Clustering-Users-Based-On-The-Structure-Of-Conditional-Preference-Networks-CP-Nets-

Clustering Users Based On The Structure Of Conditional Preference Networks (CP-Nets) In diverse areas like recommender systems, collective decision making, and preference elicitation, we are faced with the problem of representing users' preferences, consider the following statements.

Users typically feel more comfortable conveying their preferences in a qualitative way instead of a quantitative one. Some preferences are conditional, and representing these conditional preferences in a quantitative way is hard. Users prefer to express their preferences over individual attributes rather than whole outcomes, which consist of values assigned to every attribute. For these reasons, there is a critical need for a kind of graphical model that has good readability and is close to the way in which users state their preferences in natural language. That is why conditional preference networks (CP-nets) were introduced by the AI research community as a graphical model for representing qualitative and conditional preferences of users.

One of the most important challenges in the research for this thesis is that in the field of clustering CP-nets, we have a limited amount of research and the approach behind their method of clustering is based on creating induced preference graphs. The process of constructing an induced preference graph for each user is NP-hard, so this method of clustering would not be feasible in real world problems. In this specific situation, we are going to consider different ways of representing CP-nets as vectors. We can then use cosine similarity to measure the similarity between CP-nets, with no need to construct the induced preference graph.