JOB PORTAL RESUME EVALUATON SYSTEM USING TEXT MINING AND NATURAL LANGUAGE PROCESSING

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ABSTRACT
In this competitive era, getting right education and right job is always a challenge. Organization who are in need of skilled people in certain departments also find it difficult to identify right candidate with good talented skill set. In the proposed system, we propose 2 logins namely job seeker and employer. The proposed system tries to make the recruitment process simpler and efficient by integrating text mining and natural language processing techniques. The proposed architecture consists of unique and essential features like study materials, de-duplication process, resume analysis and weightage analysis. The employer can upload study materials while posting the job requirement so that the job seeker will have a fair knowledge of the exact job role. The recommendation of exact profile based on the skill required is processed using collaborative filtering algorithm. To optimize the cloud storage we have integrated de-duplication technique to eliminate saving same resume n number of times which would increase encryption cost and storage. The de-duplicaton process is performed using Proactive Replica Checking approach (PRCR). Also applying natural processing techniques in both job seeker and employer side provides efficient results saving much of time. In the employer side, we use web crawler to extract job description and requirements. In the job seeker side, once the resume is posted, stop word filtering and text segmentation is performed. After text segmentation, the scoring is provide based on the education, work experience, skills, personality traits and frequency of degree. Finally our proposed system provides a recommendation system for the upcoming generation in which degree of education major job requirements are coming.

Keywords: Proactive Replica Checking approach (PRCR), Text mining, Natural Language Processing (NLP), collaborative filtering.

1. INTRODUCTION

Natural Language Processing (NLP) is an hot research area which is tremendously getting increased. NLP can be adopted in several area's which can help human is decision making and automation. NLP is applied in online product companies to mine the n number of reviews and make the customer decision making easier. NLP is applied to mine speech input to analyze the parameter and identify the meaning automatically. NLP has huge scope in day to day life especially to help interviewers. Implementation of NLP for interviewer, resume analysis is more advantageous. This is because it eliminates the interviewer don't treat the candidates with personal, mental, physical traits, external conditions, influence, referral etc. The efforts taken by the organization human resource department is also increasing in calling list of candidates, arrange infrastructure for interview venues and schedule interviewers for the interview process. Thus fulfilling candidate requirement might take much time and increased cost. Existing traditional approach leads the organization to innovate handling the process making work less complexity. The

innovation might include domains like text mining, natural language processing to make the process simple and efficient [1].

Productive and good candidates are eliminated in the interview process by the interviewer due to their wring decisions, wrong prediction of candidate subjective views, personal emotion. Thus because of these parameters right candidate may be missed to get the right opportunity. Always hiring right candidate is an important factor for the success of the organization to obtain their mission and vision. Identifying right productive candidate is challenging for every human resource departments. Thus automating the interview process with NLP can reduce much time and make the decision making easier. Application of text mining technique to the candidate resume and projecting the list of candidate resume along with weightage of skills would help the human resource department in identifying the right candidate at short period of time [2].

Thus NLP based resume analysis, interview assessment process of the existing approach cannot provide promising results as candidates invoking top candidates cannot perform or deliver their best during the interview process as it may depend on their physical and mental state during the interview process. Few might become nervous and cannot perform well during the interview process though they are capable of cracking the interview. Also the interview time is limited and employers has to call list of candidates to analyze their skill in which for a single opening you might be analyzing 50+ candidates to hire one, which is a time consuming process. To overcome this challenges, integration of NLP into HR day to day recruitment process might be an efficient solution to identify right candidate in a short period of time. NLP may lead to technology-related unemployment, but it may also prompt industrial transformation

2. RELATED WORKS

[3] This research article explains about data mining, text mining domains. Data mining is nothing but discovery of patterns and mine knowledge & association from large set of data. Text mining is nothing but extracts meaningful information from the input text provided. In text mining, text clustering, categorization and sentimental analysis would be performed for analyzing the text and identifying user opinion. This paper deals with survey of various techniques and algorithms utilized in text mining.

[4] This survey paper details about text mining and its applications utilized for efficient documentation analysis and extract the important information's from the document which can used to build a graph for the customers to make their decision making simple in a short period of time.

