ZKG INTERNATIONAL ISSN: 2366-1313

Unlocking Human Potential: NLP-Driven Automated Resume Screening

[1]Md Naushad Alam, [2]Omer Osman Mohammed Dayani, [3]Khaja Naseeruddin, [4]Abdul Aziz Ramzan

[1]Assistant professor, Dept of CSE-AI&ML, Lords Institute of Engineering and Technology, Hyd.

naushad8125@gmail.com

[2,3,4]BE Student, Dept of CSE-AI&ML, Lords Institute of Engineering and Technology, Hyd.

omerdayyani78@gmail.com, naseer230101@gmail.com, 160920748310@lords.ac.in

Abstract: *The maximum suitable candidates for the position ought to be determined by means of cautiously applying the process utility, which turned into finished at some stage in the period of the clinical studies degree the usage of employee hiring NLP. Automated CV analysis is now a real opportunity for guide evaluation because of the precision of functions in deep knowledge of plant language knowledge and processing (NLP). In this article, we research a few cutting-edge ways to view automated resumes. In order to growth the accuracy and performance of analysis, those strategies uses more techniques along with deep popularity strategies, adaptive know-how, genetic algorithms and extra facts. Additionally, few researches have a look at the usage of task descriptions to enhance the accuracy of reappraisals. The experimental consequences of those studies display that the alert device is more powerful than the same old gadget. The outcomes of this analysis can assist HR managers and recruiters automate the recruiting manner and correctly and impartially pick out potential candidates.*

I. INTRODUCTION

An important step within the recruitment method is the resume assessment, which includes reviewing the resume to find the most involved candidate for the job. This method also can be time-eating and prone to human blunders that could result in lack of certification. Automated CV screening is now diagnosed as a manner to solve this hassle. Automated analysis uses many techniques to enhance accuracy and efficiency, which includes deep learning algorithms, device getting to know, and herbal language processing (NLP).

A wide variety of studies have endorsed several strategies for re-exam. Lee et al. (2020) proposed a deep getting to know method the use of long-range segmentation

ISSN: 2366-1313

(LSTM) and neural network (CNN) [6].

Project Scope:

The CV selection task makes use of NLP techniques which includes S-BERT [9] and similar cosine matching with the main purpose of growing computerized tools able to filtering and evaluating processing obligations. Jobs regularly based on their similarity to activity descriptions. The talents listed within the CVs are then taken into consideration. With the resume parser package, crucial information from the resume is extracted.

Purpose

The most important cause of the use of NLP algorithms for CV selection, such as Cosine Similarity and S-BERT, is to make certain that many qualified humans are considered and brought care of while the use of the method' Hire. The specific purpose of the recruitment technique is to be greener via the work of comparing candidates. Provides a further goal method to lessen the danger of bias in e book choice by the use of latest NLP algorithms inclusive of cosine similarity and S-BERT to improve CV choice accuracy. Make CVs entire at the same time as saving time and money by means of casting off the need for human screening. To enhance the candidate revel in, there's a quicker and greater effective screening manner. Improve the hiring procedure.

II LITERATURE SURVEY

In 2021, Nandhini S, Gomathi S and Lavanya S published "Research on the Use of Questionnaires" in the International Journal of Advanced Research in Computer Science and Software Engineering. The resume machine overview view uses an analysis machine that extracts statistics from resumes using NLP techniques and ranks them primarily based on their compliance with the job description.

"Resume Screening the use of Natural Language Processing and Machine Learning" which will be published by Kondapalli Sai Pranay in the International Journal of Current Technology and Engineering in 2020. Use NLP and machine learning to display CVs. and adapt them as explanations.

In 2019, "Exploratory Research on Technology-Based Learning and Effectiveness" by Shweta Agrawal and Sumit Gupta was published in the International Journal of Innovative Technology and Exploratory Engineering. Maintenance describes a machine that uses machine learning and NLP to verify return and payment as they are dedicated to job description.

The article "Exploration of Mobile Computing" by Aditi Kaushik and Shruti Jain was published in the International

ISSN: 2366-1313

Journal of Computer Science and Mobile Computing in 2018.

Pradeep Kumar Mishra and Sanjay Kumar published "Resume Parsing and Analysis Using Natural Language Processing" in the International Journal of Innovative Research in Computing and Communication Engineering in 2017. The era was decided since resume analyzes use methods NLP to extract useful information combined with Skills and Interests.

"Automatic Resume Filtering Using Machine Learning," by Anindya Sarkar and Debajyoti Mukhopadhyay, was published in the International Journal of Engineering and Technology in 2016. Study the gadgets and classify them primarily based on their suitability for job description.

