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AI BASED JOB PORTAL

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ABSTRACT

The hiring process is a very time consuming process and many resources are used to find the best candidate for job. Vacancy details are usually published on various sources on the job portal and the applicants starts applying on it. Most of the job portal has its own way to test candidates for job. When candidate filtering is not done properly, recruiter tasks increases. The proposed system is designed to allow applicants and recruiters to do this on a single portal, recruiters from different companies can publish job details available from each company. Applicants can upload resume and apply for a job. Resume is ranked based on match with work description for preselection.

Keywords: Natural Language Processing (NLP), NER (Named Entity Recognition), Spacy, Job Portal, NLTK (Natural Language Toolkit).

I. INTRODUCTION

CV screening is the process to decide whether candidates are qualified or not for a role based on education, experience and other information recorded in resume. The goal of screening CV is to decide whether the candidate is moving for next stage in recruitment process or not. The biggest challenge in CV screening is mass applicants. Number of resumes received is one of the biggest factors in increasing the time. Average job listings receives 250 resumes and up to 88% Of them, they are considered unqualified. This means that to recruit one person, recruiter has to spend up to hours reviewing the resumes. The proposed system automates the CV screening process by saving time and resources. Proposed system harness the power of artificial intelligence by using natural language processing models.

II. LITERATURE SURVEY

Author proposed a web application[1] for screening the resumes, Various modules are divided into the following three parts.

1. Job Applicant Side
2. Server Side
3. Recruiter Side

The CV will be accepted in the form of a .pdf file then it is saved in the database. If the data is unstructured, scanning, analysis, and tokenization are done. Then it is converted to json format and goes through the NLP pipeline. The Spacy framework is used for training models. Spacy, a framework trained by common data changes to NER, allows relevant entities to be extracted. The same is done to work description. Now we have scores from these units, it will be calculated and the ranking will be given. Ranking lists are displayed to recruiters, not candidates.

The author has discussed in the paper [4] about the recruitment systems. There are some drawbacks, such as searching for a large number of CVs, expensive recruitment process, certain types of CV, loss of potential candidates. They suggested the NLP model that extracts the required entities from any resume format. The NLP model helps avoid unnecessary data. according to which, entity comparison is done between resumes And job description.

The author has developed a recruiting portal [6] for job seekers. The sole purpose of the system is to reduce the confusion between job seekers and recruiters. Job seekers can also apply for their dream job on the portal. Job seekers could ask job-related questions to recruiters via the portal.

Another web portal [7] was also developed, in which there are types of users who can access the portal such as job seekers, employer and user. Job seekers can build their profiles, apply for a specific job. Employers can post job and watch profiles of applicants.

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CV classification and ranking based on matching with job description [10]. Author has used NLTK to tokenize the CV data. Tokenization of data is further processed for lemming and vectorization. KNN is used to categorize resumes into the multiple categories. Cosine similarity is used to match the job description with the resume date and the most appropriate CV is displayed to recruiter.

III. PROPOSED SYSTEM

Web application proposed for screening and evaluating resume according to work requirements advertised by company recruiters have different modules. The proposed web application has two types of users: Applicants and Recruiters.

Recruiters can create a job profile description, applicants can apply for a position by uploading their resume. Text extraction from resume is done on the backend, then related entity extracted from each resume will be compared with job description and rank will be calculated.

The most appropriate resume is ranked first. Applicant's automatic pre-selection is available on recruiter page. This process of CV screening involves matching the entity of each resume to the entity of a job description. The score of each applicant is stored in the database based on the matching. Next, applicants with their CV links are shown to recruiters in descending order of score.

The job portal is divided into two parts:

A) Applicant Side

B) Recruiter Side

A) Applicant Side:

Applicants and recruiters gather here. The available job profiles, including job titles and job descriptions, will be displayed to the applicant with the information of recruiter who have published this job listing. Applicants simply upload and apply for a job advertised by a recruiter. Resume contents of each applicant will be passed to the NLP model to extract related entities then it is stored in the database in the form of key / value pairs.

B) Recruiter Side:

Job portal is used to create job notice with job title and job description. Then the job description is passed via NLP, a model for extracting related entities and storing them in a database in the form of key / value pairs. Once a notice created, recruiters can see the number of applicants for that position and can perform tasks such as preselection and deleting posts.

Applicant's automatic pre-selection is available on recruiter page. This process involves matching of the entity of each resume to the entity of a job description created. The score of each applicant is stored in the database based on the matching. Next, applicants with CV links are shown to recruiters in descending order of score calculated.

