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CV Ranking System and Portfolio Detection

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***Abstract:** In recent times there is an increase in population and since of that plenty of individuals apply for one position of job. For this every single applicant provides his/her CV which contains its biodata, academic records and skill set. Within the present times the human resource department has to manually undergo all the CVs then they call the eligible candidates for an interview. Even after this much of human effort this method isn't efficient and involves manual reading of documents (CVs). Because of this the human resource requires many HR officers and plenty of their time. In this project we'll atomate this process with the assistance of web technologies and machine learning algorithms so we should not depend on humans for ranking the CVs and try this process in more efficient and faster way.*
***Keywords:** MySQL, Machine Learning, , Flask, Server, TF-IDF*

I. INTRODUCTION

There is a large workload on the human resource department to pick out the proper candidate for a particular job profile which would successively supply an expert workforce for the organization from a large pool of candidates. Solution: The proposed system will enable a simpler and efficient way to short-list submitted candidate CVs from an oversized number of applicants providing a uniform and fair CV ranking policy. This could be legally justified. The system will rank the experience and key skills required for a particular job position then the system will rank the CVs based on the experience and other key skills which are required for a particular job profile. This system will help the HR department to simply shortlist the candidate supported by the CV ranking policy.

II. CV RANKING SYSTEM

A. *Sec.1 Proposed System*

We made an internet site where the recruiter can post jobs from the admin side he is hiring for. From the client-side, the candidate needs to register for the online site and he will browse for job posting. Each job posting will have a singular ID. And using that ID he will upload his resume which will be able to be stored for further processing. And thereafter the system will ranking system will rank all the candidates and will show admin the most fitted candidates for the job.

B. *Sec.2 Modules*

1) *Sec.2.1 Module 1:* This module contains the front end and also the visual aspects of the project. Within the user side, the user will be able to log in browse the job openings, and apply for the job by uploading its resume. And on the admin side admin will be able to post job openings and provide 3 ideal resumes to teach the system what kind of resume the admin wants. The candidate's ranking will be shown to the admin on his view. And then admin will conduct an online personality check test. This exam will be MCQ-based and will be held on the same site to further shortlist candidates for an in-person interview.

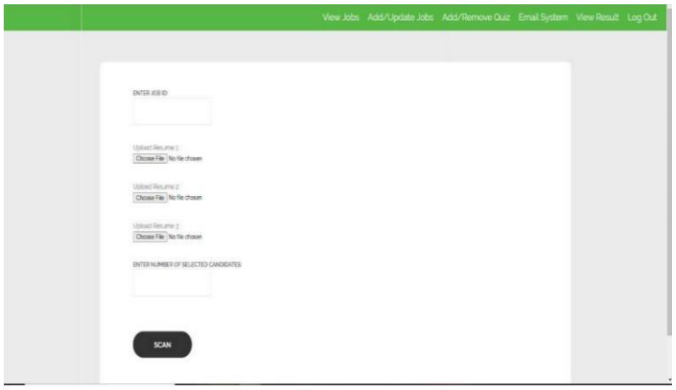


Fig1:- Admin Side

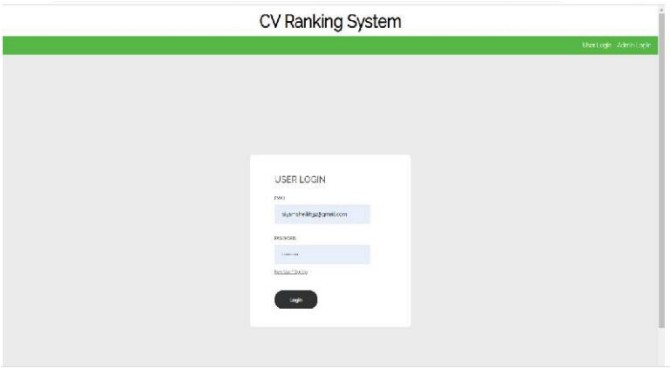
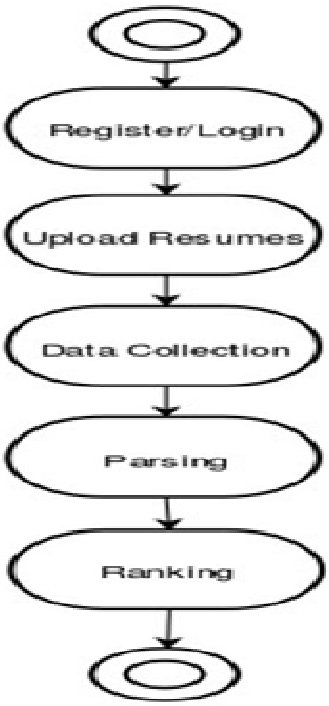


