# CV Analysis and Personality Prediction System for Recruitment Process Using ML

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**Abstract -** When it comes to the study of humans, determining one's personality is important because it serves as a window into the individual's mindset. When working for a complex organization, an individual's personality is essential. There are several methods for determining an individual's personality, but the most popular and direct method is a simple quiz. The quiz questions will be designed in such a way that they take values from the Big Five personality model and assist the developer in creating a personality report for the individual in question. When we look at the current hiring and selection processes that various organizations use, we see that employers frequently pick out CVs manually, which is monotonous, time-consuming, and consumes a lot of human resources. This project aims to create a system that automates an applicant's eligibility check and aptitude evaluation during the selection process through a system that we are going to develop. It will be possible to overcome the drawbacks of the conventional hiring process by developing a web application that evaluates a candidate's resume and personality.

***Key Words:*** *CV, Machine Learning, NLP, Personality Prediction, Big five personality model (OCEAN).*

## 1. INTRODUCTION

Personality is the most important factor that reflects an individual and keeps on varying. Tackling them is a difficult task for which we are going to implement an approach to identify the personality and provide a recommendation.

The first step in recruitment is the job application, which consists of personal details, experience, and, most importantly, a CV. Companies typically receive thousands of applications for each job opening and employ a dedicated screening team to select qualified candidates.

It is extremely difficult for humans to manually go through each applicant's CV. Many candidates are eliminated in the first round due to ineligibility, an inadequate CV, or a lack of skill. Hiring the right candidate is a difficult task because no candidate is perfect; some may not be skilled enough, while others may not have the right personality. As a result, we are going to propose a method for streamlining and speeding up the shortlisting process through personality prediction. Making personality predictions based on an individual's BIG FIVE TEST result is the main objective of our project. Many job searchers will submit an application for a position if the company provides detailed job requirements and details. As such, candidates for jobs first complete their online resume before appearing for the exam. In essence, the test we utilized is the BIG FIVE TEST.

## 2. LITERATURE REVIEW

### A. Web Application for Screening Resume

This paper majorly on the design of the web application which will be used to screen resumes (Curriculum Vitae) for a particular job posting. According to the author, recruiters would undoubtedly benefit from this technique in weeding out the most qualified applicants based on resumes for further rounds of the recruiting process. It will lessen the recruiters' workload.

It was not possible to perform operations on a file in a pdf, so it must be first converted to text. It may provide inaccurate results if the data is not entered properly. [1]

### B. Personality Prediction Via CV Analysis using Machine Learning

This research uses Natural Language Processing (NLP) techniques to investigate several machine learning approaches for effectively predicting personality through CV analysis. The Random Forest approach outperformed other algorithms including KNN, Logistic Regression, SVM, and Naive Bayes in terms of accuracy, according to the results. [2]

### C. CV Analysis Using Machine Learning

The proposed system is meant to make it simple for recruiters and job applicants alike to apply for positions and undergo screening. The Author states that this system will enable a more effective way to shortlist submitted candidate CV from a large number of applicants providing a consistent and helps in recruitment process. To reduce the time complexity of the system, the candidate's resume will only be matched to those job openings where their skills match with the job requirements. [3]

### D. Personality Prediction with CV Analysis

In this paper, the author's approach is rendering a system that motorizes the eligibility check and aptitude evaluation of an applicant in the selection process. A web application that evaluates a person's personality as well as their resume has been developed to address the shortcomings of the traditional hiring method. [4]

### E. Personality Evaluation and CV Analysis Using Machine Learning Algorithm

The system that automates a recruiting process's eligibility verification and aptitude assessment of candidates is presented in this paper.

This system will identify the experience and key skills required for a particular job position. This system will help the HR department to easily shortlist the candidate based on the CV scores. The candidate's personality can also be identified with the help of this system. Separate set keys are given to candidates to take the aptitude and personality exams. [5]

## 3. Proposed System

The goal of the "CV Analysis and Personality Prediction System for Recruitment Process Using ML" project is to use personality prediction in addition to CV analysis for the recruiting process. The study of existing systems mentioned in the above literature review gives the idea of the limitations rose during making the systems. So, to overcome some of those limitations, here is the proposed system which can fulfill the requirements of the recruiters also it will help the needful candidates/ aspirants. The earlier systems had the facility of predicting personality, Analyzing CV and filtering out the most prospective candidates based on their resumes. The systems had single facility from above mentioned ones.

The proposed system aims for recruiting a candidate by predicting the personality and analyzing the CV/ Resume. The candidates are shortlisted by the CV scores and the aptitude test.

## 4. Comparative Analysis

| Sr. No. | Title | Technology/ Method Used | Observations |
|---|---|---|---|
| 1. | Web Application for Screening Resume | ML – Semi Supervised learning<br>NLP - SpaCY<br>NER (Named Entity Recognition) | Based on resumes, this system surely will assist recruiters select the most capable candidates for the next stage of the recruiting process. It will reduce the recruiters' workload.<br>It was not possible to perform operations on a file in a pdf, so it must be first converted to text. It may provide inaccurate results if the data is not entered properly. |
| 2. | Personality Prediction Via CV Analysis using Machine Learning | Big 5 Test (OCEAN).<br>ML Algorithms - Logistic Regression, Naive Bayes, KNN, SVM, Random Forest<br>NLP - SpaCY, Pyresparser, PhraseMatcher. | The system can be used by various companies in order to streamline the recruitment process by considering the personality of potential candidates by conducting an aptitude test & personality test.<br>The results indicate Random Forest has the maximum accuracy of 0.71. But the accuracy is significantly lower than expected because there is a lack of data. |
| 3. | CV Analysis Using Machine Learning | ML – Semi Supervised learning, KNN, Logistic Regression<br>NLP - SpaCY<br>NLTK<br>NER (Named Entity Recognition) | This tool will make it possible to narrow down the many CVs supplied by candidates, making the hiring process more efficient and uniform.<br>To reduce the time complexity of the system, the candidate's resume will only be matched to those job openings where their skills match with the job requirements. |
| 4. | Personality Prediction of CV Analysis | ML – Logistic Regression<br>NLP<br>Big Five Personality Model<br>NLTK<br>Firebase | This system is an online application – based approach which is an unbiased system that selects a candidate accurately. This system also analyses the personality of the candidates, recruiters can hire individuals on the basis of their overall temperament as well on the requirements of the hiring committee.<br>To improve the accuracy of the model, more aptitude tests can be added on-site, which can also increase the efficiency of the system. |

## 5. Conclusion

The human resources department's workload will be reduced by this system. The candidate's CV that they filled out on the internet is used for CV analysis. Additionally, test results are useful in determining a candidate's attributes. As a result, the CV is shortlisted for the hiring process, and the HR department makes a just and suitable selection.

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