PROJECT REPORT

ON

Smart Resume Analyzer

Submitted by

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Divyarajsinh Rana (19IT474)

For Partial Fulfillment of the Requirements for Bachelor of Technology in Information Technology

Guided by

Prof. Prachi Shah

May, 2023

Information Technology Department

Birla Vishvakarma Mahavidyalaya Engineering College

(An Autonomous Institution)

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Birla Vishvakarma Mahavidyalaya Engineering College

(An Autonomous Institution)

Information Technology Department

AY: 2022-23, Semester II

CERTIFICATE

This is to certify that the project work entitled **Smart Resume Analyzer** has been successfully carried out by **Ajayrajsinh Zala (19IT444), Rudra Trivedi(19IT471), Divyarajsinh Rana(19IT474)** for the subject **Project II (4IT32)** during the academic year 2022-23, Semester-II for partial fulfillment of Bachelor of Technology in Information Technology. The work carried out during the semester is satisfactory.

Date: / /

Prof. Prachi Shah
IT Department
BVM

Dr. Keyur Brahmbhatt
Head, IT Department
BVM

ACKNOWLEDGEMENT

We are extremely grateful to **Dr. Indrajit Patel**, Principal, Birla Vishvakarma Mahavidyalaya Engineering College, **Dr. Keyur Brahmbhatt**, Head of the information technology department.

We are highly thankful to our project guide **Prof. Prachi Shah,** Assistant Professor in information technology for their guidance and constant supervision as well as for providing necessary information regarding the project & also for their support in completing the project.

We express our thanks to project co-ordinator **Prof. Vishal Polara**, all staff members and friends, for all the help and co-ordination extended in bringing out this project successfully in time.

We will failing in duty if we do not acknowledge with grateful thanks to the authors of the reference and other literatures referred to in this project.

Last but not the least, we are very much thankful to our parents who guided us in every step which we took.

ABSTRACT

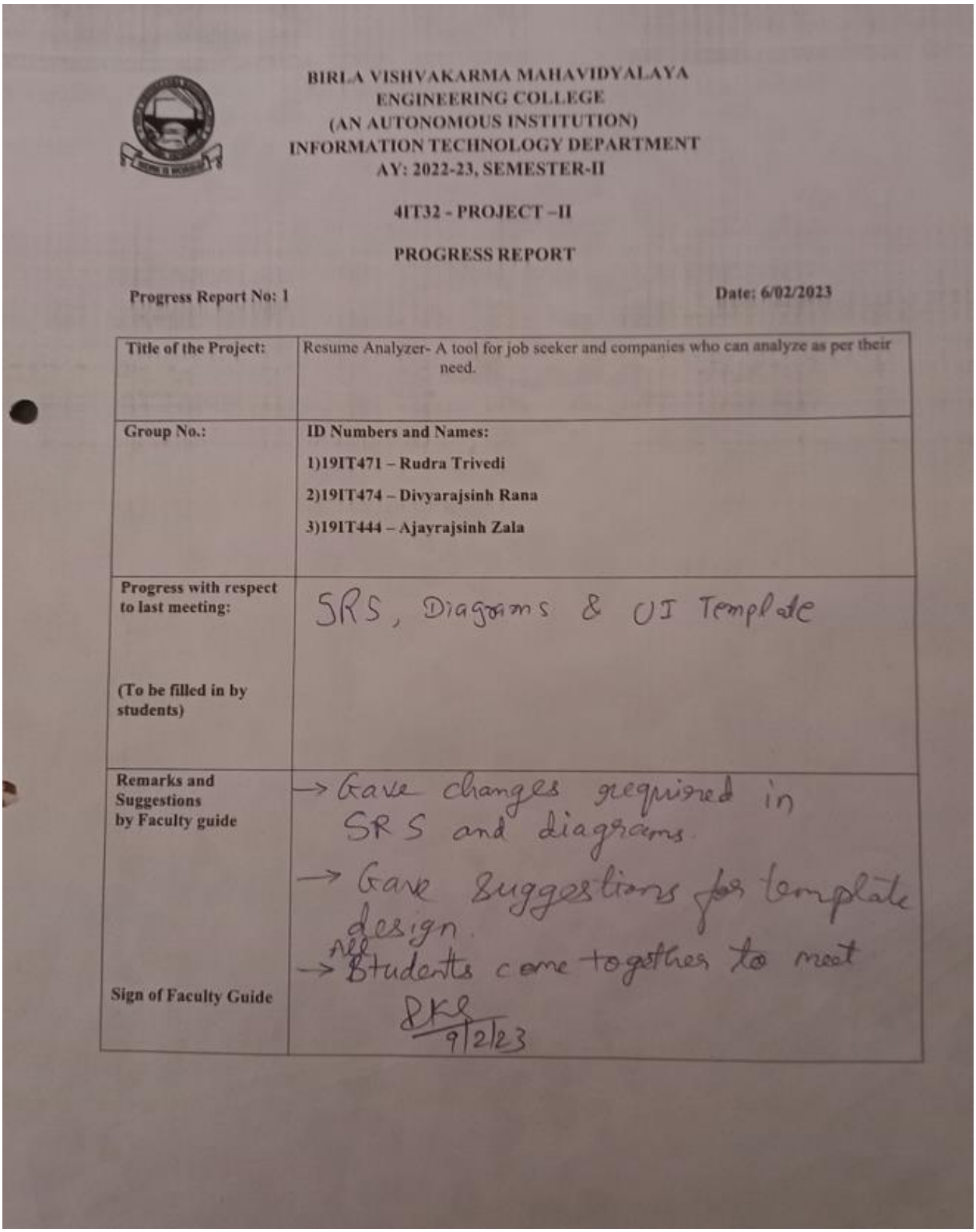
The Resume Analyzer is a Natural Language Processing(NLP) project designed to help recruiters and candidates to screen and analyze job applicants' resumes efficiently. The project uses machine learning algorithms and deep learning techniques to extract relevant information from resumes, such as education, work experience, skills, and certifications, and match them against job requirements. The system also identifies potential red flags in resumes, such as employment gaps, frequent job changes, and lack of relevant skills, and provides suggestions for improving the candidate's chances of success. The Resume Analyzer aims to streamline the recruitment process, reduce bias, and improve the quality of hiring decisions.

