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Screening and Ranking Resume Using Stacked Model

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ABSTRACT
The goal of the resume screening process is to find the best candidates for a vacancy. The program must employ both natural language processing and machine learning techniques to rate applicants in real time. Natural language processing (NLP) and machine learning algorithms are used as methods to rate resumes. The result would be a top candidate's resume, with resumes and job descriptions acting as the input. The output's findings are immediately available. Mong will be used for TF-IDF, Cosine Similarity, and string matching. Although current methods are simple and effective, they fall short in terms of precision, efficiency, and computing power.

Keywords
Deep Learning, Natural Language Processing, Machine Learning, and TD-IDF

1 INTRODUCTION
The worldwide recruiting market is estimated to be worth $200 billion. To locate the candidates who are most suited for a certain job description, a large pool of applications must be combed through. A company will get dozens of applications for the position when it posts a job offer. Every recruiter's first step in the hiring process is to screen resumes. A company's HR department will likely get tens of thousands of resumes and cover letters per day if there is a position open.

Since it requires human engagement, this method currently takes the longest and is the most error prone. Humans are limited in ways that make it impossible for them to work continuously. Hence, decreasing efficiency is also a problem. Therefore, to circumvent the company's restriction, we have proposed a system that could swiftly determine the required skill set by examining a document or even a résumé and sorting the outcomes according to skill sets. One tactic we want to use is machine learning. Recruitment technology is a developing area of HR technology that intends to automate or considerably streamline formerly manual procedures like resume screening.

New research is conducted daily in a huge number of universities across many different fields. Everyday living benefits from a vast array of research and discoveries, from the

field of information technology to that of medicine. Due to these changes, many industries today have more opportunities accessible than ever before. It is reasonable to suppose that similar trends exist in other countries' hiring procedures. Although the resume serves as the foundation of the applicant's application, it is the candidate who must build it in the beginning.

Most of the contemporary employers' demand that candidates submit their resumes online. When they have gotten the email, the next step is to group the replies according to the situation. Usually, they sort this by hand, but it takes a lot of time. On the other hand, it's possible that many errors are brought on by it. This type of sorting is rather ineffective. This might result in employing someone whose credentials are insufficient for the post or it could result in the manual sorting procedure missing a great candidate.

The most time-consuming aspect of a recruiter's job is selecting the candidates from a large pool who are best qualified for the vacant position. For human recruiters to go through hundreds of resumes to locate the top candidates might be daunting when a company gets them. There might be hundreds of candidates for each given position at the company. 75 percent of advertisements don't show the necessary competence for the job being advertised on average.

Because of LinkedIn, Facebook, and online talent databases, thousands of candidates may apply for a single post. Automated systems are starting to prevail in modern HR departments. The field is streamlined and improved with resume screening. Hence, human resources professionals have more time to engage in fruitful conversations with both potential workers and candidates. Our suggested design is a digital tool for HR departments that effectively screens resumes of applicants using NLP technology. The two best methods for comparing the information on resumes in the field to that on job descriptions are token-based similarity and latent Dirichlet allocation. The best similar resumes are then provided to the recruiter.

2 Literature Review

The best applicants are assessed in line with the job description in (1) using K-NN, Content-based Recommendation, and cosine similarity to identify the CVs that match the job description the most closely.

In (2), the proposed system, JARO, is a virtual assistant that conducts interviews by reviewing the résumés of candidates (CVs). A list of inquiries to ask the requestor will then result from this. To ensure an objective judgement, this expedites the interview process.

To determine the applicability of each resume, (3) uses a neural-network model and a few text-processing techniques. We provide a variety of model solutions that either make use of the pair/triplet-based loss or a semi-supervised learning method to handle the label deficiency problem in the dataset.

Inside (4), multiple regression was employed to evaluate the idea. The findings demonstrate how greater usage of AI in working contexts increases HR functional performance by demonstrating a substantial positive association between two criteria.

