Machine Learning techniques applied in Recommendation Systems

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The growth of information available on the Internet and the evolution of websites offering users a variety of items overwhelm the users, leading them to make poor decisions. Instead of being an advantage, this unlimited number of choices, began to decrease the users' experience on the Internet. Recommender Systems are a solution to this issue by providing suggestions for users in terms of different decision- making processes: what items to purchase, what music to listen to, what movie to watch next or what online news could be of interest to read. In this context, recommender systems change the way websites communicate with their users. Rather than providing a static experience in which users search for and potentially choose items, recommender systems increase interaction to provide a richer experience and point the user towards the next best choice to be made.

The goal of the proposed approach is to apply the collaborative filtering recommendation technique in order to define the user profile model based on ratings and to provide the user with suggestions that have been positively rated by users from his neighborhood. Several types of similarity measures are used to compute similarity between items or user profiles. The most popular similarity measures are correlation-based and cosine-based. In the learning phase of the recommendation process various clustering techniques (*K-Means*, *K-Medoids* and *Agglomerative*) are used and compared in order to best define user profiles that share the same level of preference and diversity and to group them into clusters. The *K Nearest Neighbor* technique is applied on the resulted clusters. The process is applied on the *MovieLens* dataset and the results obtained for each approach are compared in terms of accuracy.

References

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