

PERSONALITY PREDICTION SYSTEM

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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 CV's or resumes and recruit them. In this project, the proposed system helps to recruit the right candidates by parsing the data in CV's 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.

Keyword: - Personality Analysis, Aptitude Test, Resume Analysis, Big Five OCEAN Model, Pyresparser.

1. 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.

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:

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

CONSCIENTIOUSNESS: Conscientiousness refers to a high degree of deliberation, an attitude of foresightedness, and good judgement.

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

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

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.

2. PROBLEM STATEMENT

“Using Personality Identification Test and CV Analysis for better selection of candidates using The Big Five Test model and pyresparser, TF-IDF Algorithm and logistic regression”.

3. BACKGROUND WORK

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.

4. OBJECTIVE

- i. The main aim of the system is to enable a more effective way to short list the submitted candidates CV's from the large number of applicants by providing a consistent and fair CV ranking policy, which can be legally justified. The system will rank the CV's based on the experience and other skills which are required for particular job profile. This system will help the HR Department to easily shortlist the candidates based on the CV ranking policy.
- ii. Candidate here will register him/herself with all the details and will upload their own CV into the system, which will be further used by the system to shortlist their CV.
- iii. Candidate will also have to give an online test, which will include both aptitude and personality based questions.
- iv. After completing the test, candidate can view their own test results in graphical representation with marks.
- v. This system will help the human resource department to select candidate with the right skills and personality, which will in turn provide expert workforce for the organisation.

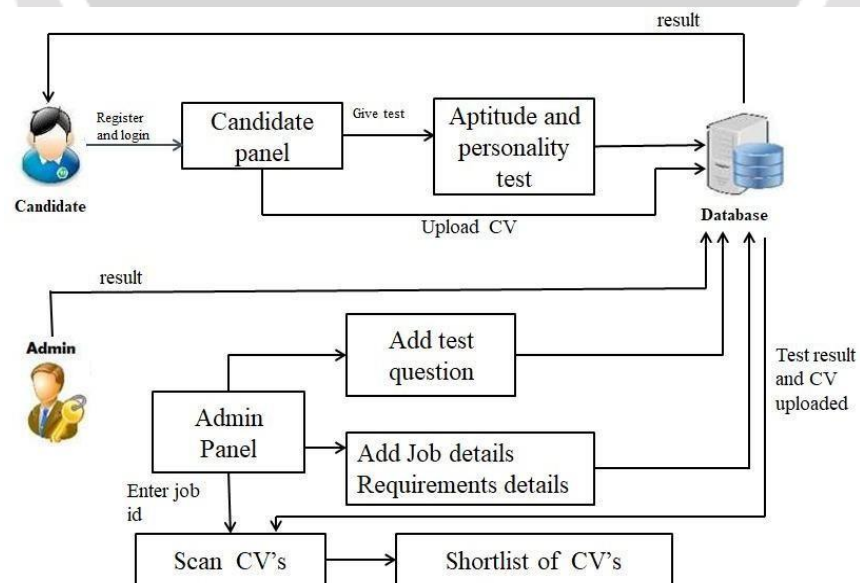
5. LITERATURE SURVEY

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. Gangandeeep 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 eligibility 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.

