LITERATURE SURVEY

PROJECT DOMAIN : CLOUD APPLICATION

DEVELOPMENT

PROJECT NAME   : NEWS TRACKER

TEAM ID   :PNT2022TMID47069

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TITLE:

Dynamic user profile – based job recommender system

AUTHOR:

Wenxing Hong, Siting Zheng and Huan Wang

ABSTRACT:

In this paper, we propose a dynamic user profile-based job recommender system. To address the challenge that the job applicants do not update the user profile in a timely manner, we update and extend the user profile dynamically based on the historical applied jobs and behaviours of job applicants. In particular, the statistical results of basic features in the applied jobs are used to update the job applicants. In addition, feature selection is employed in the text information of jobs that applied by the job applicant for extending the feature. Then a hybrid recommendation algorithm is employed according to the characteristics of user profiles for achieving the dynamic recommendation.

ADVANTAGES:

- This dynamic job recommender system provides the recommendation jobs that satisfy the changeable preferences of the job applicant.
- Cold-start problem is overcome by applying the user-based collaborative filtering to generate the initial recommendation jobs.
- Multiple models are built and then mixed to generate the eventual recommendations for the user.
- The hybrid approach allows to address gaps in the availability of data while still prioritizing better-performing models.

DISADVANTAGES:

- Scalability
- The context formed in the peak season and the off season has an influence on the job desire of a job applicant.

TITLE:

Levelized Taxonomy Approach for the Job seeking / Recruitment Problem

AUTHOR:

Michaël Guedj

ABSTRACT:

Recently, job recommendation has attracted a lot of research attention, the aim being to get a sorted list of relevant candidates for an applicant (job seeker or recruiter). To an effective matching, the utilisation of semantic technology has shown good results. Particularly, the use of taxonomy hierarchizing the skill following a relation of inheritance. However, request to the user to weighing the skills is a barrier to a usability and an efficiency of such methods on the user point of view. This paper intends to provide a first answer for such a problem.

ADVANTAGES:

- This approach uses semantic matching which is a technique which combines annotations using controlled vocabularies with background knowledge about a certain application domain.
- The utilisation of semantic technology has shown good results to an effective matching.
- To effectively locate and match individuals and positions, within or from outside an organization, it is important to use semantic technology.

DISADVANTAGES:

- The disadvantage of this approach is the design of the levelized taxonomy.
- The request to the user to weighing the skills is a barrier to a usability and an efficiency on the user point of view.
- The choices, or even interpretations, must be made by the designer, on the conception of the levelized hierarchy, which is not necessarily obvious, and therefore requires the use of an expert.

TITLE:

Generating personalized job role recommendations for the IT sector through predictive analytics and personality traits

AUTHORS:

I.A. Mirza, S. Mulla, R. Parekh, S. Sawant and K. M. Singh

ABSTRACT:

Collectively, the Information Technology sector forms one of the topmost recruiting industries as of 2015. The industry continues to grow rapidly by expanding its footprint into unexplored verticals and newer technologies. It is imperative that the IT workforce is one that is competent, versatile and adaptive.Numerous studies have determined that there is a direct correlation between the success achieved in a particular job role and the personality traits that an individual possesses. This study focuses on identifying suitable job roles for an individual who seeks a career in the IT sector by analysing their personality. Additionally, an attempt is made to suggest potentially beneficial and currently relevant skills that the individual could acquire to excel in the suggested job roles.The study uses Holland Codes to understand the individuals' personality and to identify these job roles. Additionally, the five factor model is used to further strengthen the quality of the recommendation made. The identification of skills relevant to a job role is done through the application of data analytics to job listings on web portals.

ADVANTAGES:

- This approach uses the five factor model which is a highly reliable and preferred test diagnosed for personality analysis.
- Time series analysis is used to predict and recommend the skills that may be in demand in the near future.

DISADVANTAGES:

- The five factor model is superficial and only descriptive in a world where self-improvement is a seemingly universal goal.
- This study uses the Holland codes which uses self-reports to gain information to provide reliable results. One of the main issues with selfreports are that the participants can lie**.**

TITLE:

Job Recommendation through Progression of Job Selection.

