Career Recommendation System Design by Adopting Machine Learning Techniques

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Abstract: In this paper, we focus on the different methods of recruitment system. A comparative study on existing recruitment methods with its advantages and disadvantages. We emphasize the need of career based recommender system using machine learning algorithms and challenges in building the career recommender system.

Keywords: Recommendation Systems, Machine Learning, Decision tree, Bayesian Classifier

I.   INTRODUCTION

In today's world, recommendation systems are used to clear up the hassle of records overload in many areas allowing users to focus on vital facts primarily based on their interests. One of the areas wherein such systems can play a major role is in helping students achieve their professional dreams via producing customized job and talent guidelines. At present, there are numerous job posting websites presenting a large amount of information and students want to spend hours to locate jobs that fit their pursuits. At the same time, present process recommendation systems handiest to remember the user's field of interest, however do no longer take into consideration the user's profile and competencies, which can generate more relevant career recommendations for users.

Nowadays, students are often dealing with a dilemma in deciding to choose a profession of their life. There are several factors that prompted the students while deciding on their profession course together with their personal aptitudes, educational fulfillment and their environment.

After finishing their graduation program at the college/university, students are usually starting to consider a career path which may suit their skill and matches the best. However, according to [1], many college students made incorrect choice on choosing their career due to the dearth of revel in, help and advice from buddies and family, parents and teachers, or professional counseling. The career guidance supplied in college must satisfy the occupational statistics wishes of college students at specific stages of their career development [2]. It is necessary to provide career counselling in several ways like courses, workshops, training programs and seminars that provide organization experiences in future profession planning and group counseling activities. Profession characteristic are crucial elements that affect the choice of career amongst university students. [3]. The career feature which might be crucial to college students in selecting their profession is normally classified into three companies which include the career itself, pay package or security as well as the business enterprise or work surroundings.

II.   NEED OF CAREER BUILDING RECOMMENDER SYSTEM:

Recently the increase of digital data and the emergence of e-business has led to a reform in the way companies operate their business in different aspects. In the field of recruitment, job offers were posted in the career session of the website for most companies. Due to the feedback received and the experience gained, they developed platforms specifically designed for recruitment. These platforms are used by job seekers to create profiles and to be able to apply whenever a new job posting is published. As a result, for a job, thousands of applications are received by the company, resulting in a huge and significant supply of jobs and CVs available online. This has caused a huge need for systems of recommendations.

Looking for a brand new job is a hard and takes lot of time. The most common approach for a user is to search for job offers by keywords on a job posting site and then is returned a list of job postings containing the keywords whose he will evaluate according to his profile and his preferences [4]. Although having obtained the results the candidate is unable to know if he is fit or not for the proposed job offer.

A **Career Building Recommender System** (CBRS) is designed to match jobs to users, removing the need for manual search. The recommender should evaluate a person's suitability for jobs and endorse those that boost a user's career.

[7]. We use machine learning algorithms like Bayesian or Decision Tree to design the recommender system and take the dataset from AISHE (All India Survey on Higher Education) to train the machine in future work.

III.CHALLENGES IN BUILDING CAREER RECOMMENDER SYSTEM:

A). Recommending a task or job that has simply come onto the marketplace or recommending a job to a job seeker's who has no work records. (the 'cold start' problem)

B). Recommending a job that has lots of candidates, lowering your possibilities of getting it, or recommending a job requirement at a startup that has no previous records of it. [8] (the popularity/long-tail effect).

C). Recommending a job that would improve your skills, rather than one where you will just be doing the same work which you do now someplace else. (the diversity problem)

D). Recommending a job that does not simply in shape your capabilities, however also your values, in phrases of place of job/social placing/money/and so on. (a data sparsity nightmare).

We first need to start with a general theory about how job satisfaction/fit/success/performance works. It's different at each level - person to industry, person to company, person to role, person to manager, person to fellow employee. Each company has its own culture, metrics for success, etc. There are different markets for almost each level of this question. There's potentially a lot of value to be created in the person to role and person to company levels.

A lot of Graduating students join companies they have always heard of but unsure what to expect when they actually join in. This leads to them hoping between companies. changing profiles and a weak resume with little experience in multiple fields.

