173611 2.024770 149

[12] {other vegetables,yogurt} => {whole milk} 0.02226741 0.5128806 2.007235 219

[13] {other vegetables,whipped/sour cream} => {whole milk} 0.01464159 0.5070423 1.984385 144

[14] {root vegetables,rolls/buns} => {other vegetables} 0.01220132 0.5020921 2.594890 120

[15] {root vegetables,yogurt} => {other vegetables} 0.01291307 0.5000000 2.584078 127

> library("arules")

Loading required package: Matrix

Attaching package: ‘arules’

The following objects are masked from ‘package:base’:

abbreviate, write

**2ND DATASET: ADULT DATA SET**

**1)** **supp = 0.45, conf = 0.8**

> data("Adult")

> rules <- apriori(Adult,parameter = list(supp = 0.45, conf = 0.8, target = "rules"))

Apriori

Parameter specification:

confidence minval smax arem aval originalSupport maxtime support minlen

0.8 0.1 1 none FALSE TRUE 5 0.45 1

maxlen target ext

10 rules FALSE

Algorithmic control:

filter tree heap memopt load sort verbose

0.1 TRUE TRUE FALSE TRUE 2 TRUE

Absolute minimum support count: 21978

set item appearances ...[0 item(s)] done [0.00s].

set transactions ...[115 item(s), 48842 transaction(s)] done [0.05s].

sorting and recoding items ... [10 item(s)] done [0.01s].

creating transaction tree ... done [0.04s].

checking subsets of size 1 2 3 4 5 done [0.00s].

writing ... [118 rule(s)] done [0.00s].

creating S4 object ... done [0.00s].

**PRINT FIRST TEN RULES**

> rules<-sort(rules, by="confidence", decreasing=TRUE)

> length(rules)

[1] 118

> inspect(rules[1:10])

lhs rhs support confidence lift count

[1] {income=small} => {capital-loss=None} 0.4908480 0.9698220 1.017355 23974

[2] {capital-gain=None,

income=small} => {capital-loss=None} 0.4696573 0.9685033 1.015972 22939

[3] {hours-per-week=Full-time} => {capital-loss=None} 0.5606650 0.9582531 1.005219 27384

[4] {income=small} => {capital-gain=None} 0.4849310 0.9581311 1.044414 23685

[5] {hours-per-week=Full-time,

native-country=United-States} => {capital-loss=None} 0.4959052 0.9574275 1.004353 24221

[6] {race=White,

hours-per-week=Full-time} => {capital-loss=None} 0.4618566 0.9572671 1.004185 22558

[7] {capital-loss=None,

income=small} => {capital-gain=None} 0.4696573 0.9568282 1.042993 22939

[8] {workclass=Private} => {capital-loss=None} 0.6639982 0.9564974 1.003377 32431

[9] {workclass=Private,

native-country=United-States} => {capital-loss=None} 0.5897179 0.9554818 1.002312 28803

[10] {capital-gain=None,

**2) supp = 0.6, conf = 0.8**

> rules <- apriori(Adult,parameter = list(supp = 0.6, conf = 0.8, target = "rules"))

Apriori

Parameter specification:

confidence minval smax arem aval originalSupport maxtime support minlen maxlen target ext

0.8 0.1 1 none FALSE TRUE 5 0.6 1 10 rules FALSE

Algorithmic control:

filter tree heap memopt load sort verbose

0.1 TRUE TRUE FALSE TRUE 2 TRUE

Absolute minimum support count: 29305

set item appearances ...[0 item(s)] done [0.00s].

set transactions ...[115 item(s), 48842 transaction(s)] done [0.05s].

sorting and recoding items ... [6 item(s)] done [0.01s].

creating transaction tree ... done [0.03s].

checking subsets of size 1 2 3 4 done [0.00s].

writing ... [39 rule(s)] done [0.00s].

creating S4 object ... done [0.01s].

