

LITERATURE SURVEY

SKILL/JOB RECOMMENDATION

INTRODUCTION

Nowadays, job search is a task commonly done on the Internet using job search engine sites like LinkedIn¹ , Indeed² , and others. Commonly, a job seeker has two ways to search a job using these sites: 1) doing a query based on keywords related to the job vacancy that he/she is looking for, or 2) creating and/or updating a professional profile containing data related to his/her education, professional experience, professional skills and other, and receive personalized job recommendations based on this data. Sites providing support to the former case are more popular and have a simpler structure; however, their recommendations are less accurate than those of the sites using profile data. Personalized job recommendation sites implemented a variety of types of recommender systems, such as content-based filtering, collaborative filtering, knowledge-based and hybrid approaches

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W. Hong et al. developed “A job recommender system based on clustering” that classifies users into groups by using historical behaviors of users and individual

information and then uses the appropriate recommendation approach for each group of users. This approach is suitable for the cases in which different users may have different attributes and a single recommendation approach may not be appropriate for all users [1]. Mamadou et al. presented an “online social network-based recommender system” that extracts users’ interests for jobs and then make recommendations according to user’s interest [2]. Yao et al. proposed a “hybrid recommender system” that exploited the job and user profiles and the actions undertaken by users in order to generate recommendations. Unfortunately, they did not satisfy both job seekers and recruiters at the same time to achieve a successful recommendation. Different from these previous works, we model the relations among users by cross-similarity which indicates the two-sided matching to generate preference for both job seekers and recruiters [3]. “Content-based Recommendation System”: These are the most subjective and descriptive based filtering. Content-based filtering can also be called as attribute-based recommender as it uses the explicitly defined property of an item. It is an approach to an information retrieval or machine learning problem. The assumption made in content-based filtering is that user prefers item with similar properties. Content-based filtering recommends items to the user whose properties

are similar to the item which the user has previously shown interest. Mobasher (2007) express that drawback of this filtering technique is their tendency to over-specialize in suggesting the item to a user profile as user profiles are relayed on an attribute of the previous item opted by the user. Nevertheless, in the job domain, the job listed in the job board be available only for few days; due to the nature of the domain, the tendency to over-specialize in recommending the same item would not be any problem in the job domain recommender system. In domains like entertainment, user preference are tends to change depending on various factors, but In Job domain, the user tends to look for the job where he can use his previous skills. New recommendation of jobs can be made when there is a change in user preference, i.e. if a user thinks to change his/her job domain by updating his new skills and the job domain if he/she wishes. Another scenario of new recommendation is when new jobs are listed in the database; system would identify the properties of the job listed, such as job domain and skills required for the job and matches with the users with a high similarity score[4]. “Knowledge Based Recommendation Systems”, attempts to suggest objects based on inferences about user’s needs and preferences (Burke, 2002). This approach assists users in the determination of suitable solutions from complex product

and service assortments. These solutions based on exploiting deep knowledge about the product[5]. Collaborative Filtering (CF): Collaborative Filtering is a technique is based on the human ratings that are given to an item by a user and find similarity between different users who have given similar ratings to an items(Hu and Pu, 2011). The essential operation used here is the memory-based nearest neighbor approach to group users who have a similar interest. As the volume of data grows gradually, there will be high latency in generating recommendations Mobasher (2007); Herlocker et al. (1999). Collaborative filtering has an advantage over content-based filtering techniques, but due to the nature of the hiring process, a job cannot be rated by the user and will not be possible to create a similarity matrix[6].

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