AUTHOR:

A. Nigam, A. Roy, H. Singh and H. Waila

ABSTRACT:

The task of job recommendation has been invariably solved using either a filter- based technique or through recommender systems where categorical features associated with jobs and candidates are used to generate recommendations. Through this paper, we are introducing a novel machine learning model which uses the candidates' job preference over time to incorporate the dynamics associated with highly volatile job market. In addition to that, our approach comprises several other smaller recommendations that contribute to problems of

a) generating serendipitous recommendations b) solving the cold-start problem for new jobs and new candidates. We have used skills as embedded features to derive latent competencies from them, thereby expanding the skills of jobs and candidate to achieve more coverage in the skill domain. Our model has been developed and deployed in a real-world job recommender system and the best performance of the click-through rate metric has been achieved through a blend of machine learning and non-machine learning recommendations. The best results have been achieved through Bidirectional Long Short Term Memory Networks (Bi-LSTM) with Attention for recommending jobs through machine learning that forms a major part of our recommendation.

ADVANTAGES:

- A few machine learning models were utilized to learn the sequence of joband candidate interactions and the outcomes have been designed.
- In this paper they have introduced a blended approach of recommending jobsthat uses job selection progression of candidates and tries to make recommendation task serendipitous
- They connected their model to job website and randomly evaluated therecommendation quality manually.

DISADVANTAGES:

- In this project, it will recommend only interested job. It will not be recommended based on eligibility.
- Perhaps the most common and significant difficulty is a lack of high-quality data to complete the deep learning. It takes a lot of cleared data to create a recommendation system that works efficiently and makes precise suggestions.

TITLE:

A content based approach for recommending personnel for job positions.

AUTHOR:

N. D. Almalis, G. A. Tsihrintzis and N. Karagiannis

ABSTRACT:

In this paper, we propose a content-based approach that takes into consideration an organization's needs and the skills of candidate employees in order to quantify the suitability of a candidate employee for a specific job position. The proposed algorithm utilizes Minkowski distance to perform a primary study in order to investigate how the personnel seeking and recruiting field could benefit further. Also, we conduct a three step experimental evaluation, namely, content analysis, refinement of the algorithm, and execution. The results of this experiment show that recommender systems can play an important role in the area of job seeking and recruiting.

ADVANTAGES:

- It overcomes the cold start problem that is even if the database does not contain user preferences it still shows recommendations to users.☐
- It easily adjusts its recommendations as the user changes preferences. ☐
- User similarity is not available hence no profile sharing is present, so privacy is maintained. ☐

DISADVANTAGES:

- As the recommendation depends upon item similarity hence a rich description of items must be given to the systems.☐
- Content Overspecialization also occurs in which content similar to the one already presents in the User's list is not recommended to the User.

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TITLE:

Soft skills recommendation systems for IT jobs: A Bayesian network approach.

AUTHOR:

A A. Bakar and Choo-Yee Ting

ABSTRACT:

Today, soft skills are crucial factors to the success of a project. For a certain set of jobs, soft skills are often considered more crucial than the hard skills or technical skills, in order to perform the job effectively. However, it is not a trivial task to identify the appropriate soft skills for each job. In this light, this study proposed a solution to assist employers when preparing advertisement via identification of suitable soft skills together with its relevancy to that particular job title. Bayesian network is employed to solve this problem because it is suitable for reasoning and decision making under uncertainty. The proposed Bayesian Network is trained using a dataset collected via extracting information from advertisements and also through interview sessions with a few identified experts.

ADVANTAGES:

- Soft skills have become increasingly important to employers because they do contribute to the success of a project and the organization.□
- Information Technology (IT) profession, the requirements for soft skills have greater weights than of the hard skills.□

DISADVANTAGES:

- The main challenge faced through this study is to get participation from the subject matter experts during the interview and survey. Hence, only minimum subject matter experts responded to the survey and they were from the same organization. The same person who participated in the interview is also participated in the survey. Therefore, the accuracy of the survey and interview may not be high.□
- Due to the time constraint, this study is only focus on IT Software profession which was very limited to be applied in the real scenarios.□

TITLE:
Job seeker to vacancy matching using social network analysis

AUTHOR:
Chala and M. Fathi

ABSTRACT:
Social network analysis is the investigation of social structures by using methods such as graph theory and machine learning. Social networks characterize networked structures in terms of nodes (i.e., individuals) and their relationships to each other as acquaintances, colleagues, collaborators and/or classmates. Through these relationships, one can find their ties with their connections, professions, and the degree of the ties. Networking sites such as LinkedIn and ResearchGate also contain more information of the knowledge of connections about the skill of an individual. The purpose of this study is to identify methods that measure the skills, expertise and experience of a job seeker and to investigate importance of using social networking data as input to user modelling that determines the strength of skills to be used for recommending matching job vacancies. Result of preliminary experiment using social network data in skill measurement shows consistent improvement in accuracy of matching job seekers to vacancies.

