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PERSONALITY PREDICTION THROUGH CV ANALYSIS

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ABSTRACT

Organizations recruit expert candidates for their development. But the main concern for them is selecting the right candidate. Every year, they receive a lot of applications, and it will be difficult for them to go through all the applications and recruit the best candidates. Traditionally, they go through the candidates' CVs or resumes and recruit them. In this paper, the proposed system helps to recruit the right candidates by parsing the data in CVs and resumes and by conducting quizzes to predict personality. Logistic Regression is used to build the model that will parse the data. The system also uses pyresparser to parse the information from a CV or resume. In this way, the model helps to find the personality and details of the candidates, such as skills, experience, and so on. Using this system, organisations can find expert candidates and make the recruitment department's work easier.

Keywords: Personality Prediction, Pyresparser, Logistic Regression, CV, Resume

I. INTRODUCTION

One of the most crucial elements in determining whether a person is a match for the requirements is their personality. We can know the capabilities of a person by whether they can influence and communicate with others effectively, which helps in the development of an organisation. When there is a requirement in the company, they receive thousands of applications and it is very difficult for the people of the company to go through a lot of CV's and find the suitable candidate for the requirement using traditional techniques like technical tests, interviews, and group discussions. So in the first round itself, they filter out the candidates based on different aspects like whether they are suitable for the role, their capabilities, improper CV, and the skills of the candidate. So, in order to decrease the difficulty in the hiring process, we propose a new way where the process of selecting and short listing of candidates gets easier. That is by using personality prediction.

For personality prediction here, we are using a machine learning algorithm that is logistic regression. A personality test and a CV review both contribute to the determination of a person's personality. Based on the personality test score and CV analysis, we select the candidate that is suitable for the requirement.

As we already know through CV's, we can only know the skills and qualifications of a person but not their personality. Personality is one of the most important factors in determining whether or not a person can perform well in an organization. Therefore, personality analysis and understanding are the most prominent factors to consider. The main idea of doing this project is to develop a machine that can make realistic analysis and make fair decisions in selecting the candidates.

Our project's primary goal is to make personality predictions based on a person's BIG FIVE TEST score. Many job seekers will apply for a position when the business offers specific employment requirements and information. Therefore, job hopefuls fill out their online CV first before taking the test. In essence, the test we utilised is the BIG FIVE TEST.

MODEL OF THE OCEAN

Extraversion (E), Openness (O), Conscientiousness (C), Agreeableness (A), and Neuroticism (N) are the five variables used to analyse a person's personality.

1. OPENNESS: This quality is characterised by traits like acceptance, imagination, and curiosity.

2. CONSCINTIOUSNESS: Conscientiousness refers to a high degree of deliberation, an attitude of goal-orientedness, and good judgement.

3. EXTEAVERSION: Energy, talkativeness, and assertiveness are qualities of extraversion, which is also known as extroversion.

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4. AGREEABILITY: Agreeability refers to the characteristics of a person, including trust, affection, and social behaviour.

5. NEUROTICISM: Neuroticism is characterised by traits like depression, moodiness, and abrupt emotional outbursts.

Based on the scores of each domain, we will get to know the personality of a person, i.e., serious, extraverted, lively, dependable, responsible. To extract information from the CV like name, age, gender, etc., we used a simple resume parser, Pyresparser. And we also used an important natural language processing tool, i.e., NLTK. There, after extracting information from the CV and score from the test, we generate the score of the person. Finally, after getting the score, CV analysis is done.