List of Figures

List of Abbreviations

- **NLP -** Natural Language Processing
- **JSON -** JavaScript Object Notation
- **JD -** Job Description
- **DFD -** Data Flow Diagram
- **ER -** Entity-Relationship
- **ATS -** Applicant Tracking System
- **CSV -** Comma Separated Values
- **CV -** Curriculum Vitae

Progress Report



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INFORMATION TECHNOLOGY DEPARTMENT
AY: 2022-23, SEMESTER-II

4IT32 - PROJECT –II

PROGRESS REPORT

Progress Report No: 1 Date: 6/02/2023

Title of the Project:	Resume Analyzer- A tool for job seeker and companies who can analyze as per their need.
Group No.:	ID Numbers and Names: 1)19IT471 – Rudra Trivedi 2)19IT474 – Divyarajsinh Rana 3)19IT444 – Ajayrajsinh Zala
Progress with respect to last meeting: (To be filled in by students)	SRS, Diagrams & UI Template
Remarks and Suggestions by Faculty guide Sign of Faculty Guide	→ Gave changes required in SRS and diagrams. → Gave suggestions for template design. → All Students come together to meet DKR 9/2/23

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AY: 2022-23, SEMESTER-II

4IT32 - PROJECT –II

PROGRESS REPORT

Progress Report No: 2 **Date: 21/02/2023**

Title of the Project:	Resume Analyzer- A tool for job seeker and companies who can analyze as per their need.
Group No.:	**ID Numbers and Names:** **1)19IT471 – Rudra Trivedi** **2)19IT474 – Divyarajsinh Rana** **3)19IT444 – Ajayrajsinh Zala**
Progress with respect to last meeting: **(To be filled in by students)**	Login / register functionality, Create resume module, Python script for analyze resume and get suggestions.
Remarks and Suggestions by Faculty guide	→ Suggestions given for report and ppt. → Seen the implementation done.
Sign of Faculty Guide	DKS 21/2/23

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AY: 2022-23, SEMESTER-II

4IT32 - PROJECT –II

PROGRESS REPORT

Progress Report No: 3

Date: 16/03/2023

Title of the Project:	Resume Analyzer- A tool for job seeker and companies who can analyze as per their need.
Group No.:	**ID Numbers and Names:** **1)19IT471 – Rudra Trivedi** **2)19IT474 – Divyarajsinh Rana** **3)19IT444 – Ajayrajsinh Zala**
Progress with respect to last meeting: **(To be filled in by students)**	User profile page, Course recommendation, Skills recommendation and updated UI.
Remarks and Suggestions by Faculty guide **Sign of Faculty Guide**	- Suggestion for update profile page is given. - Module integration is to be done. DKS 16/3/23

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AY: 2022-23, SEMESTER-II

4IT32 - PROJECT –II

PROGRESS REPORT

Progress Report No: 4 **Date: 23/03/2023**

Title of the Project:	Resume Analyzer- A tool for job seeker and companies who can analyze as per their need.
Group No.:	**ID Numbers and Names:** **1)19IT471 – Rudra Trivedi** **2)19IT474 – Divyarajsinh Rana** **3)19IT444 – Ajayrajsinh Zala**
Progress with respect to last meeting: **(To be filled in by students)**	- Redirecting from React Components to python script - Profile page changes - Merged course recommendation with skill page.
Remarks and Suggestions by Faculty guide **Sign of Faculty Guide**	- Do changes in statement of analysis - Add search module - Recommendation can be moved to new tab. - In poster, add more pictorial representation of project RKS 23/3/23

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AY: 2022-23, SEMESTER-II

4IT32 - PROJECT –II

PROGRESS REPORT

Progress Report No: 5 **Date: 6/04/2023**

Title of the Project:	Resume Analyzer- A tool for job seeker and companies who can analyze as per their need.
Group No.:	**ID Numbers and Names:** **1)19IT471 – Rudra Trivedi** **2)19IT474 – Divyarajsinh Rana** **3)19IT444 – Ajayrajsinh Zala**
Progress with respect to last meeting: **(To be filled in by students)**	– Completed HR module – Integrated search course module – Made poster using Adobe Photoshop and Canva.
Remarks and Suggestions by Faculty guide **Sign of Faculty Guide**	– Seen the analysis module & search module. – Gave suggestions for Poster & also for GUI of Find Match page. DKS 6/4/23

Table of Contents

CHAPTER 1: INTRODUCTION

1.1 Introduction of the Project:

The need of this tool is to reduce rejection of candidates in ATS system of any company. The resume play important role in hiring process. The first test of any company is screening test and which will filter best resume from the set of resumes of candidates. To pass screening tests of companies this tool will provide recommendations to add in candidates resume for different fields.

1.2 Project Objectives:

The objective of this project entitled “Resume Analyzer” is to provide a user friendly and easily understandable GUI to users to easily keep aside all irrelevant to the query needs in order to find the relevant information in the resume. The main objective of the system is to show the recommendations, predictions, analytics to the applicant/recruiter based on keyword matching in the resume using Natural Language Processing by and finds the keywords, cluster them onto sectors based on their keyword.

