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CS 425 Intro to Machine Learning

HW 2

3.9 Show that as we move an item from the consequent to the antecedent, confidence can never increase:

$\text{confidence}(\text{ABC} \rightarrow \text{D}) \geq \text{confidence}(\text{AB} \rightarrow \text{CD})$

$P(D|ABC) \geq P(CD|AB)$

$\frac{P(ABCD)}{P(A)P(B)P(C)} \geq \frac{P(ABCD)}{P(A)P(B)}$

$\frac{1}{P(C)} \geq 1$ is always true

3.10 Associated with each item sold in basket analysis, if we also have a number indicating how much the customer enjoyed the product, for example, on a scale of 0 to 10, how can you use the extra information to calculate which item to propose to a customer?

This extra information could be used as an extra dependency in the association rule:

$confidence(X, L \rightarrow Y)$ where L is the value of how much the customer enjoyed a product.