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Personality Evaluation through CV Analysis using Machine Learning Algorithm

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Abstract: Human personality has played a vital role in an individual's life as well as in the development of an organization. One of the ways to judge human personality is by using standard questionnaires or by analyzing the Curriculum Vitae (CV). Traditionally, recruiters manually shortlist/filters a candidates CV as per their requirements. In this paper, we present a system that automates the eligibility check and aptitude evaluation of candidates in a recruitment process. To meet this need an online application is developed for the analysis of aptitude or personality test and candidate" CV. The system analysis professional eligibility based on the uploaded CV. The system employs a machine learning approach using TF-IDF Algorithm. The output of our system gives a decision for candidate recommendation. Further, the resulting scores help in evaluating the qualities in the candidates by analyzing the scores obtained in different areas. The graphical analysis of the performance of any candidate makes it easier to evaluate his/her personality and helpful in analyzing the CV properly. Thus, the system provides a helping hand for the recruitment process so that the candidates CV will be shortlisted and the fair decision will be made

I. INTRODUCTION

As far as employment is considered, selecting the right candidate for the recruitment process from a vast pool of candidates has been a fundamental issue. Conducting personality and various technical eligibility evaluation tests, interviews, and group discussions have been traditional techniques. Due to inception of social media, much more important information about employees is exposed to their online handles. Generally, such information is unnoticed by the recruiters. Aptitude test followed by the interview is traditional practices for the recruitment process. These traditional practices are very much time-consuming, and may result in unfair choices of candidate. As compared to traditional recruitment process, if an online selection process is conducted, then a fair selection of the candidate is possible. Personality is the most important factor which reflects an individual, which keeps on varying. Tackling them is a tedious task for which we have implemented an approach to identify the personality and also provide with the recommendation. In this paper, we propose a machine learning based method to check a candidates aptitude and personality score. The personality of the candidate would be identified by using two metrics, first is aptitude /personality test and second CV analysis. The administrator is responsible to design, update or drop the questions and has the complete control to customize the aptitude/personality questions as per organization requirements. Further, three categories of questions are added in the aptitude test which includes quantitative, verbal and logical type questions. After the aptitude test, the personality test is carried out so that candidates personality would be tested. The decision can be made on the basis of the test outcome. Finally, the score of the test is displayed and the decision of the candidate is made. The result of CV analysis is used for candidate selection as per organization needs. As a last paragraph of the introduction should provide organization of the paper/article (Rest of the paper is organized as follows. In section II, related work is presented; section III contains proposed system and section IV covers architecture of the system. In section V, we present design algorithm and result and discussion is presented in section VI. Lastly, Section VII concludes research work with future directions)

II. LITERATURE REVIEW

A. *Personality Prediction Via CV Analysis using Machine Learning paper : 9September 2021*

Atharva Kulkarni, Tanuj Shankarwar, Siddharth Thorat Thakur College of Engineering and Technology, Maharashtra, India

This paper attempts to examine different machine learning approaches for efficiently predicting personality through CV analysis using Natural Language Processing (NLP) techniques as well. Resultsshow that the Random Forest algorithm achieved better accuracy when compared to other algorithms such as kNN, Logistic Regression, SVM and Naive Bayes. Random Forest is a popular machine learning algorithm. It takes less training Page 2 of 4 time as compared to other algorithms. It predicts output with high accuracy, even for the large dataset it runs efficiently. RandomForest can be used both Classification and regression tasks but it is not suitable for Regression tasks. This paper tries to explore and implement various machine learning algorithms and analyse which one among them provides the best accuracy with a wide array of data provided. We also attempt to visualise the data and form a connection betweenvariousfactors.

B. Personality Prediction System through CV Analysis paper : Feb 2019

Allan Robey, Kaushik Shukla, Kashish Agarwal, Keval Joshi, Professor Shalmali Joshi

In 2014 an Integrated E-Recruitment System for Automated Personality Mining and Applicant Ranking was proposed by Faliagka et al. an automated candidate ranking was implemented by this system. It was based on objective criteria that the candidate's details would be extracted from the candidate's LinkedIn profile. The candidates' personality traits were automatically extracted from their social presence using linguistic analysis. The candidate's rank was derived from individual selection criteria using Analytical Hierarchy Process (AHP), while their weight was controlled by the recruiter (admin). The limitations of the system were that senior positions that required expertise and certain qualifications were screened inconsistently.

Liden et al. published The General Factor of Personality: The interrelations among the Big Five personality factors (Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism) were analyzed in this paper to test for the existence of a GFP. The meta-analysis provides evidence for a GFP at the highest hierarchical level and that the GFP had a substantive component as it is related to supervisor-rated job performance were concluded by this paper. However, it is also realized that it is important to note that the existence of a GFP did not mean that other personality factors that were lower in the hierarchy lost their relevance.

C. Personality Prediction System through CV Analysis Paper : 5 May 2021

Nale R. K, Pruthviraj Patankar, Rajwardhan Khalate, Ranjit Ghorpade, Sourabh Bhapkar

Social media platforms like Facebook, Twitter, Google, and Instagram it has grown in popularity due to their global accessibility and user-friendly interfaces that allow users to start communicating with others in a short amount of time. Each user on these social networking sites (SNSs) is treated as an individual, and each individual is linked to other individuals as friends, connections, or followers. Many activities, such as posting statuses/tweets, sharing others' posts/retweets, liking others' posts, commenting on others' posts, chatting directly with friends, and playing online games with friends, are made possible while using these SNSs. It is clear that online behavior can be predicted based on the activities of users. Understanding how people act can assist you in determining their type of personality.

S.r No.	Paper Name	Publisher	Techniques	Merits	Demerits
1	Personality Prediction Via CV Analysis using Machine Learning	Atharva Kulkarni, Tanuj Shankarwar, Siddharth Thorat	-Web application, -Random Forest Algorithm	-It can automatically handle missing values, -It works well with both categorical and continuous variables.	It suffers interpretability and fails to determine the significance of each variable.
2	Personality Prediction System through CV Analysis	Allan Robey, Kaushik Shukla, Kashish Agarwal, Keval Joshi, Professor Shalmali Joshi	-Web application, -Big Five Model of Personality	personality test is it provides a basis for an individual to understand themselves. By categorizing behaviours into a term, one can reflect and explore how they adhere to those definitions.	personality test is that these are self-reported surveys. This requires that an individual has the level of self-awareness to answer these questions accurately.
3	Personality Prediction System through CV Analysis	Nale R. K, Pruthviraj Patankar, Rajwardhan Khalate, Ranjit Ghorpade, Sourabh Bhapkar	-Web application, -Support Vector Machine Algorithm	SVM classifiers offers great accuracy and work well with high dimensional space	-They have high training time hence in practice not suitable for large datasets, -- SVM classifiers do not work well with overlapping classes.

III. CONCLUSION

This project have implemented an organization oriented recruitment system that would assist the human resource department in short listing the right candidate for a specific job profile. The system would be used in many business sectors that will require expert candidate, thus reducing the work load on the human resource department



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