1.3 Project Scope:

- It can be used for getting all the resume data into a structured tabular format and csv as well, so that the organizations can use those data for analytic purpose.
- By providing recommendation, predictions and overall score user can improve their resume.
- It can be used by colleges to get insight of students and their resume before placements.

1.4 Project Modules:

• User :

-Login/Signup

-Resume Parsing

-Skill/Course Recommendations

• Company HR

-Comparison between Resume and Job description

1.5 Project basic requirements:

1.5.1 Hardware:

- RAM- Min 4GB
- Processor –1.6 Ghz or more

1.5.2 Software:

- Frontend Technologies: React Js, CSS, Bootstrap
- Backend Technologies: Python, Node JS
- Data Base: MongoDB
- Operating System: Microsoft Windows/MAC OS
- IDE: Visual Studio Code

CHAPTER 2: LITERATURE REVIEW

2.1 Literature Survey:

2.1.1 Resume Scanner Analyzer

Author(s): Naresh Mustary, Neha Kale, Harshita Shinde, Snehal Dhapare, Ashi Dutt, Department of Computer Engineering, Dr. D.Y. Patil Institute of Engineering,Management and Research, Akurdi, Pune, India

These days, we have viewed technological know-how as attaining new heights than ever before. For this reason, lots of correct chances of employment had been created for loads of people. However, every company has a one-of-a-kind way of operating. For this one-of-a-kind manner of working they want humans who have a precise ability set. Those recruitments are carried out based totally on seeing the skillset stated inner the individual's resume who's applying. Now we see that there are hundreds of people who observe an activity. Going thru the resumes of these human beings manually is extraordinarily time- consuming and a good deal much less environment friendly as there are probabilities of human intervention mistakes. Consequently, we have proposed a venture as a way to form all of the resumes constant with the requirement of the business enterprise and ahead of them. In this project, we're going to construct a Resume scanner and Analyzer the use of Machine Learning. Nowadays, most agencies use ATS (Applicant Tracking System) for filtering the resumes which comprise the required keywords. But, there is no such device on the pupil aspect that would assist him to make his resume stronger. Hence, we are creating software that will take the resume of students/ candidates as entering and generate a file primarily based on it.

This technique states parsing of the resumes with the least limit and the parser works the utilization of two or three rules which train the call and address. Scout bundles use the CV parser system for the determination of resumes. As resumes are in amazing arrangements and it has different sorts of real factors like set up and unstructured estimations, meta experiences, etc. The proposed CV parser the approach gives the component extraction method from the moved CVs.

2.1.2 Modern Resume Analyser For Students And Organisations Author(s): Vansh Nawander, Shrenita Elma, Andhoju Karthikeya, Manuka Koushik Yadav, Sai Karthik Kotala, M. D. N. Akash, Student, Vardhaman College of Engineering, Hyderabad, India

In today's world, the development of technologies such as the Internet is revolutionizing the hiring process. There are over 50,000 online job sites that encourage applicants to submit their resumes on their websites. It is very unlikely that you will be selected from thousands of applications.This smart resume analyzer may be very useful in growing your possibility of being on the candidate list. It offers pointers concerning your resume writing skills. The RDF(Resource Description Framework) ontology of CV was presented by Uldis Bojars and John G. Breslin. It uses the RDF data model to model the CV. Information about resumes is described using a wide range of classes and characteristics in resume RDF. In order to properly explain the material, Uldis Bojars has expanded FOAF with resume details. In 2002 and 2003, Turney and Littmann took into account the semantic relevance of other words he identified as a paradigm and took into account the semantic orientation or evaluation characteristics of words from a vast corpus of 100 billion words providing a schema to guess.

CHAPTER 3: SYSTEM ANALYSIS & DESIGN

3.1 Comparison of Existing Applications with your Project:

Existing Application and systems	Our Project
● It does not give score to the resume of the client.	● It gives score to the resume.
● It also has 2 Modules: Client and Admin.	● It has 2 Modules: Client, Admin.
● Here it uses concepts of Artificial Intelligence to analyse the data.	● Here we analyse the data using NLP.
● Here there is no feature to give feedback of the system.	● Here we have the option to give feedback.
• It doesn't has this kind of features.	● Here it gives the feature of Skill Recommendation and Course Recommendation to the client.
• Here no CSV file is generated, only we can see the score and analysis of the client's resume.	● At last a CSV file is generated of the resume

3.2 Project Feasibility Study:

3.2.1 Economic Feasibility:

The cost of the project depends upon the accuracy of the resume analyzed. System will be user friendly and correct analysis of the information are the benefits of this system. Hence, by cost-benefit analysis we can conclude that benefit to cost ratio is not much high.

3.2.2 Operational Feasibility:

The user just has to enter his resume details to create a resume PDF or needs to upload his resume file. Hence, the controls are simple and basic. The efficiency of the project is based upon few factors, namely, the concept and its individual accuracy, the front end and its latency.

All these components can again be controlled individually and hence accuracy of the project as a whole can be easily controlled.

3.2.3 Technical Feasibility:

Since we have used MongoDB for database proposed system can hold any kind of JSON, BSON and binary data sets. As we only need to upload the PDF file of resume, much GUI is not required at the analysis side, the backend construction coding was also not a very difficult task. As every segment will be coded individually and separately, the risk assessment for each segment will be easy.

