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SUPERMARKET DATA VISUALIZATION WITH R

supervisor

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Presented By

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System Simulation, SS2021

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Introduction

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Programing with R

- **Information Engineering and Computer Science**
- **Area of Interest**: Data analysis and machine learning
- **Project:** Data-analysis & visualization with R
- **Supermarket data visualization**
- **R plot functionality & further prediction**
- **Date: 19 June 2021**

Task overview

Aim : Supermarket Data visualizations and further prediction in “R”

Task

- Create Transaction data set from CSV
- Create an Item Frequency Plot
- Generate rule and create the plot for most Frequent Item using paracord method
- Generate rule and create the plot for most Frequent Item using paracord method

Create transaction data set from csv

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Requirement & Installation

- R version 3.6 -> For arulesViz library installation
- Required library
  - library(arulesViz)
  - library(arules)
  - library(tidyverse)

```
> basket_list[1:2]
[[1]]
[1] lunch box        cereal to go box
3099 Levels: 'children's spring' cd 'christmas stories' cd 'guglhupfform' 3er '

[[2]]
[1] chocolate dessert mold     rolling pin set            ironing utensil stati
[6] shower shelf               tray with three herb seeds
3099 Levels: 'children's spring' cd 'christmas stories' cd 'guglhupfform' 3er '
```

Transaction data from csv

```
# Read CSV file from local computer and assign to the data variablr
> data  <- read.csv( file ="/home/vikas/Documents/acadamic/data-mining/Exercise2/data.csv",sep = ";")

# Create Group from basket id for data set
> group_data <- group_by(data,basket_id)

# Make a list of item base on grop set
> basket <- summarise(group_data,count = n(),basket_list = list(article_name))

# Filter data first 25000 basket list analysis
> basket_list <- basket$basket_list[1:25000]

# Convert list in to transaction
> retail_transaction <- as(basket_list,"transactions")
```

Item frequency plot overview

Transaction data overview

- 25000 transactions (rows) > (filter from 214,530 row)
- 2319 items (columns)

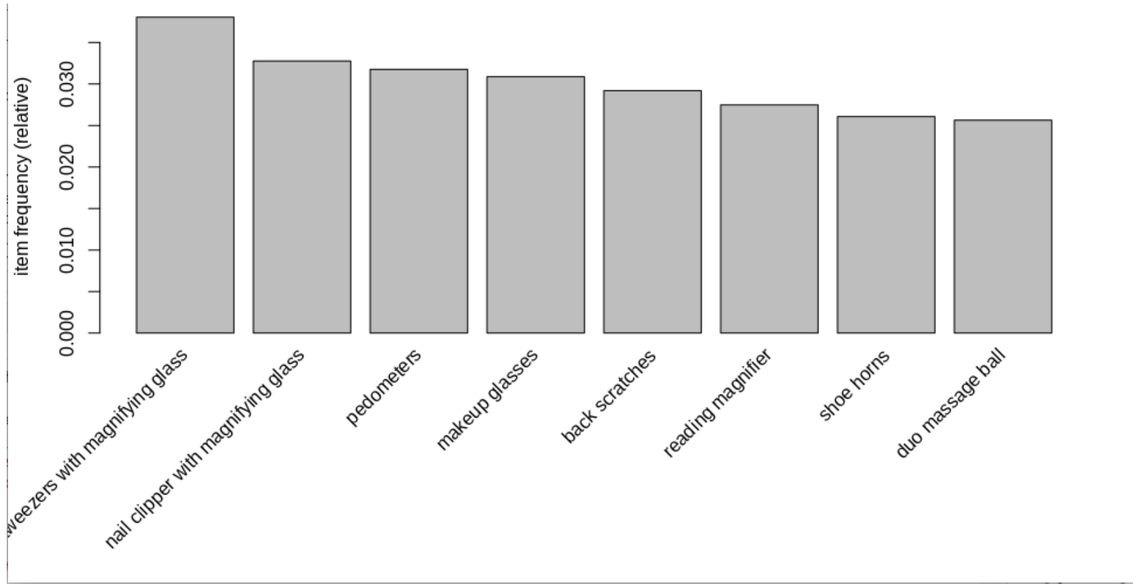
Top-8 most frequent item in shopping basket

- support of item “Tweezers with magnifying glass” is more than 0.03
- more then 3% chance of “Tweezers with magnifying glass” in shopping basket
- Identify E-question :

  - support = σ{item in set}/ {total Transaction}

- Plot generation code

  > itemFrequencyPlot(retail_transaction,topN = 8)



