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A Proposed Movie Recommender System to Solve Sparsity, Cold Start and Diversity Problems using Clustering Algorithms

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Abstract-

Internet growth has triggered massive information. Thus, the need to help users solve the information overload issue is by offering customized suggestions of services, products, information, and products. Recommender systems (RSs) that use collaborative filtering (CF) methods are commonly used because of their capability to construe user expectations and direct them towards linked tools that be acceptable to their interests. These methods face some issues such as sparsity of data, diversity and cold start. To overcome the issues faced by the RS, this paper has four proposals to better RS achievement to make proper predictions and recommend appropriate movies. First, use of K-Means algorithm to cluster the users in many groups according to each genre to cope with sparsity of data and to reduce the effect of popular movies. Second, use of K-Mediods algorithm to find the cluster that the user returned to according to all genres for increasing the diversity. Third, use of K- Nearest Neighbors algorithm based CF model to find neighbors in each cluster for the user in K-Means and K-Medoids. Fourth, demographic questions have been built for handing the problem ofcold start. The evaluating of the proposed system implemented on movielens data set in two testing using some measures and the results of these measures after implementing the algorithms show that the proposed system has a good organization. such as precision equal to 0.92, recall equal to 0.91, MAE equal to 0.39, RMSE equal to 1.16 , diversity score equal to 8, DCG, and NDCG, for users are decreased as the recommendation list progressed.