6. SYSTEM DESIGN



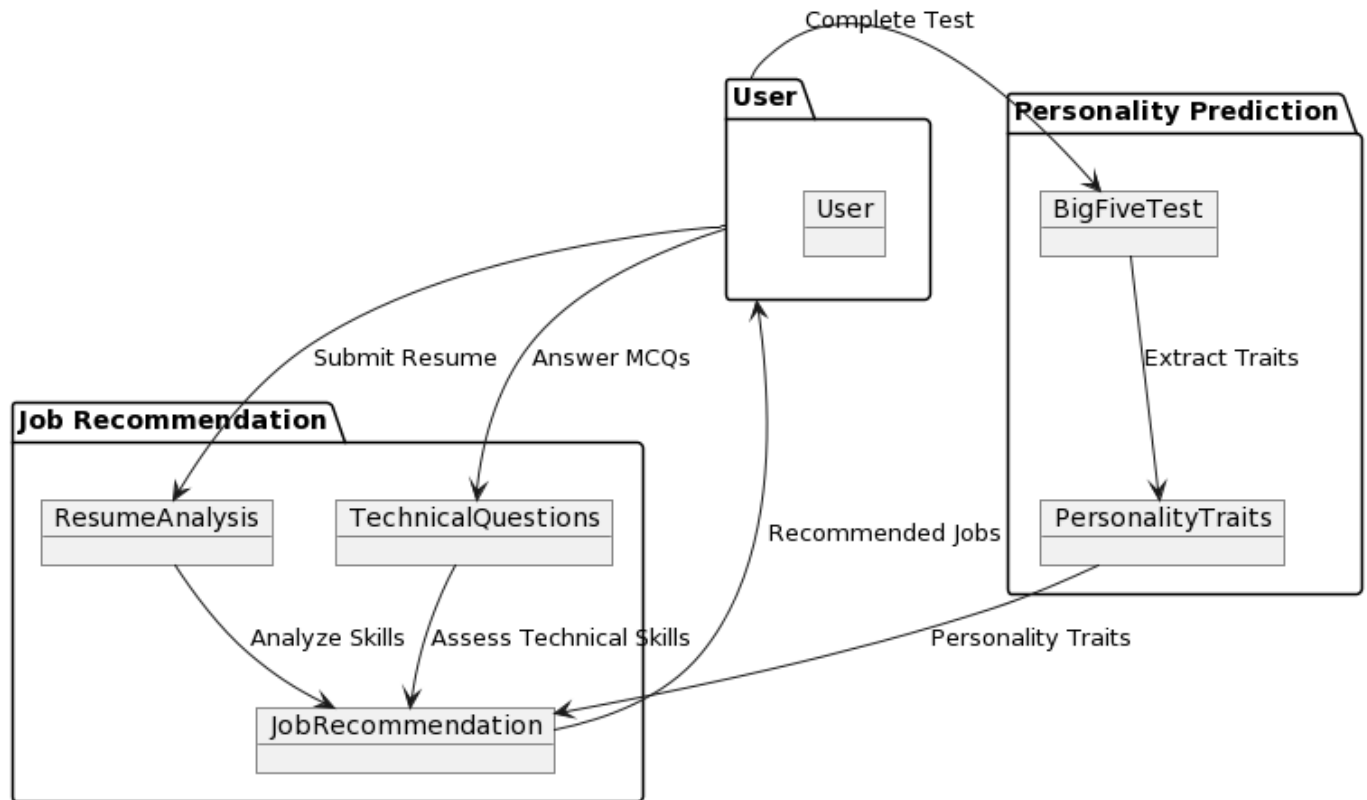
Admin:

1. **Login:** Admin need to login with its valid ID and Password to access the below modules.
2. **Add personality Questions:** Here, admin can add all personality related questions.
3. **Add Aptitude Questions:** Admin can add aptitude questions of the interest of the company to judge the candidate's capability.
4. **Add Job Details:** Admin or any authorized person can add the requirement or job details on behalf of company. System allows admin to job details such as position, experience, salary, etc.
5. **Preferred CV's:** Admin will add some CV's which are preferable and will be used to shortlist the scanned CV's.
6. **Scan CV's:** Admin can scan CV's received from candidates which will undergo the process of shortlisting the CV's. Based on the company requirement, the candidate who have submitted their CV to admin, will be uploaded by the admin into the system.
7. **Shortlisted CV's:** Here, all the shortlisted CV's of candidates will be displayed. The shortlisting of CV's is performed by system itself.
8. **View Candidates:** Can view all the registered candidates with its details.
9. **View Result:** Can view the results of individual candidate, which can be easy to admin or concern person to select a desired candidate.

Candidate:

- I) **Registration:** Candidate must fill up registration form and create login credentials in order to get the access to the system. While registration process, candidate need to upload their CV.
- II) **Login:** Candidate need to enter valid ID and Password to access the below given modules.
- III) **Give Test:** After successful login, candidate can now proceed with online test based on personality and aptitude.
- IV) **View Results:** Once the test is completed by the candidate, the results will be displayed.

7. DATAFLOW DIAGRAM



This UML diagram represents the flow of data between various components involved in the personality prediction and job recommendation system:

User: Represents the end user interacting with the system.

Personality Prediction:

Big FiveTest: Component responsible for administering the Big Five personality test to the user.

PersonalityTraits: Component to analyze the results of the personality test and extract personality traits.

Job Recommendation:

Resume Analysis: Component to analyze the user's resume and extract relevant skills and experience.

Technical Questions: Component to present MCQ technical questions to the user and assess technical skills.

Job Recommendation: Component responsible for recommending jobs based on personality traits, technical skills, and resume analysis.