**PRINT FIRST TEN RULES**

> rules<-sort(rules, by="confidence", decreasing=TRUE)

> length(rules)

[1] 39

> inspect(rules[1:10])

lhs rhs support confidence lift count

[1] {workclass=Private} => {capital-loss=None} 0.6639982 0.9564974 1.0033773 32431

[2] {} => {capital-loss=None} 0.9532779 0.9532779 1.0000000 46560

[3] {workclass=Private,capital-gain=None} => {capital-loss=None} 0.6111748 0.9529145 0.9996188 29851

[4] {native-country=United-States} => {capital-loss=None} 0.8548380 0.9525461 0.9992323 41752

[5] {race=White} => {capital-loss=None} 0.8136849 0.9516307 0.9982720 39742

[6] {race=White,native-country=United-States} => {capital-loss=None} 0.7490480 0.9504325 0.9970152 36585

[7] {capital-gain=None} => {capital-loss=None} 0.8706646 0.9490705 0.9955863 42525

[8] {capital-gain=None,native-country=United-States} => {capital-loss=None} 0.7793702 0.9481891 0.9946618 38066

[9] {race=White,capital-gain=None} => {capital-loss=None} 0.7404283 0.9470983 0.9935175 36164

[10] {sex=Male} => {capital-loss=None} 0.6331027 0.9470750 0.9934931 30922

>

**3) supp = 0.7, conf = 0.9,**

> rules <- apriori(Adult,parameter = list(supp = 0.7, conf = 0.9, target = "rules"))

Apriori

Parameter specification:

confidence minval smax arem aval originalSupport maxtime support minlen maxlen target ext

0.9 0.1 1 none FALSE TRUE 5 0.7 1 10 rules FALSE

Algorithmic control:

filter tree heap memopt load sort verbose

0.1 TRUE TRUE FALSE TRUE 2 TRUE

Absolute minimum support count: 34189

set item appearances ...[0 item(s)] done [0.00s].

set transactions ...[115 item(s), 48842 transaction(s)] done [0.05s].

sorting and recoding items ... [4 item(s)] done [0.00s].

creating transaction tree ... done [0.02s].

checking subsets of size 1 2 3 4 done [0.00s].

writing ... [17 rule(s)] done [0.00s].

creating S4 object ... done [0.00s].

**PRINT FIRST TEN RULES**

> rules<-sort(rules, by="confidence", decreasing=TRUE)

> length(rules)

[1] 17

> inspect(rules[1:10])

lhs rhs support confidence lift count

[1] {} => {capital-loss=None} 0.9532779 0.9532779 1.0000000 46560

[2] {native-country=United-States} => {capital-loss=None} 0.8548380 0.9525461 0.9992323 41752

[3] {race=White} => {capital-loss=None} 0.8136849 0.9516307 0.9982720 39742

[4] {race=White,native-country=United-States} => {capital-loss=None} 0.7490480 0.9504325 0.9970152 36585

[5] {capital-gain=None} => {capital-loss=None} 0.8706646 0.9490705 0.9955863 42525

[6] {capital-gain=None,native-country=United-States} => {capital-loss=None} 0.7793702 0.9481891 0.9946618 38066

[7] {race=White,capital-gain=None} => {capital-loss=None} 0.7404283 0.9470983 0.9935175 36164

[8] {race=White} => {native-country=United-States} 0.7881127 0.9217231 1.0270761 38493

[9] {race=White,capital-loss=None} => {native-country=United-States} 0.7490480 0.9205626 1.0257830 36585

[10] {race=White,capital-gain=None} => {native-country=United-States} 0.7194628 0.9202807 1.0254689 35140

**3RD DATASET:INCOME DATASET:**

1. **supp = 0.5, conf = 0.5**

> data("Income")

> rules <- apriori(Income,parameter = list(supp = 0.5, conf = 0.5, target = "rules"))

Apriori

Parameter specification:

confidence minval smax arem aval originalSupport maxtime support minlen maxlen target ext

0.5 0.1 1 none FALSE TRUE 5 0.5 1 10 rules FALSE

Algorithmic control:

filter tree heap memopt load sort verbose

0.1 TRUE TRUE FALSE TRUE 2 TRUE

Absolute minimum support count: 3438

set item appearances ...[0 item(s)] done [0.00s].

set transactions ...[50 item(s), 6876 transaction(s)] done [0.01s].

sorting and recoding items ... [11 item(s)] done [0.00s].

creating transaction tree ... done [0.00s].

checking subsets of size 1 2 3 done [0.00s].

writing ... [40 rule(s)] done [0.00s].

creating S4 object ... done [0.00s].