Generate rule & plot for a most frequent item using paracord method

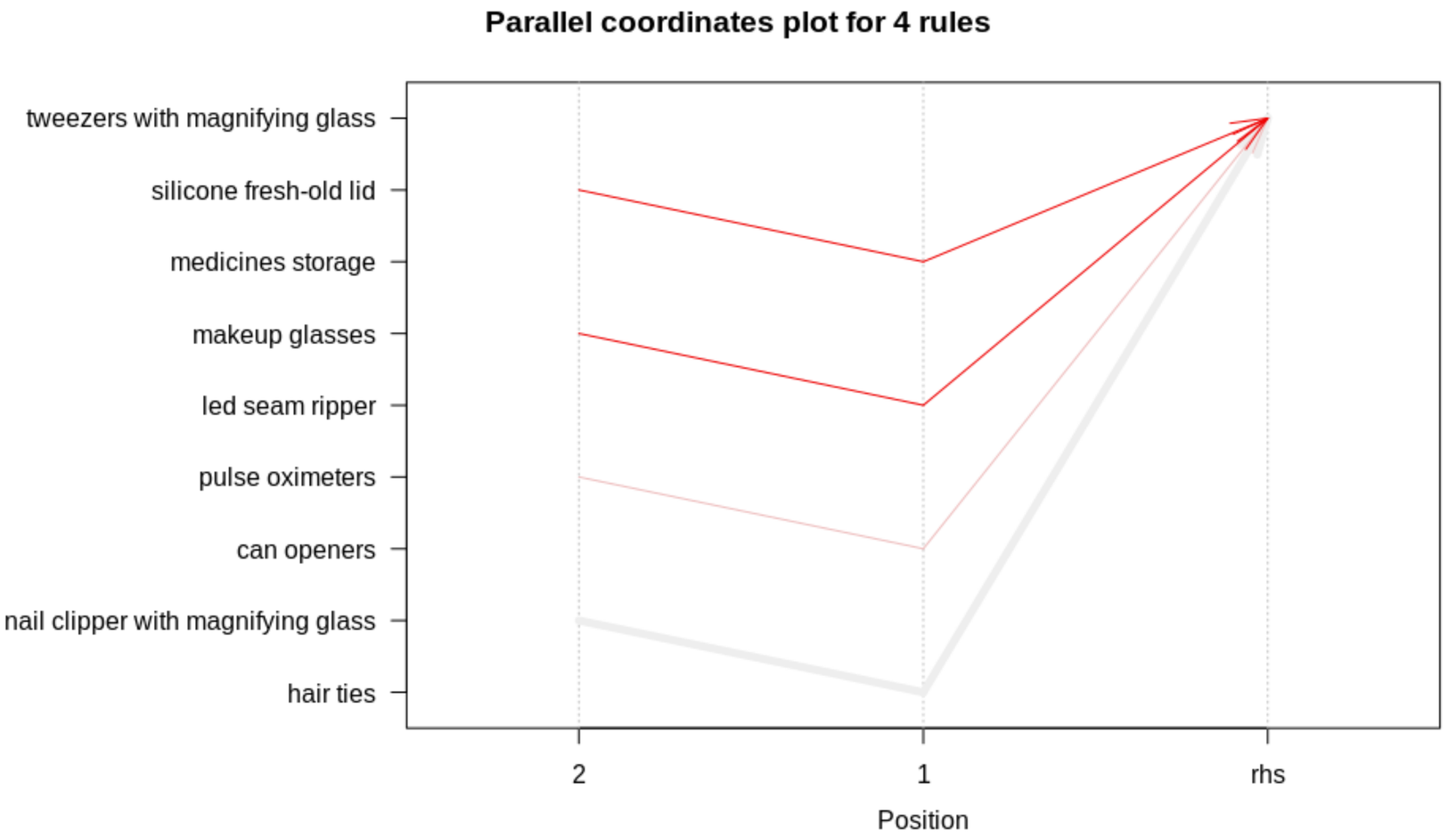
- Generate rule with support 0.0002 and confidence 0.66 minimum item is 2 and max 3 from create 54 rule

```
> basket_rule <- apriori(retail_transaction, parameter = list(support = 0.0002, conf = 0.66, minlen = 2,    maxlen = 3))

#filter rule apply on tweezer with magnifing glass
> tweezer_rule <- subset(basket_rule, subset = rhs %in% "tweezers with magnifying glass")

> tweezer_rule_head <- head(sort(tweezer_rule ,by = "lift"),4)

> inspect(tweezer_rule_head)
```

```
> inspect(tweezer_rule_head)
    lhs                                          rhs                              support confidence coverage lift     count
[1] {led seam ripper,makeup glasses}             => {tweezers with magnifying glass} 0.00020 0.8333333  0.00024  21.90676 5
[2] {medicines storage,silicone fresh-old lid}   => {tweezers with magnifying glass} 0.00020 0.8333333  0.00024  21.90676 5
[3] {can openers,pulse oximeters}                => {tweezers with magnifying glass} 0.00020 0.7142857  0.00028  18.77723 5
[4] {hair ties,nail clipper with magnifying glass} => {tweezers with magnifying glass} 0.00024 0.6666667  0.00036  17.52541 6
>
```