[5] This paper elaborates about text mining technique. This paper surveys different applications in which text mining is applied to extract useful information and make the business simple. Author in details survey text mining techniques and applications in different papers.

[6] In this paper, the author explains along with text mining integration of machine learning algorithms, natural language processing, advanced data mining techniques are useful for extracting useful information from large set of data. They involve preprocessing, text mining, sentimental analysis and machine learning techniques to process the input text, usage of association rules and visualization tool to show the output.
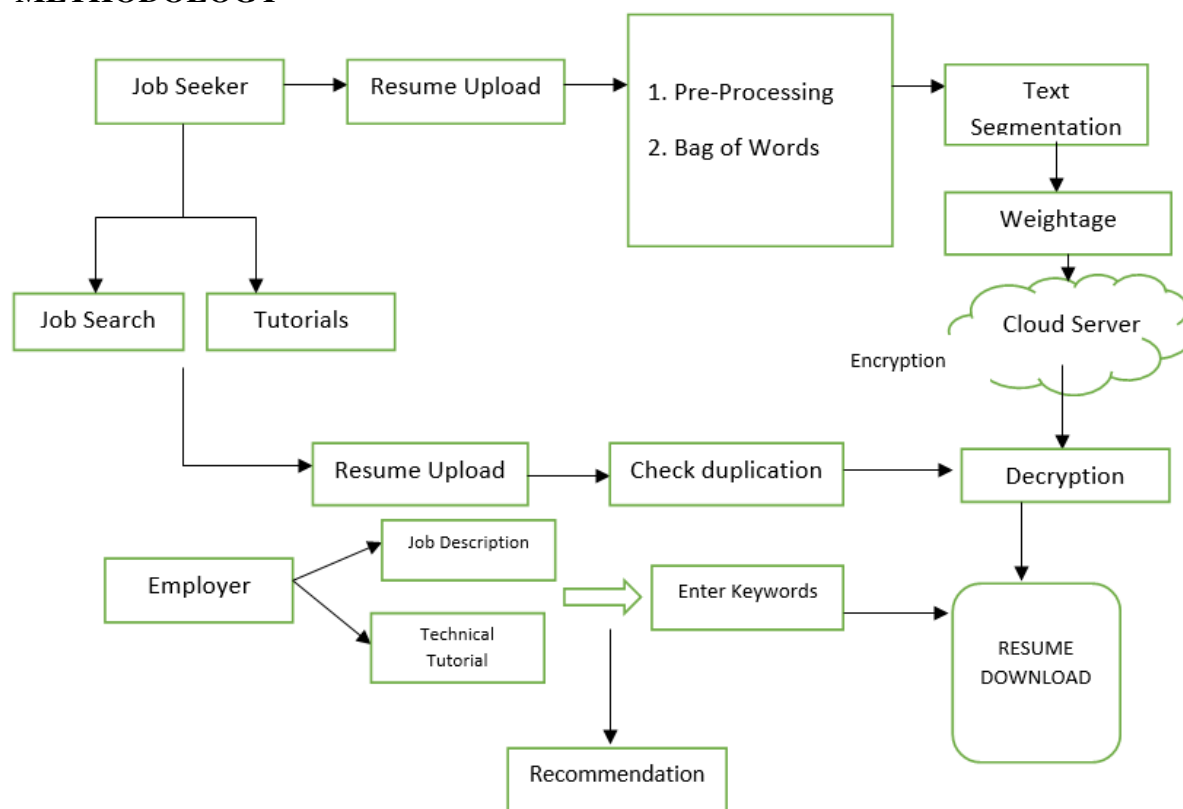
3. METHODOLOGY

Fig 1. Proposed Architecture

Fig 1 explains the proposed architecture with job seeker and employer roles making their day to day task easy using natural language processing. The major modules in job seeker side is eliminate replication of resumes, resume weightage analysis using NLP. The major modules in employer side is job posting along with tutorials, get connected with candidates based on the weightage of the resume.

