

Skill/Job Recommender

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Introduction:

Recently, most job-seekers exploit the internet to look for jobs online recruiting systems. However, with the rapid growth of information on these systems causes job searching become a time-consuming task. In other words, applicants have been dealing with the problem of information overload. Therefore, there is a need to develop job recommender systems that automatically suggest a ranked list of jobs matching users' particular interest. Nobody can deny the fact that these systems play a significant role in connecting between employees and employers. Normally, job recommender systems do not only serve for employers but also serve for applicants. Automatically, applicants obtain a ranked list of recommended jobs associated with their preference, while employers receive a ranked list of potential candidates matching their recruiting need. In this paper, we concentrate on recommending associated jobs for applicants. The question is which method should be applied for job recommender system. In order to choose a suitable algorithm, the aim of this study is to conduct a comparison study of popular methods for job recommendation. The key contributions of this study are summarized as follows: Building an experimental dataset for the problem of job recommendation. Providing a comparison study of popular methods (CB, CF, Linear-Hybrid) for job recommendation. The rest of the paper is organized as follows. In section II, formal definition of job recommendation is presented.

With the rapid development of the information society, a vast amount of information is now available from many diverse sources. To deal with this information overload problem, recommender systems, which assist users to discover relevant information, products and services, have now been successfully deployed in many domains [1, 2]. In this paper, we consider the task of job recommendation, where suitable jobs are recommended to users based on their past job application history. Recent research has also focused on this task. For example, in [3] jobs are recommended based on a graph constructed from the previously observed job transition patterns of users. These patterns were based on various features relating to employer sector and size, employee experience and education, etc. A supervised machine learning approach was then adopted to recommend suitable new jobs to users. In [4], a graph-based hybrid recommender is proposed which considers both content-based user and job profile similarities and interaction-based activities (e.g., applying to or liking a job). Personalized recommendations of candidates and jobs are then generated using

a PageRank-style ranking algorithm. Further, a collaborative filtering approach based on implicit profiling techniques was proposed in [5] to deliver personalized, query-less job recommendations to users. For other work in this area, see [6, 7, 14]. To date, research in the area of job recommendation has not considered an in-depth analysis of traditional content-based or case-based approaches to recommendation. Thus, the core contributions of this work are as follows. Firstly, a number of content-based approaches to job recommendation are proposed.

Literature Review:

There are lots of paper works and a few projects done on Skill/Job recommender and the problems that are associated with the existing solution is to be detected and the references are mentioned while finding problems in one of the papers that is as follows.

Existing Solution:

“The hybrid job recommendation approaches presented combined two or more techniques to overcome the problems that suffer from using each technique separately. For example, while the probability hybrid approaches in paragraph A realized a bidirectional recommendation and tried to cover different selection dimensions, they need to enhance by including more features for individuals and extending by various relational aspects other than trust. Additionally, they only adopted the binary representation with Yes and No when state user preferences, and it cannot measure the degree of users preferences for each index well, so the quality of recommendation is not high (Yu et al., 2011). As for the content-based job recommender systems, it is presented some approaches and systems based on CBF techniques. As mentioned in the CBF, it is limited by the features that explicitly associated with recommended objects. Therefore, since the applicants’ resumes are usually represented by their most important features using some key words, CBF systems cannot distinguish between different keywords meaning. In addition, the problem usually associated with the pure CBF systems; it cannot recommend jobs that are different from anything the user has seen before. Jobs will be recommended if they are similar to other jobs that the applicant has already interested. Thus, the applicants have to rate a sufficient number of jobs before a CBF recommender system can really understand the applicants preferences and present reliable recommendations. For example, the machine learned recommender system in paragraph 0 builds an automated system to recommend jobs for applicants based on their past job histories. This system is used a classifier that makes a recommendation by training them on content information. It suffered from scalability and data sparsity problems (Ghazanfar and Prügell-Bennett, 2010). In addition to, this system performs the recommendation as a unary relation and ignores the person-team fit when matching candidates with jobs. Table 4 summarizes the advantages and dis-advantages of these approaches and systems. Finally, from our research and findings from existing literature, we showed the increasing importance of information technology for the recruitment process. Thus, the important challenge for most organizations as identified by the literature analysis is the low qualification of applicants, where skills of applicants do not fit with the job profile.

Since, human attributes are usually pure Al-Otaibi and Ykhlef 5139 content-based that would not work very well to produce recommendations. On the other hand, the candidates can rate previous seen job profiles to be integrated with content-based filtering. Thus, a method based on collaborative filtering would also fail due to a too sparsely filled matrix of comparable ratings. Additionally, in skills requirements matching, we are interested in determining whether or not an individual satisfies a set of requirements. We must distinguish between most important and preferable requirements when matching. Most important requirements are hard constraints whereas preferable requirements are soft constraints that are taken into account when ranking (Fazel-Zarandiand, 2010). There-fore, the selection of candidates to jobs needs to integrate unary candidate attributes as well as relational information and incorporate candidate ratings for already seen jobs" profiles to develop a computational model that suitable for these requirements. This model can be benefited from successful recommender systems techniques that applied in e-commerce applications and produced good recommendations to users. We believe that this area of research has important practical implications in different levels of e-recruitment process that can support managers and recruiters. This is not aimed to replace completely traditional selection method but aims to support the human resource department by a list of candidates from which chose the suitable candidate."

The Approach to the Project:

There are exceptional solutions to job recommender, but the modification needs to be applied to the existing model and a skill evaluation phase must be implemented and the users must receive job recommendations appropriately. This approach is a way to enhance the existing wide range of applications.

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