**PRINT FIRST FIVE RULES**

> rules<-sort(rules, by="confidence", decreasing=TRUE)

> length(rules)

[1] 40

> inspect(rules[1:5])

lhs rhs support confidence lift count

[1] {ethnic classification=white} => {language in home=english} 0.6595404 0.9847991 1.078776 4535

[2] {number in household=1,number of children=0} => {language in home=english} 0.5213787 0.9424290 1.032363 3585

[3] {number in household=1} => {language in home=english} 0.6495055 0.9388270 1.028417 4466

[4] {number of children=0} => {language in home=english} 0.5801338 0.9328812 1.021904 3989

[5] {years in bay area=10+} => {language in home=english} 0.6013671 0.9300495 1.018802 4135

**2) supp = 0.3, conf = 0.4**

> rules <- apriori(Income,parameter = list(supp = 0.3, conf = 0.4, target = "rules"))

Apriori

Parameter specification:

confidence minval smax arem aval originalSupport maxtime support minlen maxlen target ext

0.4 0.1 1 none FALSE TRUE 5 0.3 1 10 rules FALSE

Algorithmic control:

filter tree heap memopt load sort verbose

0.1 TRUE TRUE FALSE TRUE 2 TRUE

Absolute minimum support count: 2062

set item appearances ...[0 item(s)] done [0.00s].

set transactions ...[50 item(s), 6876 transaction(s)] done [0.01s].

sorting and recoding items ... [22 item(s)] done [0.00s].

creating transaction tree ... done [0.00s].

checking subsets of size 1 2 3 4 done [0.00s].

writing ... [419 rule(s)] done [0.00s].

creating S4 object ... done [0.00s].

**PRINT FIRST five RULES**

> rules<-sort(rules, by="confidence", decreasing=TRUE)

> length(rules)

[1] 419

> inspect(rules[1:5])

lhs rhs support confidence lift count

[1] {marital status=single} => {dual incomes=not married} 0.4091041 1 1.671366 2813

[2] {marital status=single,age=14-34} => {dual incomes=not married} 0.3654741 1 1.671366 2513

[3] {income=$0-$40,000,marital status=single} => {dual incomes=not married} 0.3302792 1 1.671366 2271

[4] {marital status=single,education=no college graduate} => {dual incomes=not married} 0.3206806 1 1.671366 2205

[5] {marital status=single,language in home=english} => {dual incomes=not married} 0.3647469 1 1.671366 2508

**3)supp = 0.45, conf = 0.5**

> rules <- apriori(Income,parameter = list(supp = 0.45, conf = 0.5, target = "rules"))

Apriori

Parameter specification:

confidence minval smax arem aval originalSupport maxtime support minlen maxlen target ext

0.5 0.1 1 none FALSE TRUE 5 0.45 1 10 rules FALSE

Algorithmic control:

filter tree heap memopt load sort verbose

0.1 TRUE TRUE FALSE TRUE 2 TRUE

Absolute minimum support count: 3094

set item appearances ...[0 item(s)] done [0.00s].

set transactions ...[50 item(s), 6876 transaction(s)] done [0.00s].

sorting and recoding items ... [11 item(s)] done [0.00s].

creating transaction tree ... done [0.00s].

checking subsets of size 1 2 3 done [0.00s].

writing ... [55 rule(s)] done [0.00s].

creating S4 object ... done [0.00s].

**PRINT FIRST five RULES**

> rules<-sort(rules, by="confidence", decreasing=TRUE)

> length(rules)

[1] 55

> inspect(rules[1:5])

lhs rhs support confidence lift count

[1] {number in household=1,ethnic classification=white} => {language in home=english} 0.4941827 0.9880779 1.082368 3398

[2] {ethnic classification=white} => {language in home=english} 0.6595404 0.9847991 1.078776 4535

[3] {number in household=1,number of children=0} => {language in home=english} 0.5213787 0.9424290 1.032363 3585

[4] {number in household=1} => {language in home=english} 0.6495055 0.9388270 1.028417 4466

[5] {number of children=0} => {language in home=english} 0.5801338 0.9328812 1.021904 3989