The research of a hybrid technique for curriculum vitae screening conducted by the authors was detailed in (5). An integrated knowledge base is used to carry out the classification job in this case and to empirically demonstrate that they get promising accuracy results when compared to conventional machine learning-based resume classification algorithms utilizing a real-world recruiting dataset.

KNN, Linear SVC, and XGBoost are only a few of the machine learning techniques employed in system (6). To accurately forecast specific job profiles from a text description, all of these algorithms are merged into a two-level stacked model. The usage of this approach may help both employers, waitlist

competitors and job seekers determine whether their resumes are sufficiently organized for the system to identify the right job profiles.

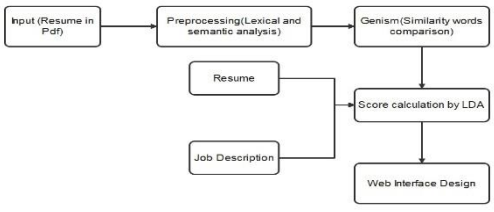
Job searchers can submit their resumes and apply for any positions via the interactive web application in (7). NLP and machine learning are used by the corporate recruiter to compare resumes to job requirements.

In (8), it's online tool helps us sort and rank resumes. The uploaded resumes are compared to the job description using a tool called Natural Language Processing to determine which ones are best suited for the position (NLP). Then, the resumes are graded and rated in order of best match to worst match. The only people with access to this ranking are corporate recruiters who are trying to select the best candidates from a large pool of applicants.

In (9), The authors hope to automate this screening process by analyzing NLP in depth to change the entire recruitment process by making employer responsibilities easier than ever before, and we are capable of scoring individual CVs by comparing total fields in CVs with needed fields. Furthermore, their classification model has an accuracy of 74% in terms of precision.

The writers compile resume-related data and do the necessary analyses on it to provide content that recruiters may utilize (10). The Resume Parser would help recruiters find the most qualified candidates rapidly, saving them time and effort.

System Flow Diagram



The system flow diagram shows how the suggested model works. First, the input is provided as research in PDF format, and then lexical and semantic analysis is conducted as part of the preprocessing. Genism, which examines similar words and calculates a score using LDA, produces a resume and a job description. This entire procedure contributes to the creation of the web interface design.

3 Research Methodology

The objective of the research is to identify available information communication technology infrastructure in the schools for implementing the information management system. The description study was conducted for implementation of management information system.at schools. The area of study was Hyderabad division primary and secondary schools. Public and Private schools were respondents of the research. Questionnaires were used as an instrument for data collection. The first part of the questionnaire is regarding demographic information of respondents. 2nd part of questionnaire facilities available for the implementation of information system and options of managers/principals regarding the technological facilities. Questionnaires have most questions are liker scale types from strongly agree, agree, neutral, disagree and strongly disagree. The population of study was mangers/ principals of the schools who are working as an administrator. This system can integrate all the media materials into the systematic resources, such as an entire school-based web-course or theme website. Before this work, rural teachers should make good instructional design on the web course, and upload the media materials into the resource library, and then they can conduct the web course development. The whole process of developing a school-based web-course mainly includes four steps: creating new courses, adding and managing course catalog, adding and managing course content, approving and publishing course content.

3. EXISTING SYSTEM

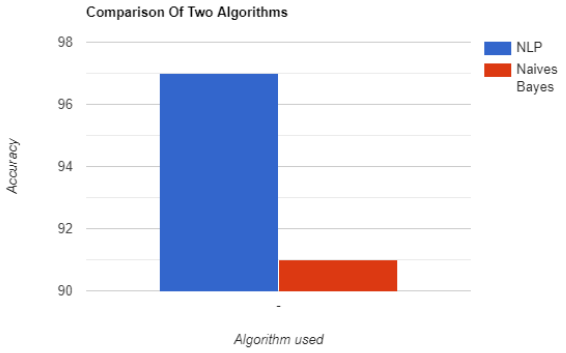
Nowadays, resume screening is done manually through the evaluation of applications. It is physically challenging to go through the resumes of the millions of job seekers in India's enormous employment market to find someone who is a suitable match. This results in a labor hiring procedure that is slow and ineffective, which costs businesses resources. HR must personally sift through each résumé to find the applicant whose qualities most closely match those listed in the job description. There is a chance that the best applicant for the job will be missed during the selection process because this uses a lot of resources and is prone to mistakes.