3.3 Project Timeline Chart:

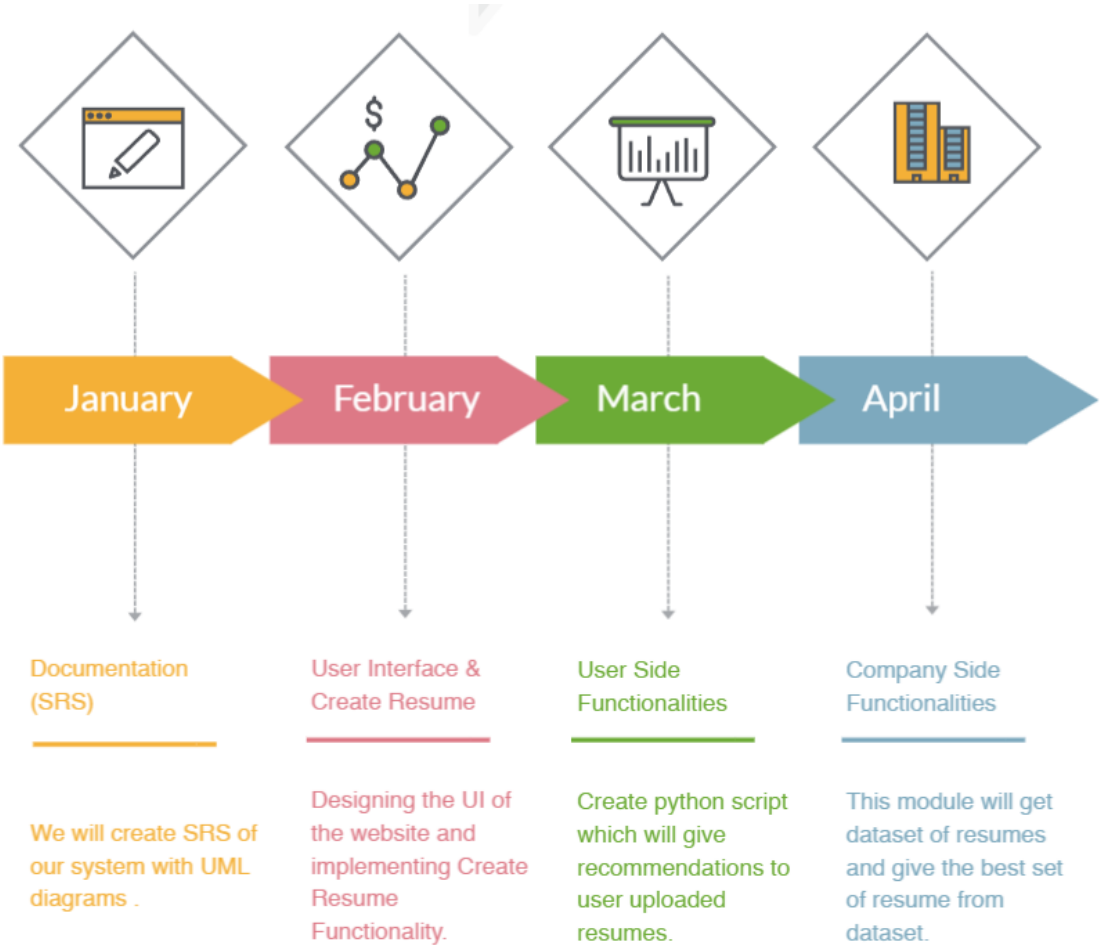

Figure 1. Timeline Chart

3.4 Detailed Modules Description:

3.4.1 Login/Sign Up:

To use the functionalities of this website first of all user have to register their self and provide their information like name, email id, set strong password. After registering their selves user have to login into system using email id and password. After successfully logged into system user can use different functionality regarding the resume.

3.4.2 Resume Parser:

Python library provides automatically parsing of the resume and provide basic information like name, skills, contact, projects, experience, etc. by parsing the resume. User have to upload their resume in pdf format then parsing of that resume done using pyres-parser library and parse Json data will be converted into text using pdf-miner.

3.4.3 Skill/Course Recommendation:

In this module, we will use parsed data of resume for skill recommendation. In this we have predefined keywords of skills of different domain. By comparing the parsed resume skills and predefined set of skills we can get idea of the area of interest of user and we can provide recommendations regarding the same.

These keywords can be also useful to recommend courses according to skills. We can provide two options to user for getting recommendation on courses. User get recommendation by parsing resume and also user can find different courses by searching different keywords. This will be done using cosine similarity matrix concept.

3.4.4 Comparison between Resume and Job description:

The module of comparing JD and resume will be helpful to both candidates and HR. They both get idea about best fit resume for particular job by simply uploading both resume and JD. It will provide match score between JD and Resume using cosine similarity matrix concept.

3.5 SRS:

3.5.1 Use-Case Diagram:

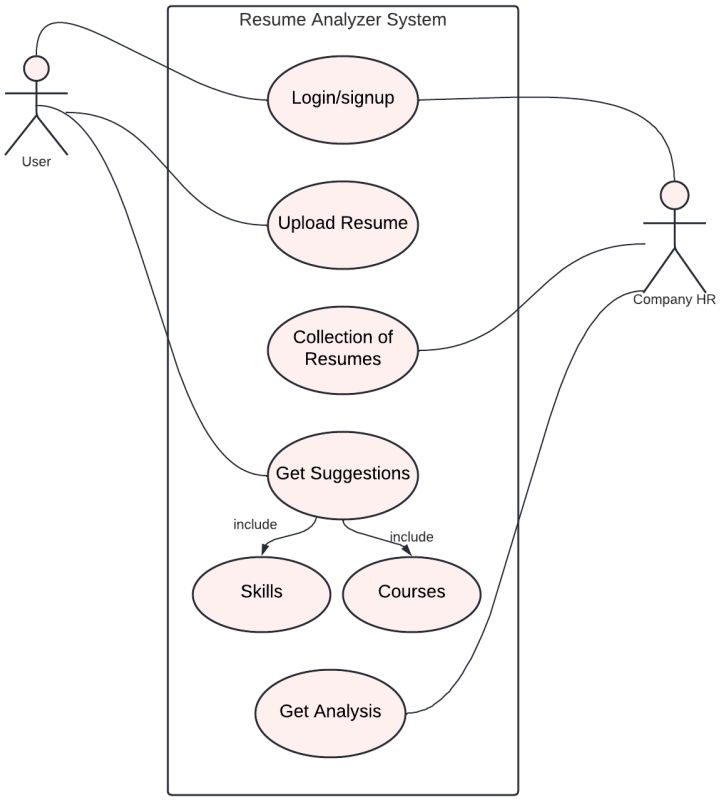

Figure 2. Use-Case

In this diagram we can see how different users is going to use website. This shows the relationship between users and the services.