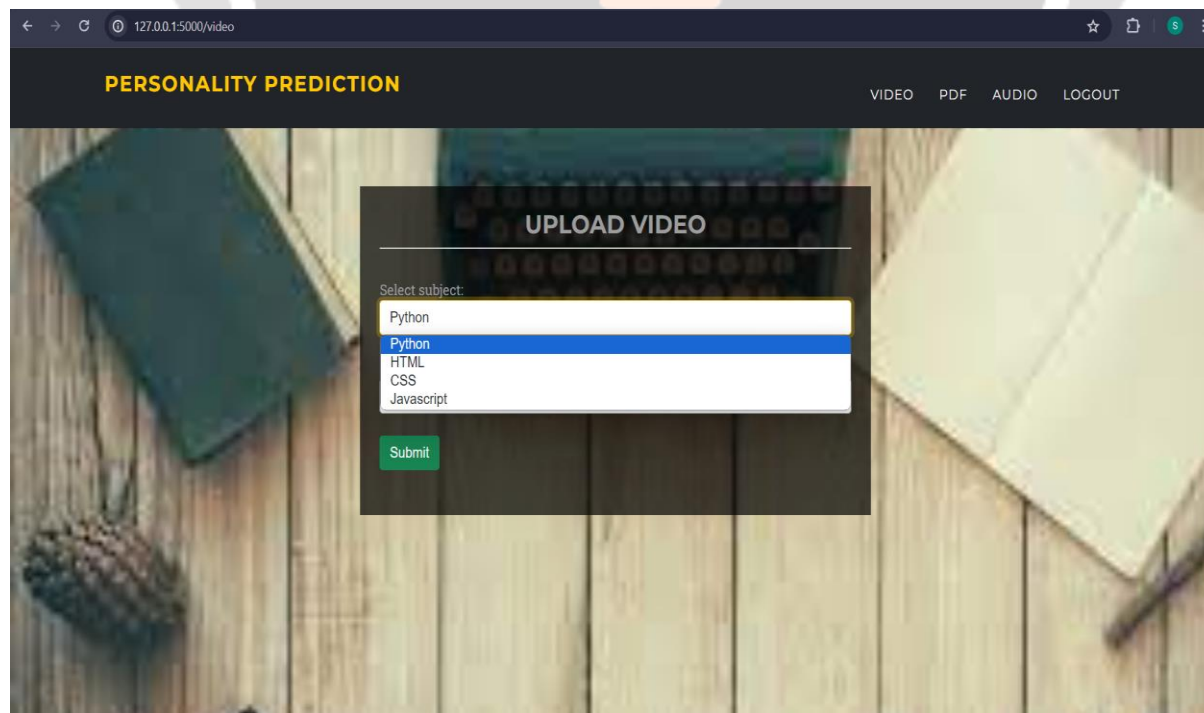
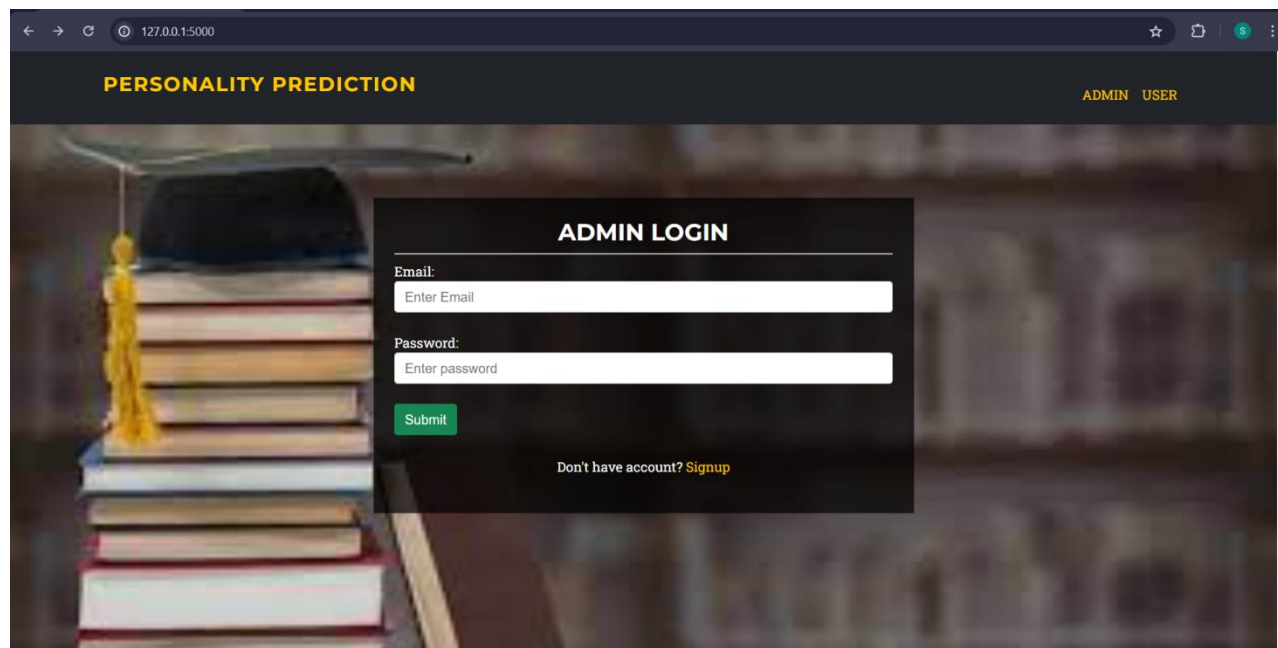
8. APPLICATIONS