4. PROPOSED SYSTEM

Our approach uses machine learning and natural language processing (NLP) to rank resumes. With the help of artificial intelligence, this tool for contextually assessing resumes goes beyond keywords. After reviewing resumes, the software evaluates prospects in real-time in accordance with the hiring needs of the recruiter. The online application seeks to organize the resumes by comparing the resumes that fit the specified Job Descriptions and intelligently reading job descriptions as input. After filtering, it offers a ranking and suggests the best resume for a specified text job description. The software uses natural language processing to instantly match and rate applicants. When it comes to string matching, cosine similarity, overlap coefficient, and natural language processing, this software uses Mong rather than general methods.

We employ a different methodology for our work because it largely concentrates on the content of the resumes, from which we extract skills and other pertinent information to match people with job descriptions.

5. ALGORITHM COMPARISON



We evaluate the performance metrics of the two models and find the accuracy rates. It is found that NLP outperforms Navies Bayes.

6. REFERENCES

This forecast enables the resume to be selected without a manual review. It helps to improve accuracy, and in the long run, this model itself educates the system to evaluate and choose the necessary abilities from the resume that is provided as input. As a result, prediction improvement is strong and efficient.

1. Pradeep Kumar Roy; Sarabjeet Singh Chowdhary; Rocky Bhatia, "A Machine Learning technique for automation of Resume Recommendation system," Procedia Computer Science Volume 167, Pages 2318-2327, 2020

2. Jitendra Purohit; Aditya Bagwe; Rishabh Mehta; Ojaswini Mangaonkar; Elizabeth George, "Natural Language Processing based Jaro-The Intervieweing Chatbot," 2019 3rd International Conference on Computing Methodologies and Communication (ICCMC), August 2019

3. Yong Luo, Huaizheng Zhang, Yongjie Wang, Yonggang Wen, and Xinwen Zhang, "ResumeNet: A Learning-Based Framework

for Automatic Resume Quality Assessment," 2018 IEEE International Conference on Data Mining (ICDM), December 2018 [ResumeNet: A Learning-Based Framework for Automatic Resume Quality Assessment]

4. 2020 International Conference on Computation, Automation, and Knowledge Management (ICCAKM): Garima Bhardwaj, S. Vikram Singh, and Vinay Kumar, "An Empirical Study of Artificial Intelligence and Its Impact on Human Resource Functions."

5. Mohamed Maree, Muath Sabha, and Abeer Zaroor's book chapter from 2017's Smart Innovation, Systems and Technologies volume 72

6. Ranikka Ransing Nikita Bhrugumaharshi Emberi, Kailas Mahavarkar, and Akshaya Mohan, "Screening and Raking resumes based on Stacked Model, 2021, IEEE

7. Amin Sujit Web Application For Screening Resumes, Nikita Jayakar, Sonia Sunny, Pheba Babu, M. Kiruthika, and Ambarish Gurjar, 2019 IEEE.

8. M. Alamelu D.Sathish Kumar; R. Sanjana; J.Subha Sree; A.Sangeerani Devi; D. Kavitha “Resume Validation and Filtration using NLP, 2021, IEEE IEMECON

9. M.F. Mridha; Rabeya Basri; Muhammad Mostafa Monowar; Md. Abdul Hamid “A Machine Learning Approach for Screening Individual’s Job Profile Using Convolutional Neural Network”, 2021 IEEE

10. Anushka Sharma, Smiti Singhal, and Dhara Ajudia, 2021 AIMV, Artificially Intelligent and Mechanics Voices