3.5.2 Activity Diagram:

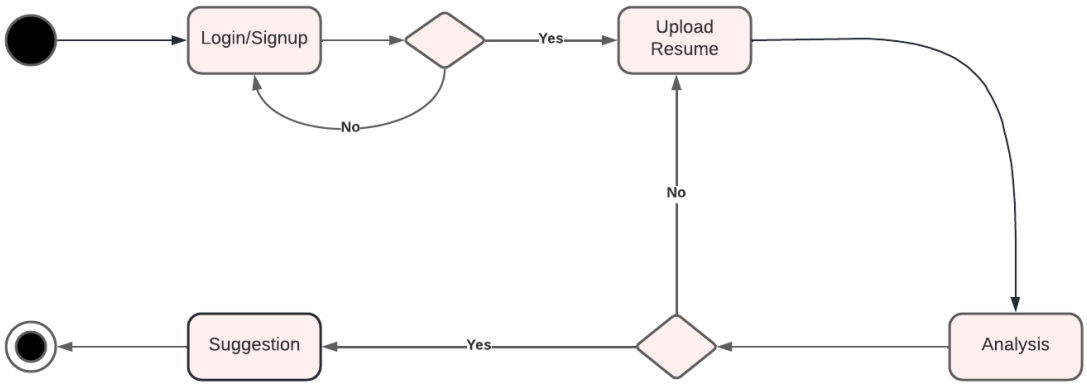

Figure 3. Activity Diagram

This is Activity Diagram which shows Different activity happened website at a time. This shows the exact activity flow in website.

3.5.3 ER Diagram:

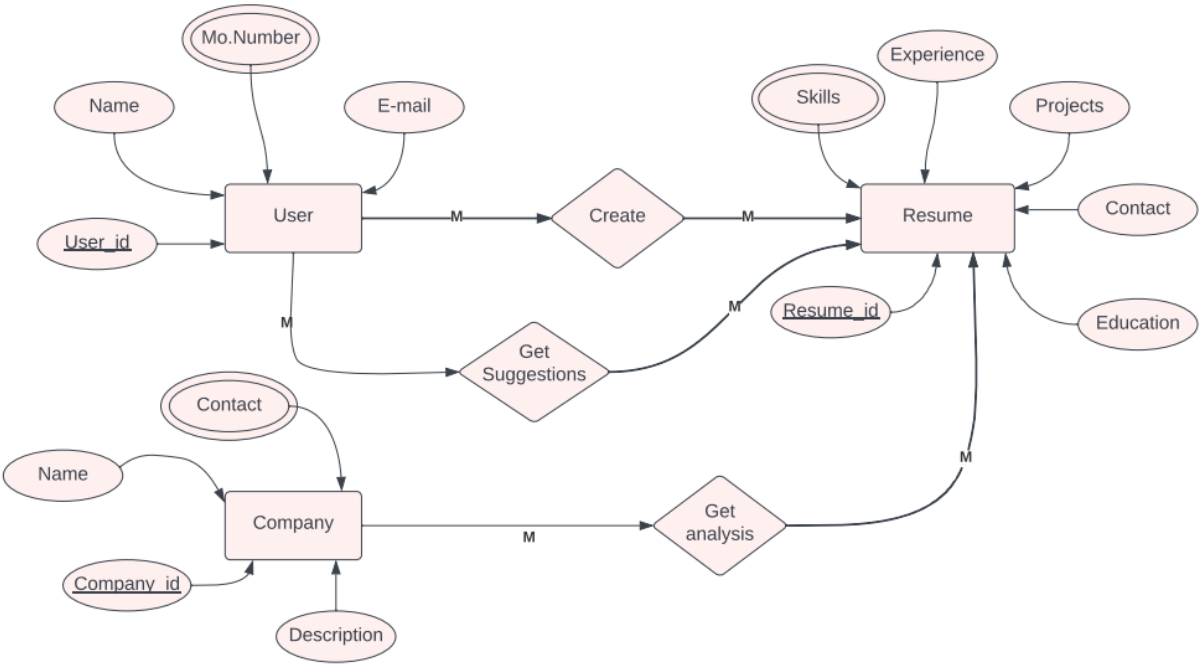

Figure 4. Sequence Diagram

In this E-R diagram we can see the relationship between different entities. We can see different attributes of different entities. And how they are in relation with other entity.