In the proposed methodology, we use job seeker and employer login. The employer can register and login into the portal to obtain the right candidate resumes. The employer has an option to post the requirement; hence they will upload the job description details. While uploading job description details, to make the recruitment process simple and efficient by providing an option of uploading study materials of the skill required during job post. After this the registered job seekers automatic recommendation to the job seeker when respective skills are matched with the job post. For this notification and identifying the right list of candidates for the required skill set is performed using collaborative filtering algorithm. In existing system, the job seekers would be uploading the same resume n number of times without knowing, which leads to increased encryption cost and storage cost. To optimize the storage space, we used de-duplication technique to avoid storage of same file many times. For this de-duplication technique, we used Proactive Replica Checking approach (PRCR) algorithm to validate replication of files in the storage. Also applying natural processing techniques in both job seeker and employer side provides efficient results saving much of time. In the employer side, we use web crawler to extract job description and requirements. In the job seeker side, once the resume is posted, stop word filtering and text segmentation is performed. After text segmentation, the scoring is provide based on the education, work experience, skills, personality traits and frequency of degree. Finally our proposed system provides a recommendation system for the upcoming generation in which degree of education major job requirements are coming. To protect the job seeker personal details and preserve their privacy, we used AES encryption algorithm. For experimental results and analysis, we used public cloud storage to make the file available globally.

4. EXPERIMENTS AND RESULTS

Fig 2 explains the landing page designed in Java using java servlet page which consists of job seeker (user) and admin (employer) login provisions. Respective java functions are developed for authentication.

