

Smart Employer – The revolution of Recruitment with AI

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ABSTRACT

An AI-powered recruitment system, also known as a "smart" or "intelligent" recruitment system, is a technological solution that uses advanced machine learning algorithms and natural language processing to automate various tasks related to the hiring process. This system is designed to help employers make the hiring process more efficient and effective by reducing the time and effort required to identify and evaluate potential candidates.

Finding qualified applicants for a position is the employer's duty. It appears simple enough to complete this talent search however it's not. Starting off, each CV or resume submitted by an applicant is assessed based on the pre-determined criteria. After reviewing CVs or resumes, a few top-matched candidates are chosen, and then an interview is conducted to judge their technical and soft skills. Some organizations also administer aptitude examinations. However, the majority of candidates are hired by following a face-to-face interview and a CV review. During the interviewing process, employers face a variety of difficulties, such as reviewing a large number of CVs/resumes, the need for a technical person, and scheduling alignment with him/her (as the recruiter may not be familiar with the technical knowledge required to judge for the specific role), incorrect interpretation of a candidate's response, inconsistency between candidates (difficulty weighing candidates against one another), time consumption, cost (if held physically), and so on. Candidates, on the other hand, face significant challenges. The interviewer may be biased and pre-occupied due to a drawn-out interview process or personal emotional factors, which is obviously not in the candidates' favour. To counter some of these issues and to ease employers' pain, several platforms (Customer Relationship Management, Application Tracking Systems, etc.) have been created. These platforms have provided the facility to review a large number of CVs in few minutes, track the hiring process and attract a large talent pool. However, these all are different platforms and still, time consuming and resources are the concern because managing all different platforms requires time and money. This problem can be solved by making a standalone platform submerging nearly all the recruitment phases from job posting to recruitment and automating the hiring process at all possible stages such as automated CV analysis by matching a candidate's profile with a job description, automated interview consisting of Deep Learning and Natural Language Processing (to judge candidate's emotions and answers during the interview automatically for assessing personality and technical skills). The study is based on primary and secondary information sources and aims to highlight the way hiring is currently being carried out and how Smart Employer contributes to its evolution.

Keywords: Deep Learning, Artificial Intelligence, Smart Recruiter, Natural Language Processing, Text Mining.

INTRODUCTION

An AI-powered recruitment system is a technological solution that uses advanced machine learning algorithms and natural language processing to automate various tasks related to the hiring process. The goal of this system is to make the hiring process more efficient and effective by reducing the time and effort required to identify and evaluate potential candidates. This system can provide valuable insights and analytics related to the hiring process, handling high-volume recruitment and learning from previous hires.

One of the key features of an AI-based recruitment system is its ability to screen resumes and identify the most qualified candidates based on keywords, skills, and other qualifications. The system can also analyze job postings and make suggestions to improve their effectiveness in attracting candidates. This can help employers reach a larger pool of potential candidates and increase the chances of finding the right fit for the job (Zimmermann et al.).

Another important feature of an AI-based recruitment system is its ability to match candidates to job openings based on their qualifications, experience, and other factors. This can help employers save time and resources by only considering candidates who are a good fit for the job (Faliagka et al.). Additionally, the system can automatically schedule interviews and send out calendar invites to both the interviewer and the candidate, which can help streamline the scheduling process (K. Satheesh, A. Jahnavi, L. Iswarya, K. Ayesha, G. Bhanusekhar).

A further feature of an AI-based recruitment system is its ability to conduct initial screening interviews through chatbot or video conference, which can help save time and effort for both the employer and the candidate. The system can also use natural language processing and machine learning algorithms to understand and analyze the responses of the candidates, which can help employers make more informed decisions (Journal and Technology).

Overall, an AI-based recruitment system can help employers to be more objective and unbiased in the hiring process by removing human bias, emotions, and intuition from the decision-making process. It also allows employer to reach out to larger pool of candidates, saves time and resources, and streamlines the recruitment process (Schmitt et al.) (Amin et al.).

In addition to the features mentioned above, an AI-based recruitment system can also provide employers with valuable insights and analytics related to the hiring process. For example, the system can track key metrics such as the number of resumes received, the number of interviews conducted, and the number of offers extended. This data can help employers identify bottlenecks in the hiring process and make adjustments to improve the efficiency and effectiveness of the recruitment process (Homsapaya and Budsara; Alam and Benaïda; Schmitt et al.).

Additionally, an AI-based recruitment system can also help to improve the candidate experience. By automating certain tasks such as resume screening and scheduling interviews, the system can help to speed up the recruitment process and provide candidates with real-time updates on the status of their application. This can help to reduce the amount of time candidates have to wait for feedback and can improve their overall perception of the company.

An AI-based recruitment system can also help to improve the compliance and legal aspects of the recruitment process. By automating the screening process, AI-based systems can help employers to ensure that all candidates are treated fairly and that the recruitment process is compliant with all relevant laws and regulations. This is particularly important when it comes to equal opportunity employment, and fair hiring.

Traditional recruitment methods rely heavily on resumes and qualifications, but AI-based systems can also consider other factors such as personality, work style, and cultural fit when making candidate matches. This can help employers to find candidates who may not have all the qualifications listed on the job posting but still have the potential to be a valuable asset to the company. AI-based recruitment system is its ability to learn

from previous hires. The system can analyze the qualifications, experience and job performance of employees who have

been successful in their roles, and use that information to identify similar candidates in the future. This can help employers to make better hiring decisions and improve the chances of finding the right fit for the job.