3.5.4 DFD Level-0 Diagram:

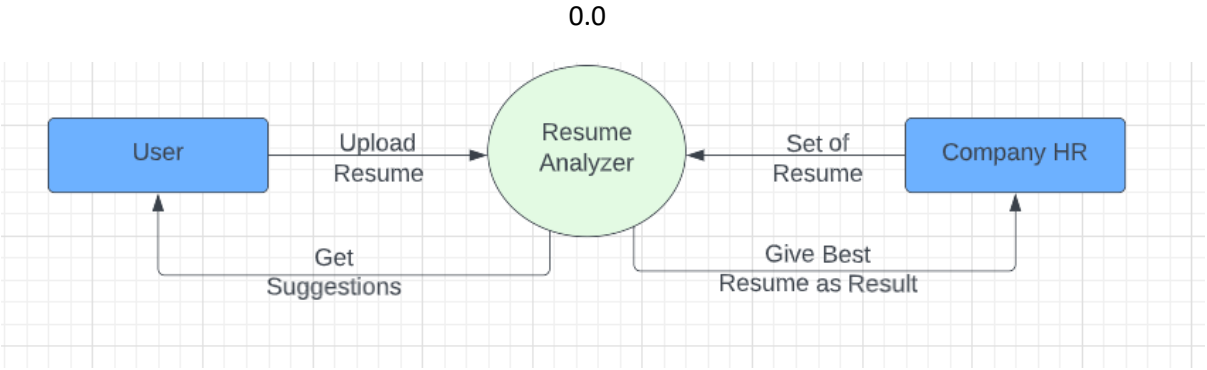

Figure 5. DFD Level-0 Diagram

3.5.5 DFD Level-1 Diagram:

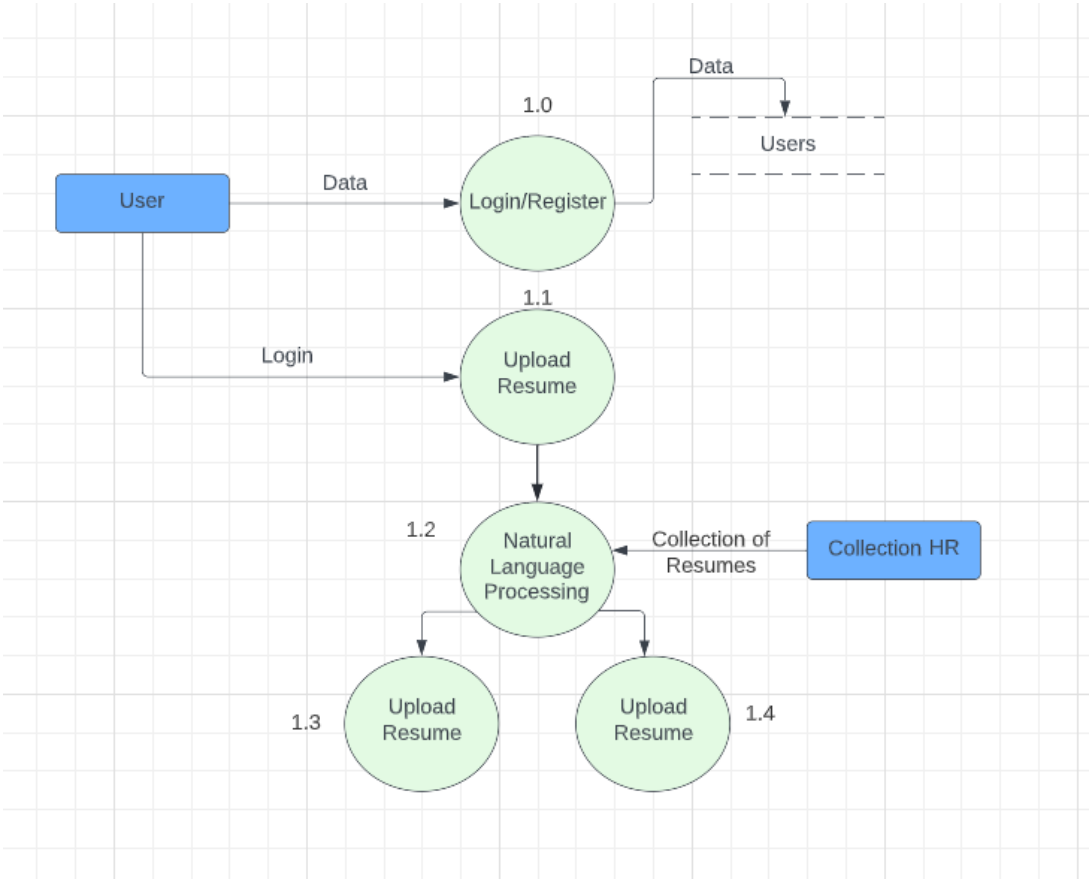

Figure 6. DFD-Level 1

3.5.6 DFD Level-2:

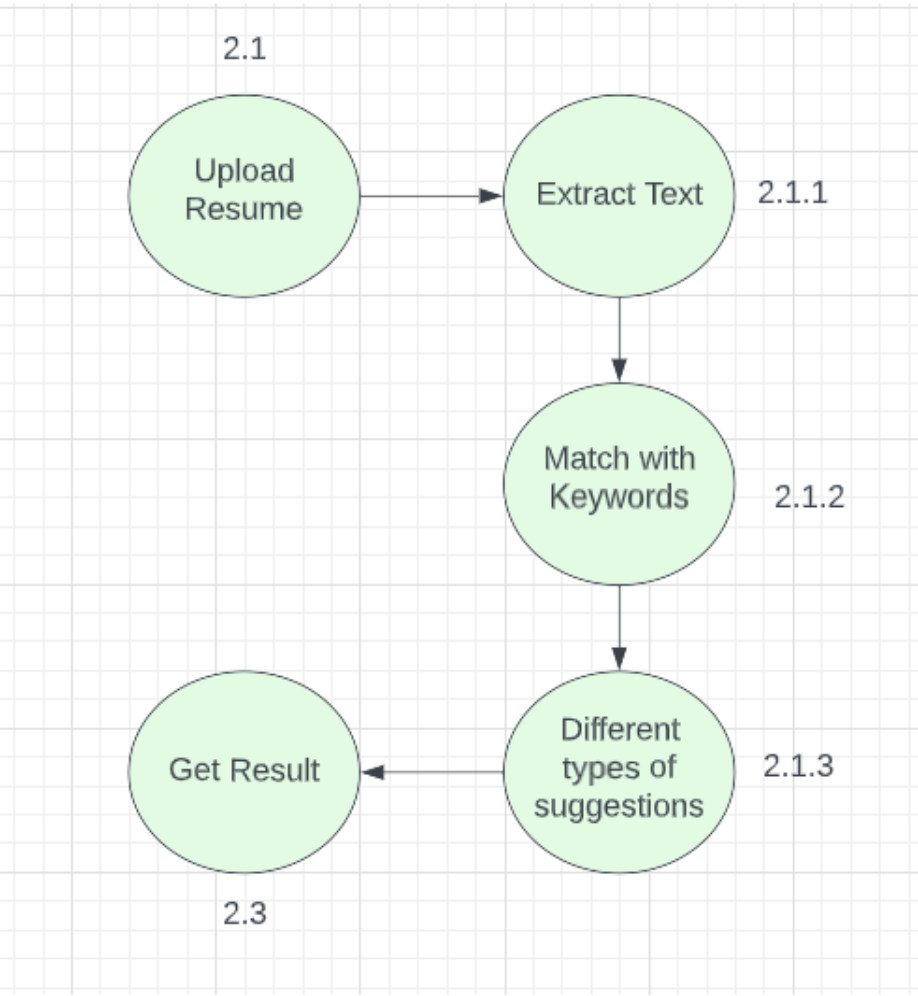

Figure 7. DFD-Level 2

DFD Level 1 provides a more detailed breakout of pieces of the Context Level Diagram. You will highlight the main functions carried out by the system, as you break down the high-level process of the Context Diagram into its sub-processes.