Plot of most frequent item with method paracoord

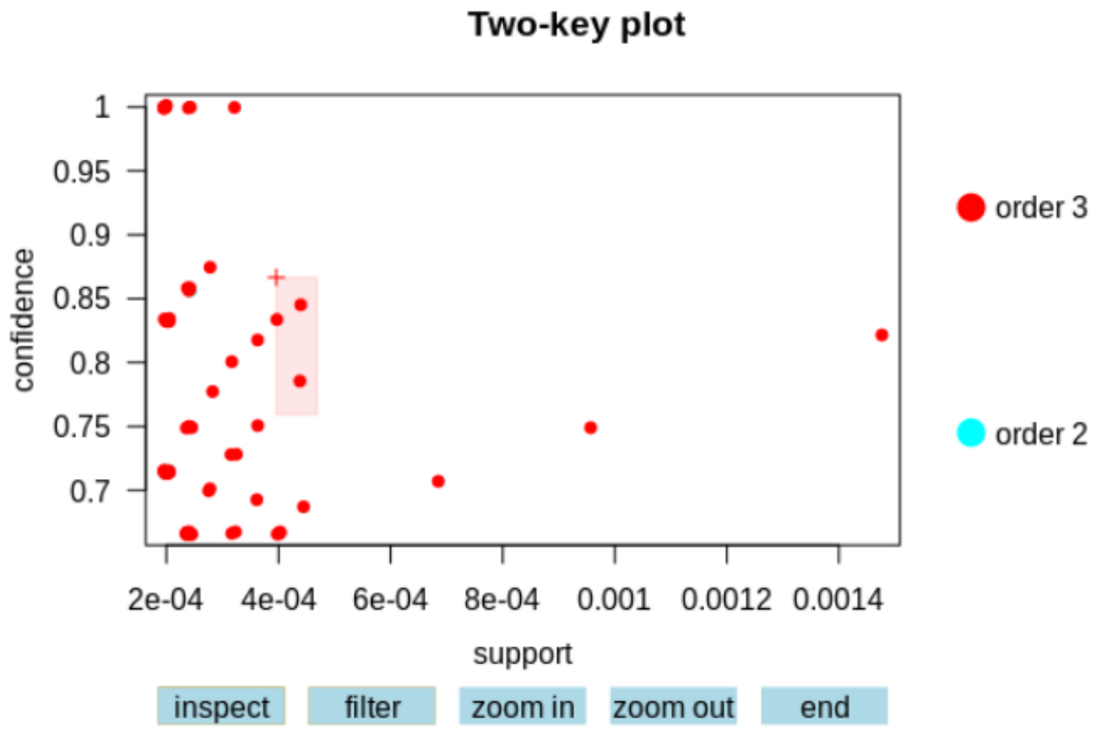
- > plot(tweezer_rule_head,method="paracoord")



Generate rule for entire basket and create plot with two-key plot method

> plot(basket_rule,method = "two-key plot",interactive = TRUE)

NOTE : Selected data shows the inspect of item list from “Two-key plot” graph



Selected data of region

```
Number of rules selected: 3
    lhs                                          rhs           support conf
[1] {crystal rocks ms bracelet,ms ear}       => {ms bracelet} 0.00040 0.83
[2] {bath buckets,toilet paper holder black} => {hooks}       0.00044 0.84
[3] {ms chain,ms ring crystal gray}          => {ms ring}     0.00044 0.78
```

Outcomes & Further Prediction

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Outcomes

- The item “tweezer with a magnifying glass” and “nail clipper with magnifying glass” both the most frequent items from the same category so these two product keep gathering in shop. For easy to customer.

Further Prediction

- Also, identify which category of the item should keep together
- Which item should close to selling due to very low frequency of buy.
- How to arrange section of item with daily usage

Project and Code Link

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The project code push on GitHub repository link has been given below

Code Link

- **GitHub:** https://github.com/vji-axelor/simulation

Related Fiels

- **data.csv:** Supermarket transaction data records
- **documents.pdf**: The brief description about code and project
- **system-simulation.r :** R code with comments

Thank You...!

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