Fig2:- User Side

2) *Sec.2.2 Module 2:* This contains all the backend-related functionalities of the project. The backend of the project is created using Python's framework flask. The server to manage all backend processes is created using a flask. It'll help us to take resumes and data from the user and also to post job openings. We are using MySQL database to store both admin and user data. MySQL is a relational database.
3) *Sec.2.3 Module 3:* This module accommodates the machine learning part. For machine learning, we are using TF-IDF(term frequency-inverse document frequency) which is a machine learning algorithm. It's a numerical statistic that's intended to reflect how important a word is to a document in a document. We will parse the entire cv of the user and then using this algorithm together with the ideal resumes which are provided by the admin we will rank the applicants.
4) *Sec.2.4 Implementation Detail*



The System Architecture consists of two modules

- Candidates.
- Company's CV Ranking System

a) *Candidates Consist Of:*

- *Domain Establishment:* This module is responsible for creating user accounts and database creation as the proposed system is domain independent and would be used by multiple users.
- *Registration or Login Module:* If the new user wants to interact with our system. he needs to simply register into our system by completely filling details i.e. validation. If the user is already exists, he needs to login.
- *CV uploading:* The candidate has to upload the cv in the pdf format. So, that the parser can sort the resumes and store it properly into the database.
- *Job search:* Skilled professional who wants to get hired by such a company or an organization who really worth their ability and their skill sets. They will be able to make sure that the desired position is made available to a particular candidate. You can say best possible candidate.
- *Recruiting Test And Results*
- *Give Test:* After successful login, candidate can now proceed with online test base on company's selection criteria.
- *View Results:* Once the recruiting process is completed by the company, and the time limit has ended. The shortlisting mail will be sent to the selected candidates & they will be able to view their rankings.

b) *Company's Cv Ranking System Consist Of:*

- *Parser System:* Parsing module is responsible for parsing the document and storing it in json format which will later be used by the ranking module. Ranking module will then use the json file and rank the candidate's information according to his/her skills and the information will be stored in the database.
- *Testing Module and Their Result:* As per the company's selection criteria or process, they can add whatever type of test they wish to and add and update the required questions and answers of the tests such as personality test, coding test, technical test etc. this test will be multiple choice question based. The candidate who will score more than 75% in these tests will only be to rank their resumes in the machine learning algorithm of the system. In the instead case they will be discarded and will not be sorted and displayed in the ranking and also will not be able to see their results.
- *Candidate Skillset Database:* This is the block where the actual processing of our project is done. This block connects the gui to the database i.e. it acts as a connector as well as communicator which connects the database and helps in transfer of data between the gui and the database. Its main function is to take input from resumes of the candidate and parse it to store the information and store it in the structured format(json), and database. After storing this information this system will give output using web application. Database tier is the tier used for the storage of data. This tier contains all the data that is need for the processing of the whole project.
- *Resume Ranking Algorithm:* TF-IDF is a statistical measure that evaluates how relevant a word is to a document in a collection of documents. This is done by multiplying two metrics: how many times a word appears in a document, and the inverse document frequency of the word across a set of documents. It has many uses, most importantly in automated text analysis, and is very useful for scoring words in machine learning algorithms for Natural Language Processing (NLP).TF-IDF (term frequency-inverse document frequency) was invented for document search and information retrieval. It works by increasing proportionally to the number of times a word appears in a document, but is offset by the number of documents that contain the word. So, words that are common in every document, such as this, what, and if, rank low even though they may appear many times, since they don't mean much to that document in particular.
- *Information Retrieval:* TF-IDF was invented for document search and can be used to deliver results that are most relevant to what you're searching for. Imagine you have a search engine and somebody looks for LeBron. The results will be displayed in order of relevance. That's to say the most relevant sports articles will be ranked higher because TF-IDF gives the word LeBron a higher score. It's likely that every search engine you have ever encountered uses TF-IDF scores in its algorithm.
- *Keyword Extraction:* TF-IDF is also useful for extracting keywords from text. How? The highest scoring words of a document are the most relevant to that document, and therefore they can be considered keywords for that document. Pretty straight forward.

C. *Sec.2 Disadvantages of existing system*

1) Require manpower
2) Slow due to manual work
3) Inefficient due to lack of computer technologies

4) Require plenty of time
5) Costly as dedicated people are to be assigned for this work.