DFD Level 2 provides a more detailed breakout of pieces of the Context Level Diagram. You will highlight the main functions carried out by the system, as you break down the high-level process of the Context Diagram into its sub processes.

CHAPTER 4: IMPLEMENTATION AND TESTINGs

4.1 User Interface & Snapshot:

4.4.1 Signup/Login:

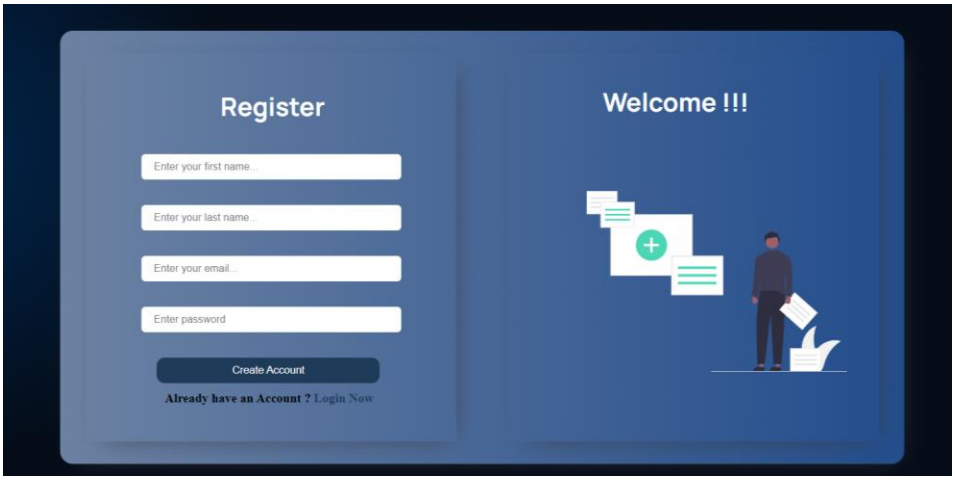

Figure 8. Signup

To use the functionalities of this website first of all user have to register their self and provide their information like name, email id, set strong password.

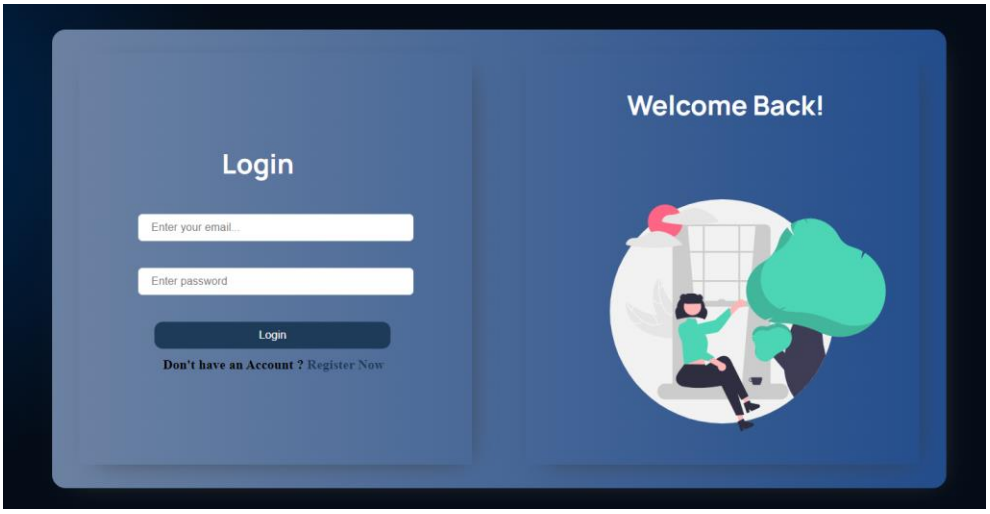

Figure 9. Login

User have to login into system using email id and password.