ADVANTAGES:

- The purpose of this study is to identify methods that measure the skills, expertise and experience of a job seeker.
- This system uses social networking data as input to user modelling that determines the strength of skills to be used for recommending matching job vacancies.

DISADVANTAGES:

- Since we are using social network analysis, it is more difficult and timeconsuming process.
- The profile of users in social network concerns with the problem of inaccurate data, compliance issues.

TITLE:

A Research of Job Recommendation System Based on Collaborative Filtering.

AUTHOR:

Y. Zhang, C. Yang and Z. Niu

ABSTRACT:

Dealing with the enormous amount of recruiting information on the Internet, a job seeker always spends hours to find useful ones. To reduce this laborious work, we design and implement a recommendation system for online jobhunting. In this paper, we contrast user-based and item-based collaborative filtering algorithm to choose a better performed one. We also take background information including students' resumes and details of recruiting information into consideration, bring weights of co-apply users (the users who had applied the candidate jobs) and weights of student used-liked jobs into the recommendation algorithm. At last, the model we proposed is verified through experiments study which is using actual data. The recommended results can achieve higher score of precision and recall, and they are more relevant with users' preferences before.

ADVANTAGES:

- This system provides background information like student resumes, recruitment details which the system more reliable.
- Since it uses content-based filtering algorithm, it recommends the job according to the user liked one in the past.
- Cold start and sparsity problems are overcome by using the user-based and item-based collaborative filtering.

DISADVANTAGES:

- This system does not provide filling of user's preference matrix effectively.
- The user's implicit behaviours cannot be predicted.

TITLE:

Personalized Preference Collaborative Filtering: Job Recommendation for Graduates

AUTHOR:

Q. Zhou, F. Liao, L. Ge and J. Sun

ABSTRACT:

It is challenging for graduates to find a proper job. Unlike those with occupational history, graduates generally are short of work experience and the support from social network, so they have to face hundreds of recruitment companies. It is very helpful to recommend a few most suitable jobs to graduates. Collaborative filtering (CF) method is currently the most frequently adopted and effective recommendation algorithm, but it cannot be directly applied to job recommendation for graduates because graduates generally have no historical records on employment. Besides, job recommendation should take into account graduate preferences for jobs, such as enterprise types and company locations, which are crucial to job choices. To address these challenges, we propose a Personalized Preference Collaborative Filtering Recommendation Algorithm (P2CF), which can not only recommend jobs for graduates through massive campus records, but also identify graduate personal preferences for jobs. Graduates are first clustered into different groups according to their academic performances and family economic conditions. Then Bayesian personalized ranking (BPR) method is introduced to calculate the scores of graduate groups to jobs. Finally, the scores and graduate personalized preferences are combined to recommend a few potential jobs. P2CF is a recommendation algorithm with hierarchical structure, which takes account of both the group records of job choices and the individual preferences for jobs. Experimental results show that P2CF on job recommendation outperforms state-of-the-art CF methods and identifies graduate personalized preference for jobs accurately.

ADVANTAGES:

- This approach uses P2CF first divides graduates into groups, and then recommends jobs for graduates based on both group records of job choices and graduate preferences for jobs.
- The hit rate of P2CF in recommending jobs can be twice higher than traditional collaborative filtering algorithms.

- This algorithm is used to increase the accuracy and efficiency in finding a proper jobs.

DISADVANTAGES:

- Scalability
- There is more to recommendations than relevance

TITLE:

Based on the application of AI technology in resume analysis and job recommendation

AUTHOR:

Y. -C. Chou and H. -Y. Yu

ABSTRACT:

This study adopted machine learning- and text mining technology-based artificial intelligence and current big data technology to analyze the trendiness of online discussion. Developing a system that can be applied in large job fairs, where numerous job applicants seek to match with the maximum of job vacancies provided by companies possible. The developed system conducts personal competitiveness analysis, personality trait analysis, and gives job vacancy recommendations according to the electronic resumes job applicants submit. In addition, the system generates a talent recommendation list for the companies. The experimental results verified that the job vacancies recommended by the developed system desirably met job applicants' expectation.

