

Assignment 7

Association Rule Mining

- Aim: Create Association Rules
for market Basket Analysis
for the given threshold (Using R)
- Objective
 - i) To understand the concept -
of Association Rule Mining.
 - ii) To understand and implement
the Apriori algorithm.
- Theory
Market Basket analysis is one
of the key techniques
used by large retailers to
uncover association between
items.
It is an unsupervised
data mining tool item - which
one can bought together.
- Application.
 - i) Music product Recommendation
 - ii) Medical diagnosis
 - iii) Content optimization

• Association Rule mining ARM

- It is used when you want to find an association between different objects in a set, find frequent pattern in a transaction database etc.

ARM can be viewed as 2 step approach

• Frequent Itemset Generation : find all frequent item sets with support \geq predetermined minimum support.

• Rule Generation : List all Association rules from frequent item set.

let A & B be the product and N be the total products.

$$\text{Support} = \frac{\text{freq}(A)}{N}$$

$$\text{Confidence} = \frac{\text{Support}(A \cup B)}{\text{Support}(A)}$$

$$\text{Support}(A \cup B) = \frac{\text{freq}(A \cup B)}{N}$$

Confidence shows the strength of association.

$$\text{Lift} = \frac{\text{Support}(A \cup B)}{\text{Support}(A) \times \text{Support}(B)}$$

Lift = 1 \rightarrow A & B are independent

Lift $> 1 \rightarrow$ A & B are dependent

Lift $< 1 \rightarrow$ more randomness

Apriori algorithm

It is given by R Agrawal

& R Srikant in 1993 for

finding frequent association

rules. we apply iterative

approach on level using

seach, where k frequent

itemset are used to find

$k+1$ itemsets

Conclusion

In this assignment we have implemented the prior algorithm to generate association rules and have understood the concepts & measure of Association Rule mining.