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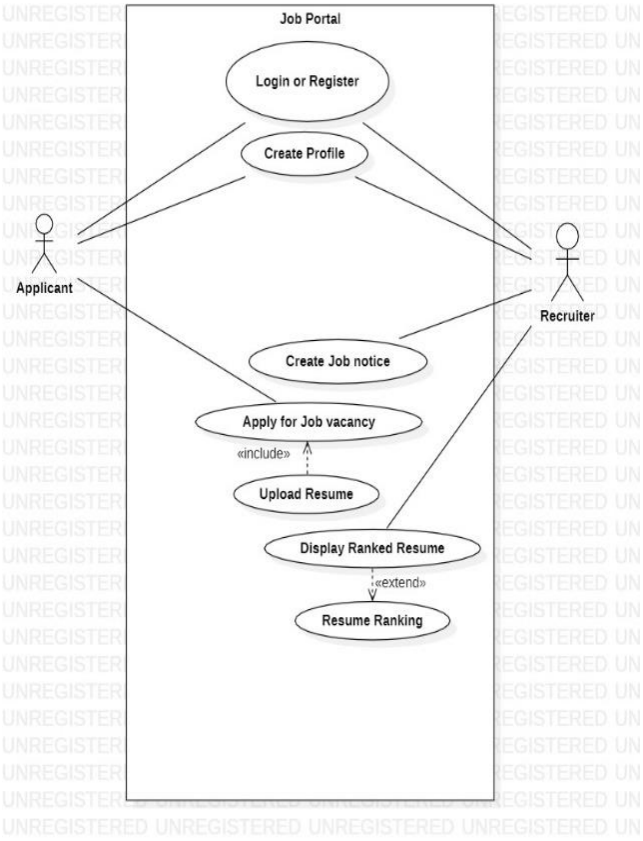

Figure 1: Use Case Diagram

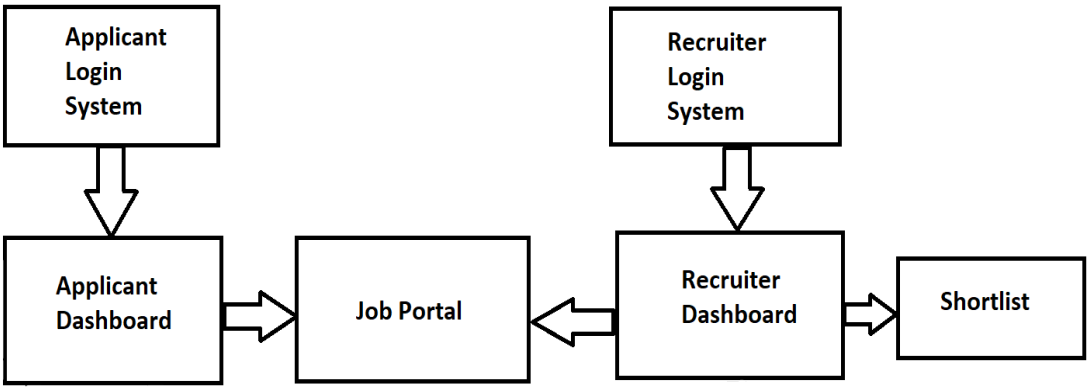

Figure 2: System Architecture

IV. IMPLEMENTATION

The entire project is made with HTML5, CSS3, Bootstrap, JavaScript, Flask, Python. The whole NLP model are provided in the backend of job portal. We have Implemented highest precision model in our project.

In the NLP model, we have used spacy library to train the resume dataset. Spacy allow us to train NLP model to identify essential entities such as experience, skills, education etc. This can be easily done, simply by updating the NER model during training of model. This model is also used in the portal backend and used for extraction of entities from job description and resume.

The CV has large number of format available on the web, so it's always a good idea to create ATS friendly resume so that it can be analyzed properly. When an applicant applies for a specific position by uploading the resume, resume will be converted to text automatically. Then, the text is feed to NLP model to extract and save entities into database in key / value pairs. The same process follows when recruiter publishes a job description. When the recruiter wants to shortlist the applicants, the entity of the job description starts matching with the

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entity from CV. Matching plays an important role in the calculation of each applicant's score. We have used the regular expression to split the values on delimiters like '/', ':'. '@' etc.

Now, the applicants will be shortlisted in descending order of the score, calculated based on the matching of entities.

V. CONCLUSION

The system we have proposed is fully implemented and tested for various test cases. Our system definitely assists recruiters by selecting the best candidate for the position by iterating automated candidate list for each applicant, provided by our portal.

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