D. Sec.3 Advantages of proposed system
1) No need for human work all work is done by computer.
2) Faster than manual work.
3) Efficient thanks to machine learning.
4) Require less time.
5) Cheap as we don't need extra people in the human resource department for resumes short.

III. CONCLUSIONS

In this project, we've implemented a company-oriented recruitment system that may assist the human resource department in shortlisting suitable candidates for a particular job profile. The system would be used in many business sectors that require expert employees, thus reducing the workload on the human resource department. Our system will provide a better and efficient solution to the current hiring process. This can provide the potential candidate to the organization and therefore the candidate will be successfully be placed in a company that values his/her skillset and ability.

IV. ACKNOWLEDGEMENT

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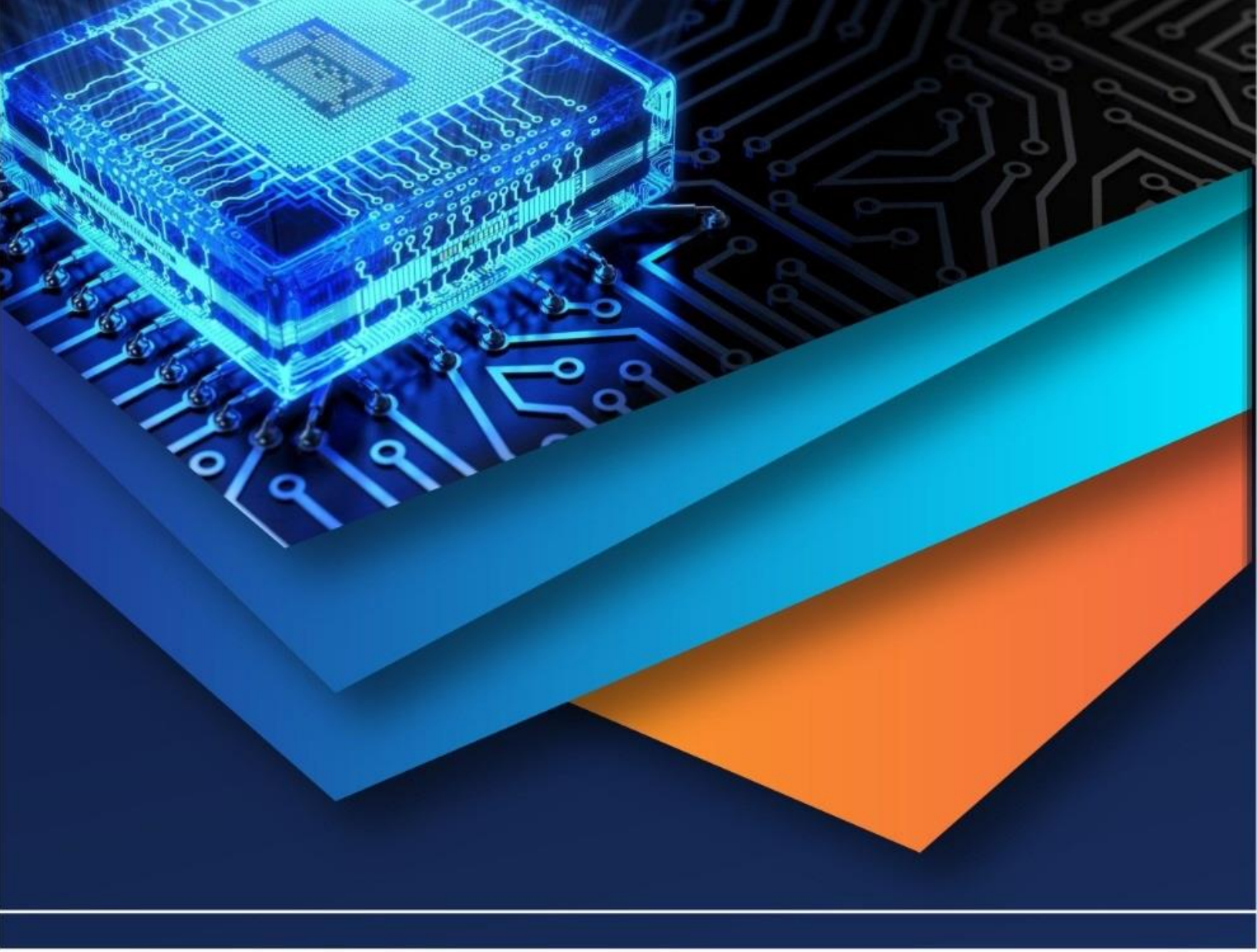

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