
ASSOCIATION RULES

Interview Questions:

1. What is lift and why is it important in Association rules?

Lift measures how strongly two items are associated compared to random chance. A lift value greater than 1 indicates a strong positive relationship, meaning buying one item increases the likelihood of buying the other. It is important in association rule mining as it helps identify meaningful patterns for recommendations and decision-making.

2. What is support and Confidence? How do you calculate them?

Support measures how frequently an item or itemset appears in the dataset. It is calculated as: $\text{support} = \frac{\text{Transactions containing the item}}{\text{Total transactions}}$ Confidence measures how often an item Y is bought when item X is bought. It is calculated as: $\text{Confidence} = \frac{\text{Support of (X, Y)}}{\text{Support of X}}$ Higher confidence means a stronger likelihood of Y being purchased when X is purchased.

3. What are some limitations or challenges of Association rules mining?

Association Rule Mining faces challenges like high computational complexity, making it slow for large datasets due to numerous itemset combinations. Setting the right thresholds for support, confidence, and lift is tricky, as poor choices can lead to irrelevant or excessive rules. Additionally, many generated rules may be redundant or uninteresting, and traditional methods do not consider the sequence or timing of transactions, limiting their real-world applicability.