II. LITERATURE SURVEY

Jenal Parmar[1] devised a system to aid businesses in choosing the best candidates for open vacancies. The HR department will include the qualifications, experience, and other details required for a particular job position. The system will take the details and CV/Resume of the candidates and then shortlist the right person suitable for that job profile. Allan Robey[2] built a system using modern technology. It will help to pick the right candidates effectively and efficiently. The system will conduct a weight-age policy and an aptitude test to understand the personality of the candidate. In this way, top candidates are shortlisted. Sudhir Bagade[3] says that personality plays an important role in one's individual life and also in the development of any organization. An online application has been developed that analyses the personality of a candidate based on their CV or Resume. The system uses the TF-IDF algorithm to select the right candidates. Atharva Kulkarni[4]built a system using different machine learning algorithms for predicting the personalities of the candidates using Natural Language Processing. At last, Random Forest achieves better accuracy than remaining algorithms such as KNN, Logistic Regression, Support Vector Machine, and Naive Bayes. VVCET-CSE[5]The system will predict the personality based on the ranking policy. It will rank the skills, experience, and other aspects of the uploaded resume. The candidates also take the aptitude test and answer personality questions. They also receive the result in the form of a graphical representation. Afroja Khatun Monalisa[6]built a model using the Random Forest Algorithm, Support Vector Machine, and Weighted Majority Voting algorithm. Firstly, resumes or CV's are uploaded into the system and candidates are shortlisted based on the administrator's request. The shortlisted candidates receive personality and ability test links, which they need to answer, and then they receive their scores. Based on the scores and the department's requirements, candidates are shortlisted. Gangandeep Kaur[7]developed a system using a machine learning technique known as Logistic Regression. The system estimates the applicant's emotional aptitude through a psychometric analysis and predicts personality by using the OCEAN model. The details of the candidates are protected by using a password encryption algorithm, and the passwords are known only to the required individuals. The candidates can know whether they are selected for the interview via dashboard and SMS. Pragya Sanjay Chauhan[8]built the proposed system that evaluates the right candidate based on the elibility score obtained by attempting an aptitude test and uploading a CV or resume. The model is built using the TF-IDF algorithm. Based on the scores, the candidates' qualities can be analyzed, and the graphical representation of the candidates' scores helps to evaluate their personalities and analyse their CV properly. Hemalatha Kallar[9]created a website which takes the aptitude test and uploads the CV or resume of the candidates. In this way, an expert candidate is selected. Rutuja Narwade[10] created a web application for personality evaluation and CV analysis. The system uses Natural Language Processing for CV analysis and Machine Learning Techniques for personality prediction. The system will output the filtered candidates, which will be helpful to predict the skills and mindset of the candidates. Pruthviraj Patankar[11]built a system using a set of techniques that are used to shortlist an expert candidate. Using a weight-age policy, the system ranks the candidates. The personality prediction exam is used to ascertain a candidate's personality characteristics. Additionally, the recruiter receives the findings and examines them before shortlisting the prospects. Dany Azucar[12]The digital footprints are extracted and analysed. For the purpose of forecasting digital footprints, several meta-analyses have been done. In order to make recommendations for goods or services to customers based on their preferences, the Big Five Personality traits are applied. Golbeck[13] suggests that social media is a platform for people to share all of their life's events, etc. By making this prediction, we will conclude the individual's personality and relationships based on

everything he has shared on Twitter. It mentions a technique for precisely predicting a user's personality. M. Kalghatgi[14] displayed a Neural Network Approach is based on the Big Five Test to estimate a person's personality based on tweets that were published on Twitter by identifying meta-attributes from tweets, which are applied to social behaviour analysis. While neural networks have been used to predict personality, there are drawbacks such as detecting bogus news, automatically analysing tweets, and the inadequacy of using merely Twitter to predict user's behavior and trends rather than personality. Md Tanzim Reza[15]evaluated resumes of persons using NLP and ML, then converting them to HTML, then reverse engineering them into HTML code, and finally performing segment finalisation and qualification feature extraction. The model takes data from a CV and divides it into segments according to the values. Multivariate logistic regression was used to classify the CVs. However, the size of dataset was quite little.

III. EXISTING SYSTEM

The traditional method is manual sorting of the resumes, where the recruiting team must go through a large number of applications to select an expert candidate for any particular job position. This is a time-consuming and challenging process for the recruiting team. However, they can know the details of candidates such as skills, experience and so on by going through their CVs or resumes. But they cannot identify the personality of the candidate or whether he/she is suitable for that job position.