III OVERVIEW OF THE SYSTEM

Existing System

Today's resume screening method uses a guide manner wherein recruiters or human resources managers evaluate applicants for the system based totally on their qualifications, enjoy beyond and so forth. Among the opposition winners are:

Taleo: This tool is a cloud-based recruiting tool that evaluates resumes and selects the quality candidates for a given task using AI-primarily based algorithms. Using qualitative language and analytical tools, he compares written and descriptive paintings based on similarities [10].

Jobscan: is a web resume scanner that uses the Applicant Analysis System (ATS) era to assess resumes primarily based on correct descriptions [5]. It seems at key phrases, competencies and particular information to decide whether or not the resume and CV are an awesome in shape or not.

Computers are now re-analyzing competing programs for relevance to job descriptions, the use of a wide variety of NLP techniques, consisting of personalization, seek semantic, and cognitive gadgets. The accuracy of those algorithms but desires to be progressed, in particular in phrases of figuring out the first candidates for the process.

Disadvantages of the present system

Lack of customization: Many of trendy analytics equipment depend upon pre-defined strategies or strategies that may not be the exceptional fit for a specific assignment or commercial enterprise. Due to the excessive percentage of fake positives and negative results, certified candidates can be bypassed by means of less certified applicants.

Focus: Some resume analysis equipment can better recall some matters, along with

ISSN: 2366-1313

keywords or previous years, leaving out crucial facts approximately a candidate's ability or achievement.

Language Bias: Lack of range in candidates is because of resume evaluation of files that can be inspired by means of sure languages, keywords, or subculture [2].

Bad analysis: The accuracy of NLP algorithms used to look CVs may be tormented by configuration troubles or consistency problems which could result in incorrect data.

Lack of context: Current resume screening strategies might also fail to don't forget the details of a candidate's education, paintings, or abilities, resulting in poor results. .

Practical device

The proposed tool calls for extracting beneficial capabilities from the preferred descriptors and CVs and mapping them to function-period vectors using S-BERT and cosine similarity [4]. The cosine similarity and S-BERT similarity rankings may be used to determine how well the software suits the functional description. The manner in question is to enhance the accuracy of the selection system, lessen bias and ensure that the pleasant qualified people are selected to increase delight.

The pleasant of the making plans system

Improved accuracy: NLP algorithms blended with SBERT and cosine similarity are powerful at identifying CVs that can be used for precise descriptions. These algorithms are designed to apprehend the content of the textual content and decide the means of the content.

Improved efficiency: NLP algorithms can evaluate loads or corporations of CVs in a couple of minutes, making them quicker than guide choice. Job seekers may have more money and time because of this [3] .

NLP algorithms which include SBERT and cosine similarity may be customized for particular organizations, tasks, or groups, which results in better regression analysis.

Multiple Applicants Matching: S-BERT and Cosine Similarity algorithms are designed to suit process applicants with activity descriptions based at the relevance and similarity in their talents, enjoy information, and qualifications.

Language Autonomy: Recruiters will discover it less difficult to assess CVs of applicants with ideal language way to the capability of NLP algorithms to translate CVs written in one-of-a-kind languages.

Unstructured Recording Facts: NLP algorithms can extract important facts from unstructured records, including written paintings, as

IV ARCHITECTURE

ISSN: 2366-1313

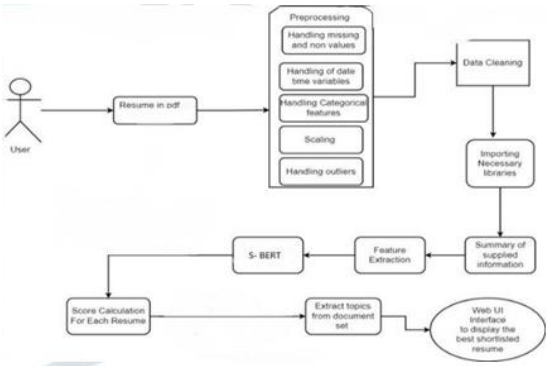

Fig 1: Architecture of Automatic Review of Resumes

As mentioned in Fig 1. The Automatic Review of Resume method can be described inside the shape. Five steps make up the complete resume overview method. We will now have a look at each step in the computerized overview of resumes.

The five steps of Automated Review of Resume:

1. Data Collection: A multitude of web sites, which includes project forums, profession internet websites, and corporate web sites, can be used to accumulate resumes. Moreover, bring together the assignment descriptions or necessities for the pertinent positions.

2. Preparation: At the pre-processing degree, take out any unnecessary prevent words, punctuation, and facts from the resumes and technique descriptions. Lemmatization, stemming, and tokenization are used at this diploma to deliver meaningful tokens.

3. Finding Features: Create language embeddings from the pre-processed resumes and manner descriptions by way of extracting important attributes the usage of NLP strategies like S-BERT. The semantic closeness and universal which means of the sentences are contemplated in these embeddings.