Applicability refers to the potential or relevance of the projects outcomes in practical or theoretical contexts. This projects applicability lies in:

- Personality analysis have a wide range of applications like knowing your strengths and weaknesses of an individual.
- The test also tells the traits in which a person is lacking and what are the implementations that can be done to develop those traits.

- Its easy for the HR Department to sort the candidates for a particular job role which requires a lot of personality skills.





9. RESULTS



127.0.0.1:5000/userlog

PERSONALITY PREDICTION COMPANY APTITUDE CV ANALYSIS PERSONALITY ANALYSIS LOGOUT

USER



PERSONALITY PREDICTION COMPANY APTITUDE CV ANALYSIS PERSONALITY ANALYSIS LOGOUT

Upload resume

Choose File chandana.pdf

Personality Quiz

Extraversion

Q.1 Do you feel comfortable around people?

- Very inaccurate
- Neither moderately inaccurate not accurate
- moderately accurate
- very accurate

Q.2 At parties, do you often talk to different people?

- Very inaccurate
- Neither moderately inaccurate nor accurate
- Moderately accurate
- Very accurate

PERSONALITY PREDICTION COMPANY APTITUDE CV ANALYSIS PERSONALITY ANALYSIS LOGOUT

Very accurate

Q.40 Feel secure most of the time?

Very inaccurate

Neither moderately inaccurate nor accurate

Moderately accurate

Very accurate

Aptitude Quiz

1. What is the output of the following code?

```
print(2 + 2 * 3)
```

A. 8

B. 10

C. 12

D. 14

2. Which of the following is not a valid variable name in Python?

A. my_variable

B. 2nd_variable

C. variable_3

D. _myVariable

3. What is the output of the following code?



127.0.0.1:5000/prediction

PERSONALITY PREDICTION COMPANY APTITUDE CV ANALYSIS PERSONALITY ANALYSIS LOGOUT

Resume Data	Personality Analysis	Aptitude												
<p>Name Chandana H</p> <p>Email chandanahs.1s19cs031@gmail.com</p> <p>Contact 7676701594</p> <p>Skills [Python, Website, C, C++, Java, Database, Programming, Technical, Sports, Machine learning, Networking, Engineering, Reporting, System, Communication, English, Information security, P, Security, Try]</p> <p>Recommended Job is Web Development</p> <p>View posts on Web Development</p>	<p>predicted trait : Extraversion</p> <p>predicted_score : 80.0</p> <table border="1"> <caption>Predicted Trait</caption> <thead> <tr> <th>Trait</th> <th>Score</th> </tr> </thead> <tbody> <tr> <td>Neuroticism</td> <td>40</td> </tr> <tr> <td>Openness</td> <td>40</td> </tr> <tr> <td>Conscientiousness</td> <td>40</td> </tr> <tr> <td>Agreeableness</td> <td>80</td> </tr> <tr> <td>Extraversion</td> <td>80</td> </tr> </tbody> </table>	Trait	Score	Neuroticism	40	Openness	40	Conscientiousness	40	Agreeableness	80	Extraversion	80	<p>Your score is 3/10. Thank you for taking the quiz!</p>
Trait	Score													
Neuroticism	40													
Openness	40													
Conscientiousness	40													
Agreeableness	80													
Extraversion	80													

10. CONCLUSION

- In this system, 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 Resumeparser and the model built using Natural Language Processing.
- 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 the candidate.
- As only Natural Language Processing is used in the proposed work, many classification algorithms of machine learning can be used to upgrade the system for much better functionalities, so that little time will be consumed and also an appropriate candidate can be recruited.
- This model will help a lot for the companies to recruit appropriate candidates for particular job roles.

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