It's important to note that implementing an AI-based recruitment system requires a significant investment in terms of both time and money. However, the long-term benefits of the system can more than justify the initial investment. It also requires regular maintenance and updating to ensure the system is well-trained, unbiased, and accurate.

Overall, an AI-based recruitment system can provide many advantages to employers, including improved efficiency and effectiveness, better candidate matching, improved candidate experience, compliance, legal and fair hiring, but it does require an initial investment and ongoing maintenance to ensure the system is accurate and unbiased.

OBJECTIVES

The main objective of this study is to implement an AI-powered recruitment system to automate various tasks related to the hiring process, and to evaluate its effectiveness in improving the efficiency and effectiveness of the recruitment process. Specific objectives include:

- Screening resumes and identifying the most qualified candidates.
- Analyzing job postings and making suggestions to improve their effectiveness in attracting candidates.
- Matching candidates to job openings based on qualifications, experience and other factors.
- Scheduling interviews and sending out calendar invites.
- Providing valuable insights and analytics related to the hiring process.

METHODOLOGY

We have divided hiring process into four phases i.e. Job posting, CV screening, automated interview, and a face-to-face interview, and submerged them into a standalone platform named Smart Employer. It is a standalone solution for employers and a liaison between employers and job-seekers that provides a platform for both of them to create their accounts and do their respective operations on profile completion.

Employers are enabled to add job posts with the help of dropdowns and predefined choices to make it quicker to post and more accurate to compare with a job seeker's profile. For more efficiency, some job posting suggestions can also be provided with respect to the job title in the future. After receiving job applications, profile and JD comparison-based CV analysis are helpful in quick CV assessment (Dehigaspitiya). Moving on, the platform has the incredible incorporation of Deep Learning (DL) and Natural Language Processing (NLP) as an "Automated Interview". Automated Interview is designed to narrow down the talent pool for face-to-face interviews and facilitate job-seekers to appear in interviews at their convenience on the interview day. Initially, it can analyze a candidate's answers concerning the employer's set of questions and answers (AI-based assessment) via Linguistic Detection using Google Speech API and Facial Emotion Recognition to detect the candidate's emotions throughout the interview. At last, the further shortlisted candidates can move forward for a face-to-face interview to finalize the perfect fit.

Our future work includes the replacement of keyword-based assessment with a more efficient AI-based analysis with relevant interview questions and aptitude test suggestions.

The system will be evaluated by comparing its performance with a traditional recruitment process. Key metrics such as the number of resumes received, the number of interviews conducted, and the number of offers extended will be tracked and analyzed.

Recruiters and candidates will be surveyed to gather their feedback on the recruitment system. This feedback will be used to identify areas for improvement.

CONCLUSION / RESULTS

The implementation of an AI-powered recruitment system has the potential to significantly improve the efficiency and effectiveness of the recruitment process. The system can automate various tasks related to the hiring process, provide valuable insights and analytics, and reduce the risk of human bias and errors. The results of the system evaluation will be used to determine the actual effectiveness of the system, and user feedback will be used to identify areas for improvement. Overall, it can be an important asset for the company when it comes to improving scalability, compliance, legal and fair hiring, and reducing administrative workload.

REFERENCES

1. Alam, Tanweer, and Mohamed Benaida. "Blockchain and Internet of Things in Higher Education." *Universal Journal of Educational Research*, vol. 8, no. 5, 2020, pp. 2164–74, doi:10.13189/ujer.2020.080556.
2. Amin, Sujit, et al. "Web Application for Screening Resume." 2019 International Conference on Nascent Technologies in Engineering, ICNTE 2019 - Proceedings, no. Icнте, IEEE, 2019, pp. 1–7, doi:10.1109/ICNTE44896.2019.8945869.
3. Faliagka, Evanthia, et al. "Application of Learning Algorithms to Online Recruitment Systems.Pdf." *ICIW 2012: The Seventh International Conference on Internet and Web Applications and Services Application*, no. c, 2012, pp. 215–20, <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.885.909&rep=rep1&type=pdf>. Homsapaya, Kanyanut, and Kridsada Budsara. "Machine Learning for Older Jobseeker and Employment Matching." 17th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology, ECTI-CON 2020, 2020, pp. 427–30, doi:10.1109/ECTI-CON49241.2020.9158291.
4. Journal, International, and Recent Technology. "Differential Hiring Using a Combination of NER and Word Embedding." *International Journal of Recent Technology and Engineering*, vol. 9, no. 1, 2020, pp. 1344–49, doi:10.35940/ijrte.a2400.059120.
5. K.Satheesh, A.Jahnavi, L.Iswarya, K.Ayesha, G.Bhanusekhar, K. Hanish. Resume Ranking Based on Job Description Using SpaCy NER Model. no. May, 2020, pp. 74–77, <https://www.irjet.net/volume7-issue5>.
6. Schmitt, Thomas, et al. *EPIc Series in Computing Matching Jobs and Resumes: A Deep Collaborative Filtering Task*. 2016, pp. 124–37.
7. Zimmermann, Tim, et al. *Data-Driven HR - R'esum'e Analysis Based on Natural Language Processing and Machine Learning*. 2016, <http://arxiv.org/abs/1606.05611>.