Skill / Job Recommender Application

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Abstract
In the last years, job recommender systems have become popular since they successfully reduce information overload by generating personalized job suggestions. Although in the literature exists a variety of techniques and strategies used as part of job recommender systems, most of them fail to recommending job vacancies that fit properly to the job seekers profiles. Thus, the contributions of this work are threefold, we: i) made publicly available a new dataset formed by a set of job seekers profiles and a set of job vacancies collected from different job search engine sites; ii) put forward the proposal of a framework for job recommendation based on professional skills of job seekers; and iii) carried out an evaluation to quantify empirically the recommendation abilities of two state-of-the-art methods, considering different configurations, within the proposed framework. We thus present a general panorama of job recommendation task aiming to facilitate research and real-world application design regarding this important issue.

INTRODUCTION

Nowadays, job search is a task commonly done on the Internet using job search engine sites like LinkedIn , Indeed , 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.

Based on the person-job fit premise, we propose a framework for job recommendation based on professional skills of job seekers. We automatically extracted the skills from the job seeker profiles using a variety of text processing techniques. Our experimental results show the performances of the evaluated methods and configurations and can be used as a guide to choose the most suitable method and configuration for job recommendation

RELATED WORK

Before we discuss the literature, it is useful to observe that in recent surveys on applications of recommender systems, job recommender systems and (more general) recommender systems in e-recruitment, are frequently not included. I.e., in the well-cited review on applications of recommender systems, Lu et al. do not mention the application area of e-recruitment, the same holds for the earlier review by Felfernig et al. Also, although most papers on neural networks in job recommender systems were published after 2018, the survey on (deep) neural networks in recommender systems (including a section on application areas) also neglects this application. From the HR perspective, job search and recommendation are also not always mentioned as an application area, as opposed to candidate selection, while in the end these systems do determine who will be in the applicant pool in the first place

SYSTEM MODEL

Use Case Diagram:

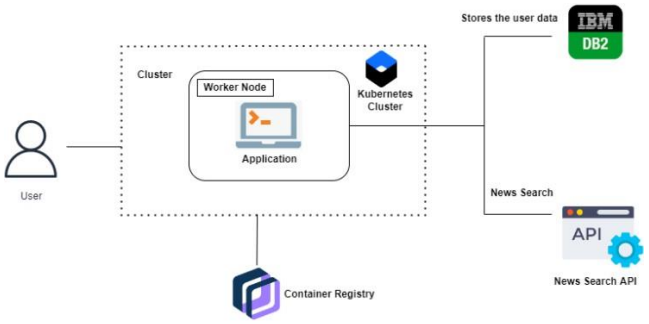

Figure 1: Use Case Diagram

Use Case Diagrams referred to as behavior diagrams which describe the commutation between actors or participations and a set of actions. This set of actions or use cases will be enclosed by system boundaries and can also have a relation with each other. Division among tupelos will be based on the information gain computed for each attribute.

TITLE	AUTHORS	PROPOSED IDEA	DRAWBACKS
Recommender system application developments	Jie Lu, Dianshuang Wu, Mingsong Mao, Wei Wang, and Guangquan Zhang.	Recommender systems can be defined as programs which attempt to recommend the most suitable items (products or services) to particular users (individuals or businesses) by predicting a user's interest in an item based on related information about the items, the users and the interactions between items and users The aim of developing recommender systems is to reduce information overload by retrieving the most relevant information and services from a huge amount of data, thereby providing personalized services. The most important feature of a recommender system is its ability to "guess" a user's preferences and interests by analyzing the behavior of this user and/or the behavior of other users to generate personalized recommendations	Do not mention the application area of e-recruitment, the same holds for the earlier review by Felfernig et al..
E-Recruitment recommender systems: a systematic review	Mauricio Noris Freire and Leandro Nunes de Castro.	Recommender Systems (RS) are a subclass of information filtering systems that seek topredict the rating or preference a user would give to an item. e-Recruitment is one of thedomains in which RS can contribute due to presenting a list of interesting jobs to a candidateor a list of candidates to a recruiter. This study presents an up-to-date systematic review ofrecommender systems applied to e-Recruitment considering only papers published from 2012 up to 2020. We searched three databases for published journal articles, conference papers andbook chapters. We then evaluated these works in terms of which kinds of RS were appliedfor e-Recruitment, what kind of information was used in the e-Recruitment RS, and howthey were assessed.	Even though the work by Freire succeeds in collecting a substantial number of contributions in the JRS application domain, they seem to fail to properly classify these contributions, making it difficult to see patterns in this literature
Combining content-based and collaborative filtering for job recommendation system: A cost-sensitive Statistical Relational Learning approach	ShuoYanga, Mohammed Korayem, KhalifehAlJadda, , TreyGrainger, SriraamNatarajana	We propose a hybrid model combining content-based filtering and collaborative filtering that is learned by an efficient statistical relational learning approach - Relational Functional Gradient Boosting (RFGB). Specifically, we define the target relation as Match(User, Job) which indicates that the user–job pair is a match when the grounded relation is true, hence that job should be recommended to the target user. The task is to predict the probability of this target relation Match(User, Job) for users based on the information about the job postings, the user profile, the application history, as well as application histories of users that have the similar preferences or profiles as the target user.	One way recommendation. – No relational aspects are included. – Scalability, ramp-up, and data sparsity problems.
A Reciprocal Recommender System for Graduates' Recruitment	Yanhui Ding; Yongxin Zhang; Lin Li; Weizhi Xu; Hu Wang	A reciprocal recommender system for graduates' recruitment (RRSGR) is presented in this paper. RRSGR makes full use of the historical information in university about graduates and former graduates. Probabilistic neighborhood selection and priority k-medoids clustering are adopted to improve the diversity of recommendation results.Experiments and user survey show that RRSGR is effective to improve the accuracy and diversity of recruitment recommendation	No relational aspects are included. – Ramp-up and data sparsity.

Conclusion:

we proposed a framework for job recommendation task. This framework facilitates the understanding of job recommendation process as well as it allows the use of a variety of text processing and recommendation methods according to the preferences of the job recommender system designer. Moreover, we also contribute making publicly available a new dataset containing job seekers profiles and job vacancies. Future directions of our work will focus on performing a more exhaustive evaluation considering a greater amount of methods and data as well as a comprehensive evaluation of the impact of each professional skill of a job seeker on the received job recommendation

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