ADVANTAGES:

- This idea adopted machine learning- and text mining technology-based artificial intelligence and current big data technology to analyse the trendiness of online discussion.
- This system effectively saves time and effort to both the job-seeking and talent-recruiting parties as well as to overcome time and space constraints by using the Internet.

DISADVANTAGES:

- It is possible that it made their current goal inconsistent with their previous experience or skills. Therefore, the recommendation results might not have met the needs of every job applicant.
- This study only investigated the feedback of job applicants who used the job vacancy recommendation system but in not all aspects.

TITLE:

      Career Recommendation Systems using Content based Filtering

AUTHOR:

     Tanya V. Yadalam; Vaishnavi M. Gowda; Vanditha Shiva Kumar; Disha Girish; Namratha M.

ABSTRACT:

Machine learning is a sub-field of data science that concentrates on designing algorithms which can learn from and make predictions on the data. Presently recommendation frameworks are utilized to take care of the issue of the overwhelming amount of information in every domain and enables the clients to concentrate on information that is significant to their area of interest. One domain where such recommender systems can play a significant role to help college graduates to fulfil their dreams by recommending a job based on their interest and skillset. Currently, there are a plethora of websites which provide heaps of information regarding employment opportunities, but this task is extremely tedious for students as they need to go through large amounts of information to find the ideal job. Simultaneously, existing job recommendation systems only take into consideration the domain in which the user is interested while ignoring their profile and skillset, which can help recommend jobs which are tailor made for the user. This paper examines existing career recommendation system and highlights the drawbacks of these systems, such as cold start, scalability and sparsely. Furthermore, proposed implementations of career recommendation system using machine learning have been researched in order to identify how the recommender systems introduce features of security, reliability and transparency in the process of career recommendation. In addition, possibilities for improvements in these systems have been explored, in order to design a career recommendation system using the content-based filtering approach.

ADVANTAGES:

- This paper examines existing career recommendation system and highlights the drawbacks of these systems, such as cold start, scalability and sparsely.

- And also, furthermore implementations of career recommendation system using machine learning have been researched in order to identify how the recommender systems introduce features of security, reliability and transparency in the process of career recommendation.

DISADVANTAGES:

- Since the feature representation of the items are hand-engineered to some extent, this technique requires a lot of domain knowledge. Therefore, the model can only be as good as the hand-engineered features.

- The model can only make recommendations based on existing interests of the user. In other words, the model has limited ability to expand on the users' existing interests.

TITLE:

Job Recommendation System based on Machine Learning and Data Mining Techniques using RESTful API and Android IDE

AUTHOR:

Harsh Jain; Misha Kakkar

ABSTRACT:

In the current Capitalist world with an abundance of different state-of-the-art industries and fields cropping up, ushering in an influx of jobs for motivated and talented professionals, it is not difficult to identify your field and to persevere to get a job in the respective field but lack of information and awareness render the task difficult. This problem is being tackled by Job Recommendation systems. But not every aspect from the wide spectrum of factors is incorporated in the existing systems. For the "Job Recommendation System - Vitae" machine learning and data mining techniques were applied to a RESTful Web Server application that bridges the gap between the Frontend (Android Application) and the Backend (MongoDB instance) using APIs. The data communicated through APIs is fed into the database and the Recommendation System uses that data to synthesize the results. To make the existing systems even more reliable, here efforts have been done to come up with the idea of a system that uses a wide variety of factors and is not only a one-way recommendation system.

ADVANTAGES:

- A fully functioning user interface was developed to combine everything together to give the user a seamless experience.

- The system has a broad scope that can be used to make it more robust and foolproof.

- Problems of sparse database, scalability, and lack of trend recommendation have been eliminated.

DISADVANTAGES:

- Every user has the same recommendation list. Item cold start problem. The system cannot propose an item that has never been selected or a rating by other users before.
The personal information collected by recommenders raises the risk of unwanted exposure of that information. Also, malicious users can bias orsabotage the recommendations that are provided to other users.