Fig 3 explains the page for employer to provide job descriptions details for the organization by authenticating into the application as employer. First the employer has to register then they can able to login.
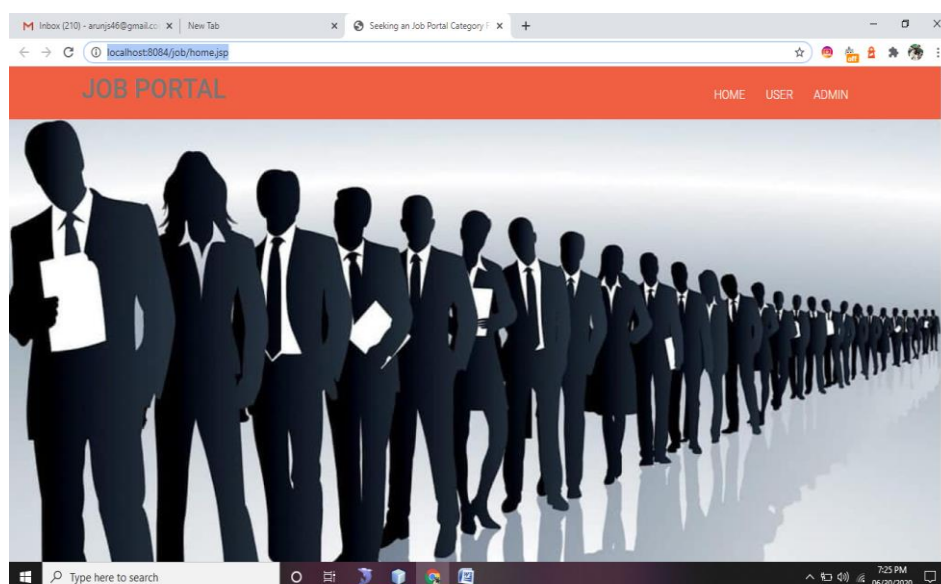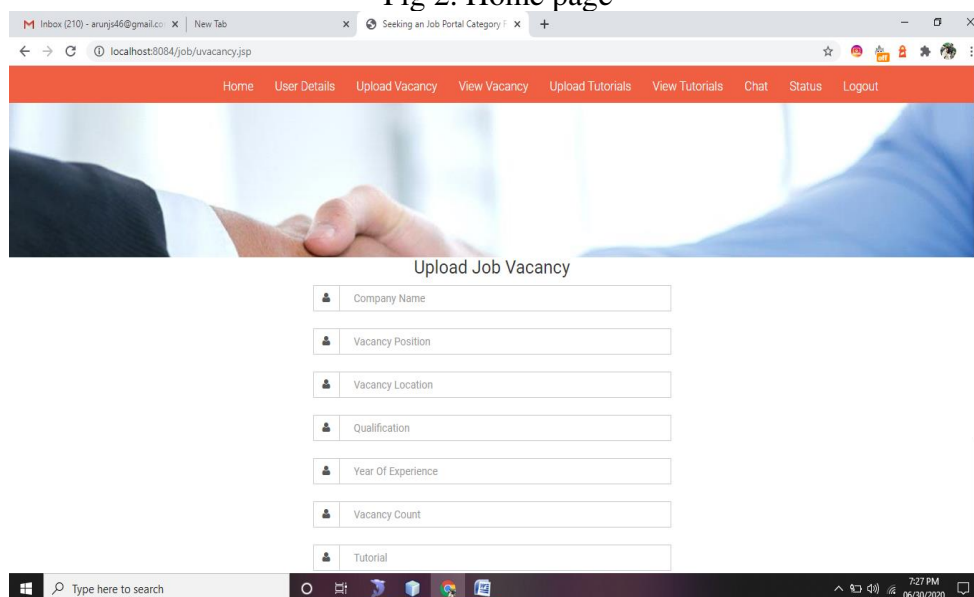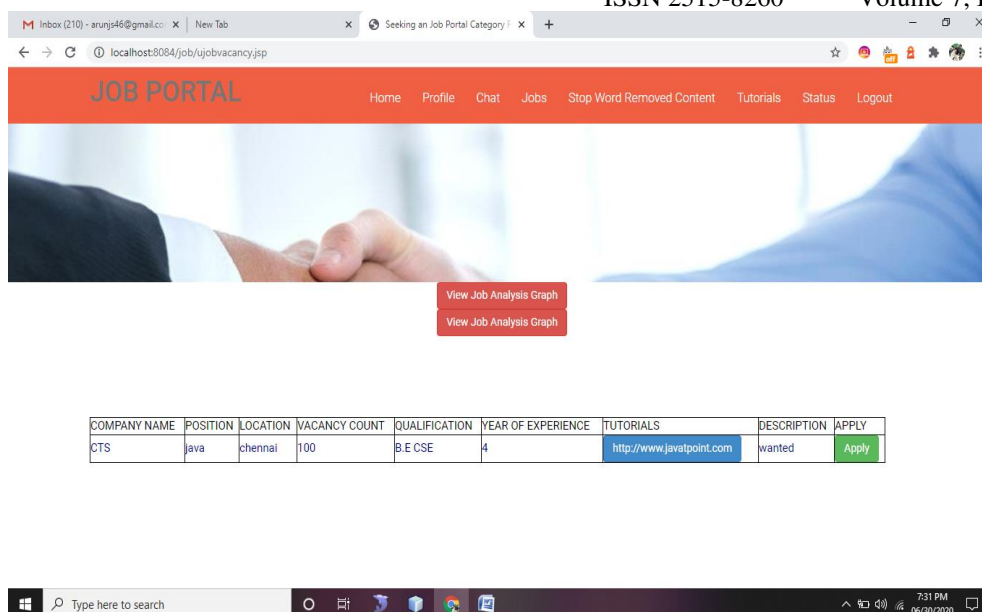