4. Score calculation: Determine every candidate's rating as a candidate with the resource of computing the cosine similarity rating among their resume and the job description. If an applicant has a excessive cosine similarity score, they're given a higher ranking and are a better in shape for the hobby.

5. Candidates are excluded: Candidates who don't get the desired cosine similarity score should be disqualified. Some applicants may have their programs automatically rejected or placed on a listing with decrease precedence for manual evaluation.

V RESULTS SCREEN SHOTS

Main page:

Fig 2: Main Page

The above image shows the main page of the automaticResume showing using NLP.

ISSN: 2366-1313

Resume Screening:

Fig 3: Resume Screening

The above image shows the Resume Screening page of theAutomated Resume Screening using NLP.

Resume Upload:

Fig 4: Resume Upload

The above image shows the Resume Upload page of the Automated Resume Screening using NLP.

Resume Shortlist:

Fig 5: Resume Shortlist

The above image shows the Resume Shortlist page of the Automated Resume Screening using NLP.

View Resume:

Fig 6: View Resume

The above image shows the View Resume page of the Automated Resume Screening using NLP.

VI CONCLUSION

Drawing these conclusions, we are able to say that using NLP algorithms for regression evaluation - which include SBERT and cosine similarity - gives many benefits over traditional methods. These algorithms are very accurate, efficient and bendy, and may procedure unnecessary facts, in addition to rewritten texts written in one-of-a-kind languages. They can reduce discrimination of humans and make applicants appealing, enhancing the recruitment procedure. It is important to understand that these algorithms are difficult and now not suitable for all instances [11]. It is therefore critical to use those algorithms as part of a broader recruitment manner that still includes human choice-making and choice-making models. The use of NLP algorithms in recruitment, consisting of SBERT and

ISSN: 2366-1313

cosine similarity, is a promising improvement that has the capability to control the screening and choice of candidates through corporations.

REFERENCES

[1] Singh, A. K., & Shukla, P. (2020). "Automated resume screening and evaluation using machine learning techniques". Journal of Intelligent & Fuzzy Systems, 39(4),5947-5960.

[2] Oh, J., & Lee, S. (2019). "A study on the extraction of competencies from job postings and their correlation with resumes using natural language processing". Expert Systems with Applications, 115, 475-486.

[3] Xu, C., Lu, J., Liu, J., & Wei, X. (2021). "Resume screening using deep learning and natural language processing". Knowledge-Based Systems, 215, 106864.

[4] Bhowmik, R., Garg, N., & Gupta, A. (2021). "Resume Screening Using Semantic Similarity and Clustering Algorithms". In Proceedings of the 2021 3rd International Conference on Communication, Devices and Computing.

[5] Elakkiya, R., & Muthurajkumar, S. (2021). "Automated Resume Screening System using Semantic Similarity". In 2021 International Conference on Computing, Electronics & Communications Engineering (ICCECE).

[6] Garg, N., Bhowmik, R., & Gupta, A. (2021). "Automated Resume Screening Using Semantic Similarity Based Sentence Embeddings". In 2021 International Conference on Smart Electronics and Communication (ICOSEC).

[7] Huang, S., Li, W., Wang, L., & Huang, H. (2021). "Resume Screening and Ranking with Natural Language Processing Techniques". Applied Sciences, 11(5), 2095.

[8] Kang, Y., & Lee, J. (2020). "Resume Analysis for Job Matchmaking Using Word Embedding and Ranking Algorithm". In Proceedings of the 2020 International Conference on Artificial Intelligence in Information and Communication.

[9] Li, X., & Shen, X. (2021). "Resume Ranking and Classification Based on SBERT". In 2021 International Conference on Computer, Information and Telecommunication Systems (CITS).

[10] Liu, J., Zhang, R., Yang, W., & Guan, R. (2021). "A Semantic Similarity-Based Resume Screening System". Journal of Intelligent & Fuzzy Systems, 40(1), 787-797.

[11] Ma, Z., Wang, Y., & Zhao, Y. (2021). "Automated Resume Screening with Semantic Similarity and Gradient Boosting". In Proceedings of the 2021 3rd International Conference on Cybernetics, Robotics and Control.

[12] Mandviwalla, M., & Kappelman, L.

ISSN: 2366-1313

A. (2021). "Automated Resume Screening Using Semantic Similarity and Machine Learning". Journal of Information Systems Education, 32(1).

[13] Prasadi Peddi and Dr. Akash Saxena (2014), "EXPLORING THE IMPACT OF DATA MINING AND MACHINE LEARNING ON STUDENT PERFORMANCE", International Journal of Emerging Technologies and Innovative Research (www.jetir.org), ISSN:2349-5162, Vol.1, Issue 6, page no.314-318, November-2014, Available: http://www.jetir.org/papers/JETIR1701B47.pdf