This problem can be overcome by using the proposed system, which not only parses the information from the resume but also predicts the personality of the candidate, which makes the recruitment team's work easy. Machine learning technique is used to create the model, which is tested by the proposed automated candidate grading system

IV. PROPOSED SYSTEM

In our paper, we suggest employing machine learning algorithms for personality assessment and CV analysis. This method gives the company access to a skilled workforce, which will make it easier for the HR department to choose the best applicant for a certain job profile. Our society places a great value on intelligence. You have a better chance of succeeding in your career if you have a positive personality. Psychometric tests are typically used to predict personality. A machine learning technique i.e. Logistic Regression[7] is used to built the model that will parse the information from the CV or resume and displays as the output. The suggested system is designed as a web application[10], where the administrator must first log in using the correct credentials before they may add or alter any questions. The applicant will complete all the necessary registration information and enter their own CV information into the system.

Examples of aptitude test questions and the answers they provide, the results of the tests that the candidates took are kept in databases. The following exam is a personality test. It's a popular misconception, that intellect is measured through personality tests. A personality test mainly evaluates an individual's ability for intelligence rather than their actual intelligence. The variables include things like conscientiousness and being open to new things. Each question includes a predetermined range and the candidate need to select any number within that range.

4.1 Methodology

The figure depicts the design of the system, an application window is opened where the candidate must enter the answers to the quiz, and also the CV or resume is uploaded along with the details of the candidate. Based on the given answers, the personality is predicted to be dependable, extraverted, lively, serious, and responsible. The CV or resume is parsed and the details like name, email, phone number, skills, experience, and predicted personality are displayed as output.

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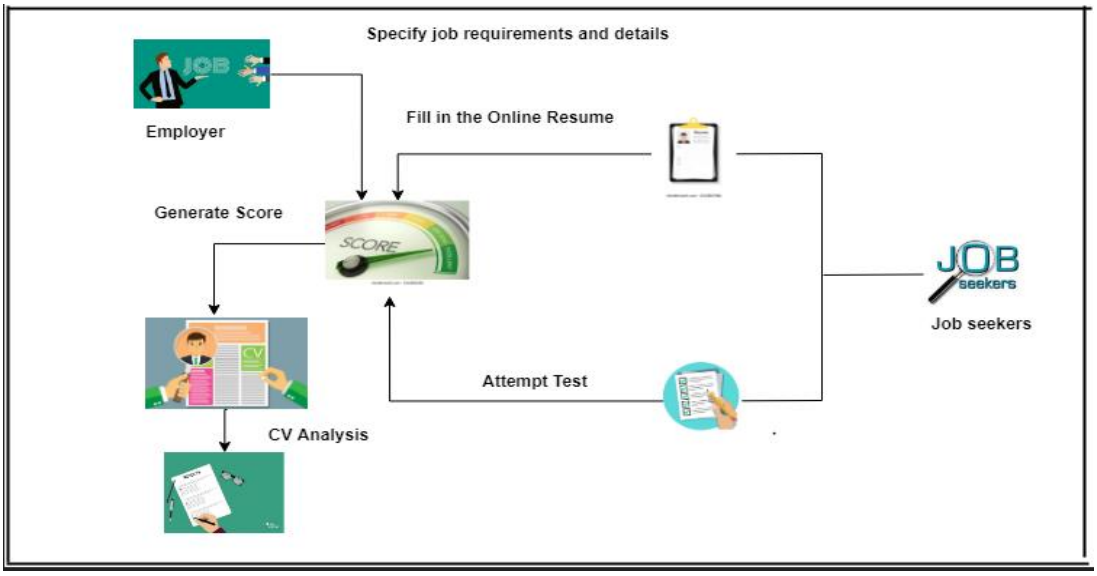
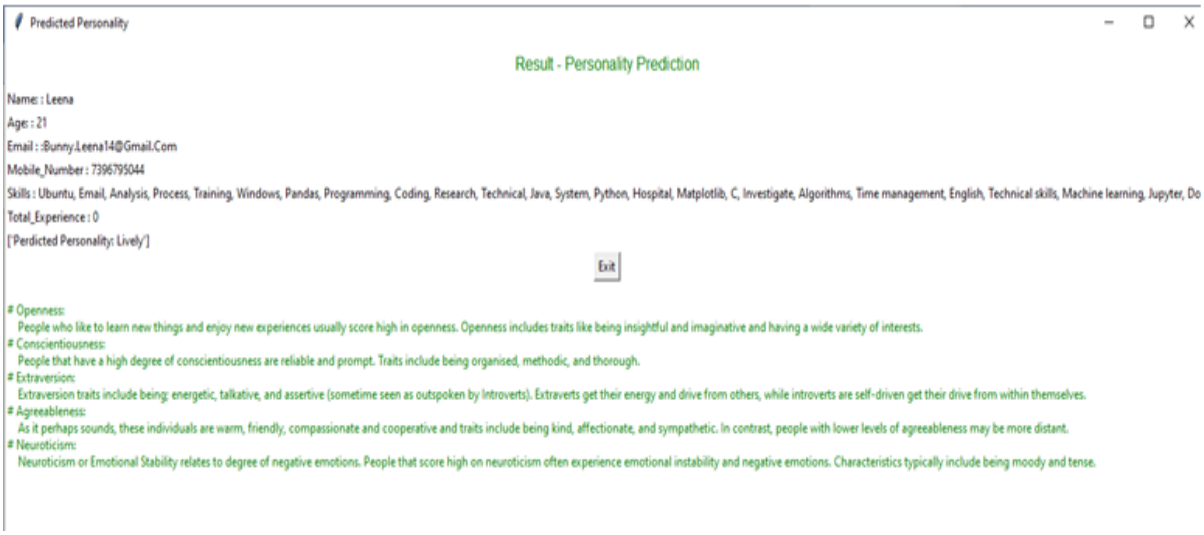