Fig 2. Home page

Fig 3. Employer providing job requirement

Fig 4.Job Description

Fig 4 shows the view page of list of job descriptions posted by the employers. The job seeker can register and login into our application and check for the suitable job posting and can able to apply for the respective job posting.
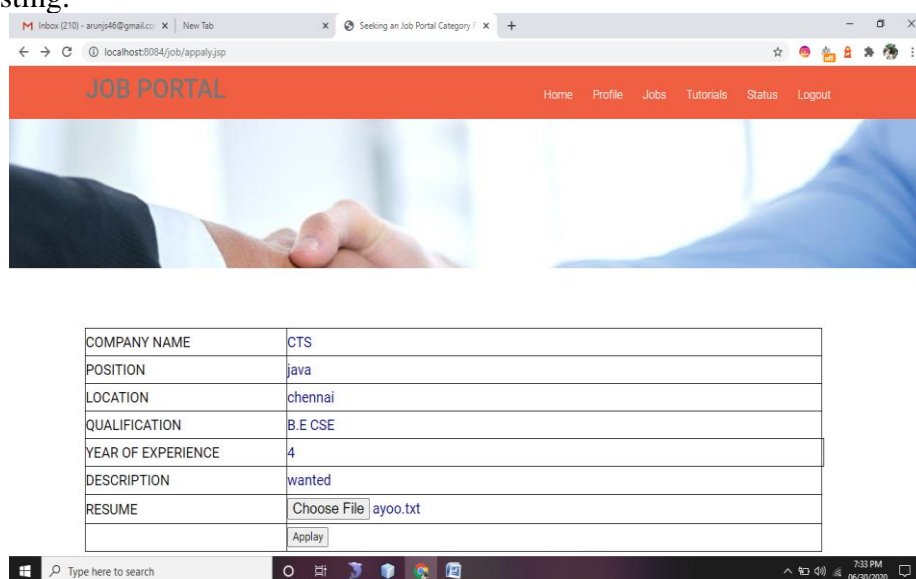

Fig 5. Job seeker details

Fig 5 shows the job seeker page, in which the job seeker can provide his personal and technical details. Also the job seeker can upload the updated resume
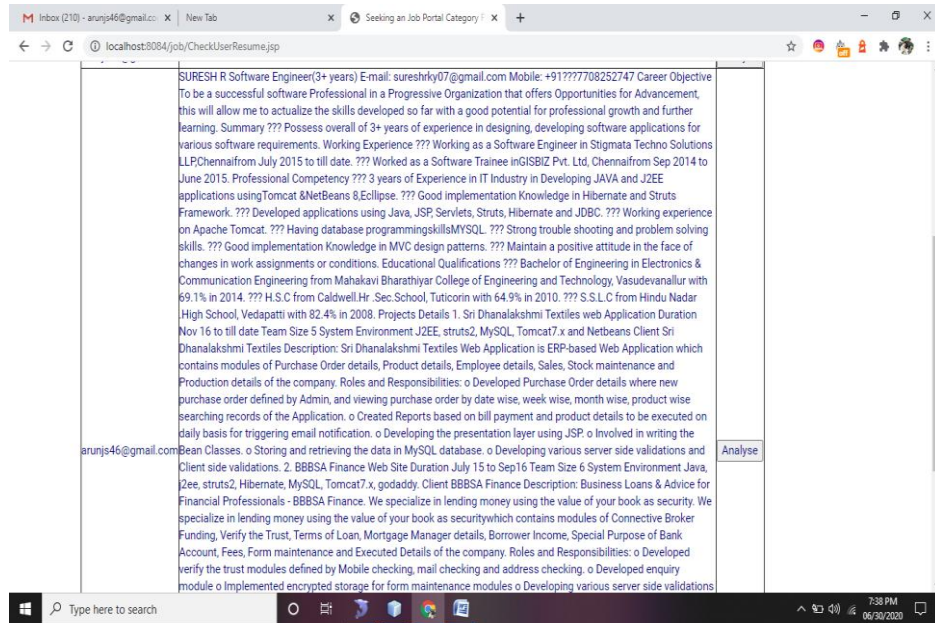
Fig 6. Resume analysis