IV. METHODS OF RECRUITMENT:

There are different ways graduate or post-graduate student's /job seekers will be recruited like online job boards and websites, recruitment agencies, search consultants, press advertising, referrals, recruitment events, social networks etc.

Advantages and disadvantages of various recruitment methods:

1) Online job boards and websites: General job boards (such as monster.com) may be especially beneficial for companies without a strong business enterprise logo that may be not likely to attract candidates directly to their website [5] [6].

Advantages	Disadvantages
• Cost-effective	• Quite a large numbers of inappropriate applications, if care not taken while drafting the key job roles.
• It can speed up the recruitment process and streamline administrative activities.	• A incorrect information or technical difficulties can turn-off desired applicants and damage reputation of the companies.
• Use of new age technology helps manage job-requirements efficiently and coordinates the processes easily.	• If the applicants are not computer literate, it is a discriminatory for them.
• Worldwide reach, instant applications.	• Use of CV key-word search can also result in allegations of discrimination.

2)Recruitment agencies: Private sector agencies that provide part-time and full-time placements.

Advantages	Disadvantages
• Professional expertise knowledge of current specialist expert knowledge of target recruitment	• One agency can suggest only one database, although agencies can even put it up for advertise your positions externally for your behalf
• Quick of response from dedicated staff exclusively meant for them.	• Sending too many candidates for the same job and sometime does not meet the employer requirements.
• Higher quality job aspirants because of pre-screening.	•Most of the times, job aspirants directly wants to deal with the potential employer.

3. Press advertising: National and local newspapers and journals are referring by most of the job aspirants for their skill sets and potential employers.

Advantages	Disadvantages
• Effectively communicates the job details, qualification and organization requirements.	• Costlier process and no guarantee of success
• Highlights the company messages and creates awareness about their brands.	•High administrative cost is involved in background verification.
•It sends a positive feedback about the organization's fortunes to the marketplace.	• Most of the time, it is a slower process, mainly if you use expert press or trade press.

4.Search consultants: Search consultants (or 'headhunters') may be employed when a vacancy is not to become public knowledge, usually where the post is very senior and/or there may be market sensitivities.

Advantages	Disadvantages
• Good expertise knowledge of required job market.	• Costlier process
• Preference for the senior position	•At the highest or senior levels, very limited availability of candidates.
• Lists the suitable profile who can do the required job.	• shortlisted people may not be available.

5.Professional referral schemes: Internal reference is the most effective method of recruitment. They know the exact job roles, company culture and so on.

Advantages	Disadvantages
• Exact job requirement, qualification is informed.	• Scarcity in getting the candidates due to the limited pool of database.
• Expertize candidates.	• Potentially fails to create a diverse body of workers, because it limits the pool which might not be representative of the external staff standard.
• Most of the times retention rate is very high.	•Rejection of a referral can also demotivate the employee who made the advice

6.Recruitment events: These events are becoming more popular now because of the increase in demand for the job market.

Advantages	Disadvantages
• Many companies will look	• Lot of competition and

	sometime difficult to meet the potential companies/ candidates.
for the potential candidates in one umbrella.	sometime difficult to meet the potential companies/ candidates.
• Cost effective process.	• Difficult to meet their criteria.
• Create awareness of their organization.	• Retention rate is very less.

7.Social networks: With the increasing popularity of Social media, most of the candidates who are looking for jobs use professional networks such as LinkedIn, Facebook and Twitter.

Advantages	Disadvantages
• An genuine technique of reaching the related generations.	•Most of the times, employers discourage their staff members to discussing about their company in social media.
• It gives an opportunity to access to a large, virtually unlimited network of contacts.	•Sometimes companies refuse to interview potential candidates because of their activities on social media sites.
• It gives the job aspirants a view of organizational culture.	• A less active or poorly managed presence may put off potential employees.

V. FUTURE WORK AND CONCLUSION:

We discuss about the various methods of existing recruitment system with its advantages and disadvantages. Also explained about the need of career builder recommender system and its design using machine learning algorithms as future work to better facilitate about the student's career.

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