Fig 1. Architectural Workflow

V. RESULTS

When the candidate wants to apply for any job, he/she needs to take the quiz. A window gets opened where the candidate needs to fill the details and upload the CV or resume. The candidate fills the details, uploads CV or resume and answers the personality based questions. The resume or CV is scanned by the model and personality of the candidate is predicted based on the ocean model which are displayed as output. The obtained results are as follows:



Here are the details of the candidate named 'Leena' which are parsed from the resume, using the model. As per the quiz, the personality is predicted as 'Lively'.

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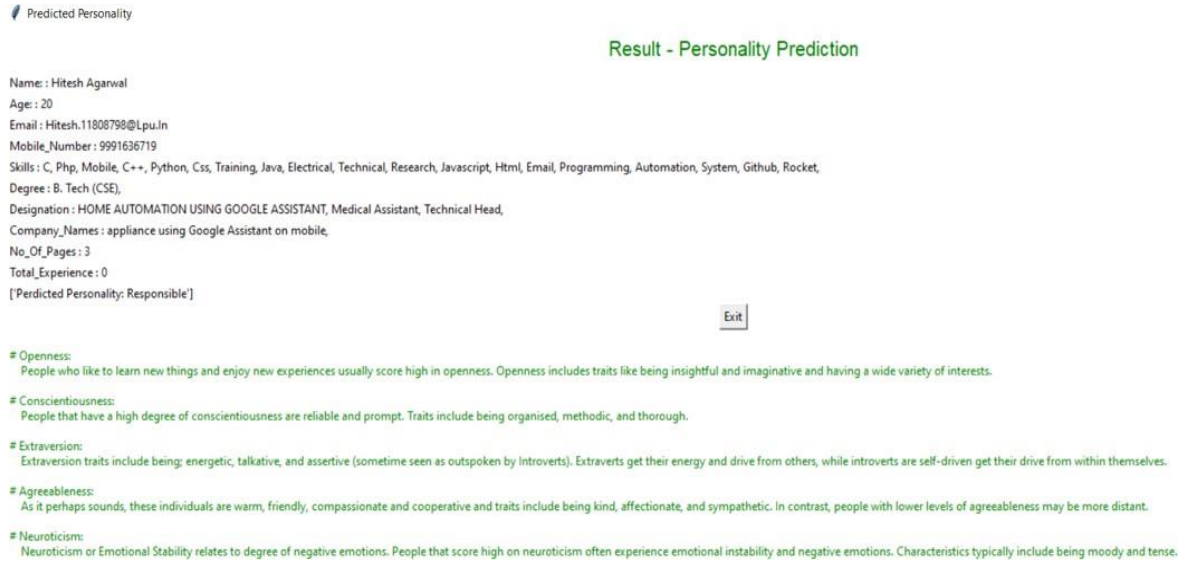
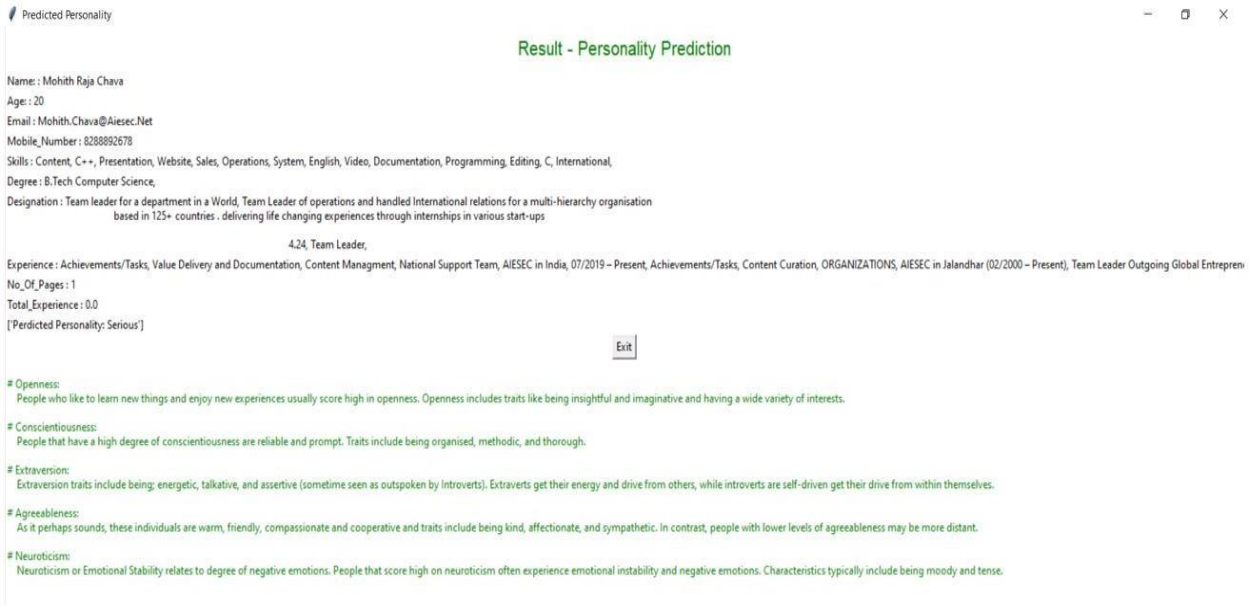


Here are the details of the candidate named 'Hitesh Agarwal' that are scanned by the model and the predicted personality is 'Responsible'.



Here are the scanned details of the candidate named 'Mohith Raja Chava'. The predicted personality is 'Serious'.

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Here are the details of 'P. Sai Reddy' scanned from the resume using the model and the predicted personality is 'Dependable'.

Here are the parsed information of the candidate named 'Sandhya' and the predicted personality is 'Extraverted'.

VI. CONCLUSION AND FUTURE WORK

In this project, we have identified the personalities of different people based on the test known as the BIG FIVE TEST. and also extracted the information from CV's using Pyresparser and the model built using Logistic Regression. Based on the test, we can know the qualities and personality of a candidate, and through CV analysis, we can know the skills and qualifications of a person. Using these two important factors, we can make the hiring process easy, fast and also help in hiring the right candidate with fair decisions. As only Logistic Regression is used in the proposed work, many classification algorithms of machine learning can be used to upgrade the system for much better functionalities [3]. So that the time will be consumed and also an expert candidate can be recruited by the company. This model will help a lot for companies to recruit expert candidates for particular job profiles.

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