Fig 6 explains the job seeker resume analysis by the application. The content in the resume is extracted by the application and would be provided for analysis in the next steps.
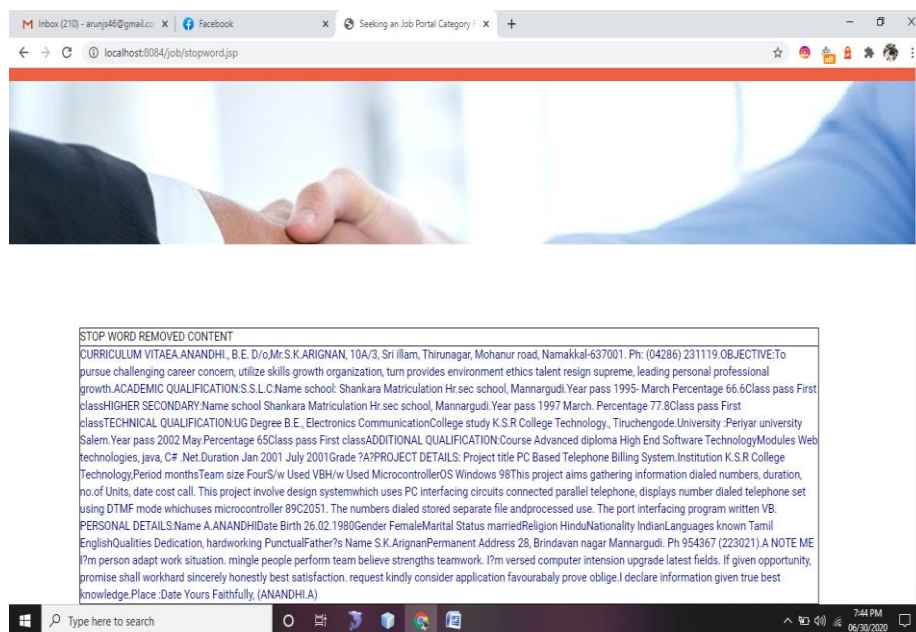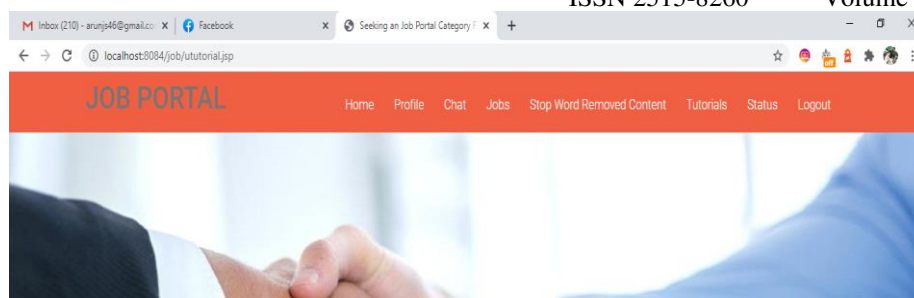

Fig 7. Stop Word Removal

Fig 7 shows pre-processing steps. The resume uploaded by the job seeker is subjected to natural language processing technique by removing stop word removal and tagging of words.

Fig 8. Employer providing job description with study materials

Fig 8 explains the employer can provide tutorials links for job seeker to prepare themselves before the interview process so that job seeker can know what exactly the employer is looking for in precise.
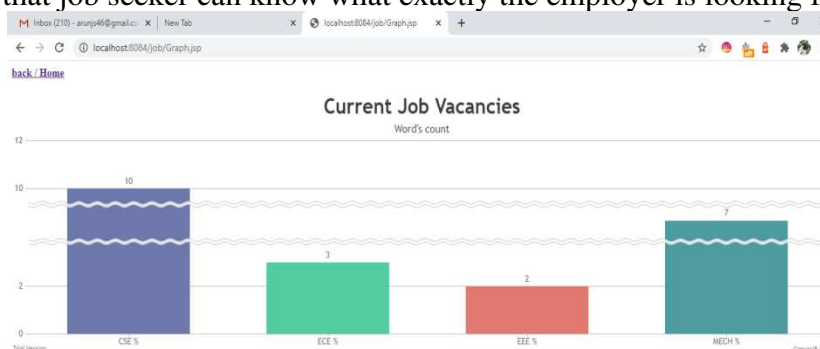

Fig 9. Graph

Fig 9 is a recommendation graph which provides recommendation for the young graduates to understand which industrial sector is flourishing and has posted fresher openings in the past. Based on this real and live data the young minds can choose the extra courses and career path.

5. CONCLUSION

Job portal is an important process to post the job requirement and the job seeker can upload their resumes using this portal. This project analyses the job seeker resume and make the recruitment process easier using text mining and natural language processing techniques. The main goal of this portal is to attempt to produce the right graduates based on the industry needs using natural language processing techniques. In future work, we can integrate video based resume format to validate candidate communication and technical skills, which saves time and cost for the recruiter. Also in future, developing job portal as mobile application would have greater scope.

6. REFERENCE

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