4.4.2 Parsing of Resume:

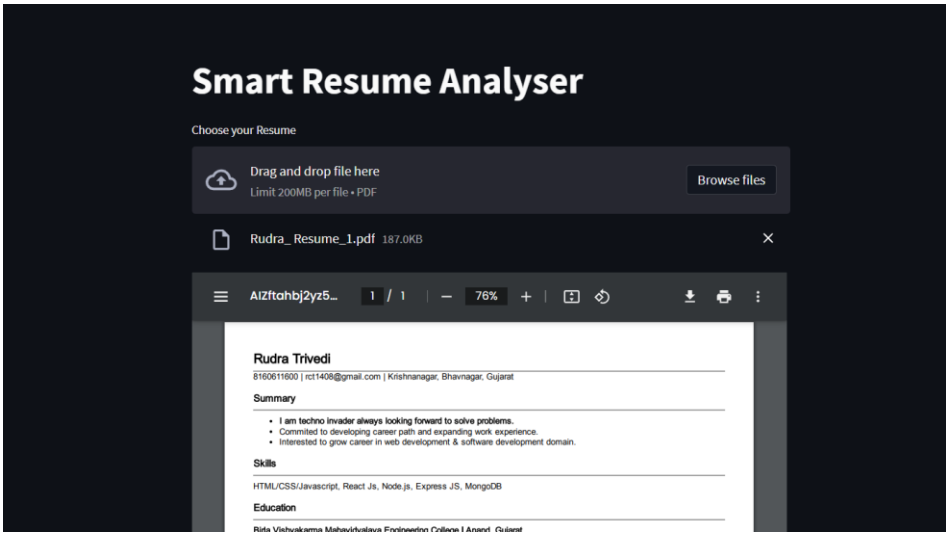

Figure 10. Resume Parsing

- When user uploads their resume to our system then it will show us which resume is uploaded on the screen.

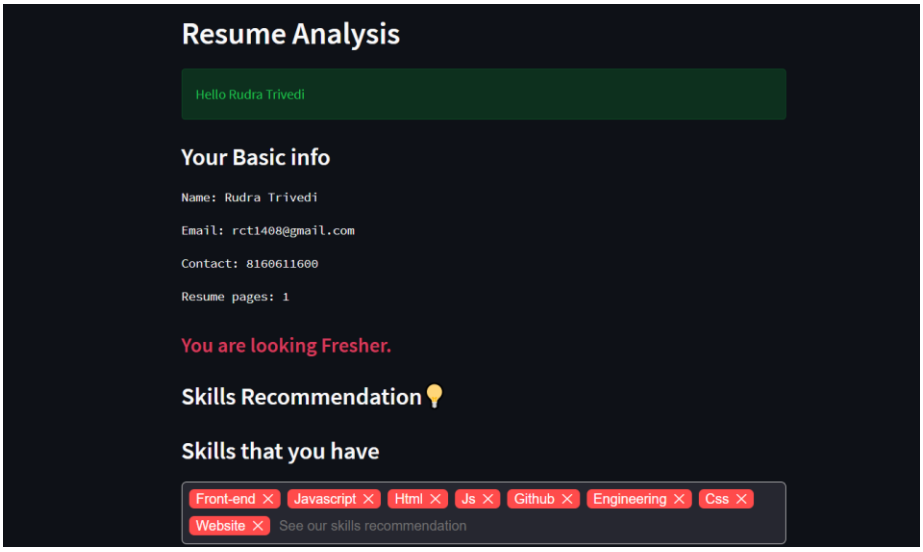

Figure 10. Resume Parsing

- After the resume was uploaded our code will parse that resume and divide the resume data into categories like name, contact, skills, email, etc.

4.4.3 Skill/Course Recommendations:

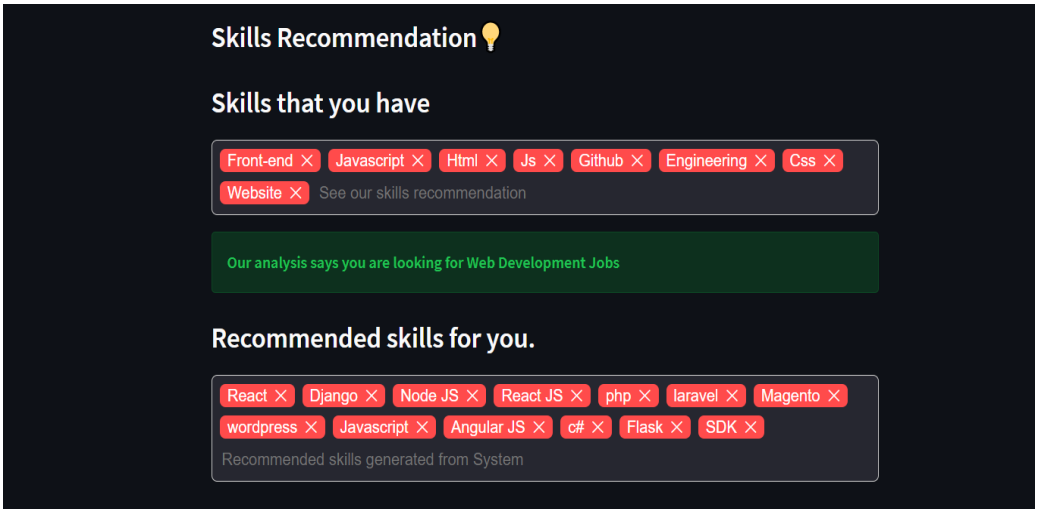

Figure 11. Skill Recommendation

- When keywords of skills detected by pyres-parser library it will give set of keywords of skill by using that skills we can predict domain of the user and also recommend skills they must have in that domain.

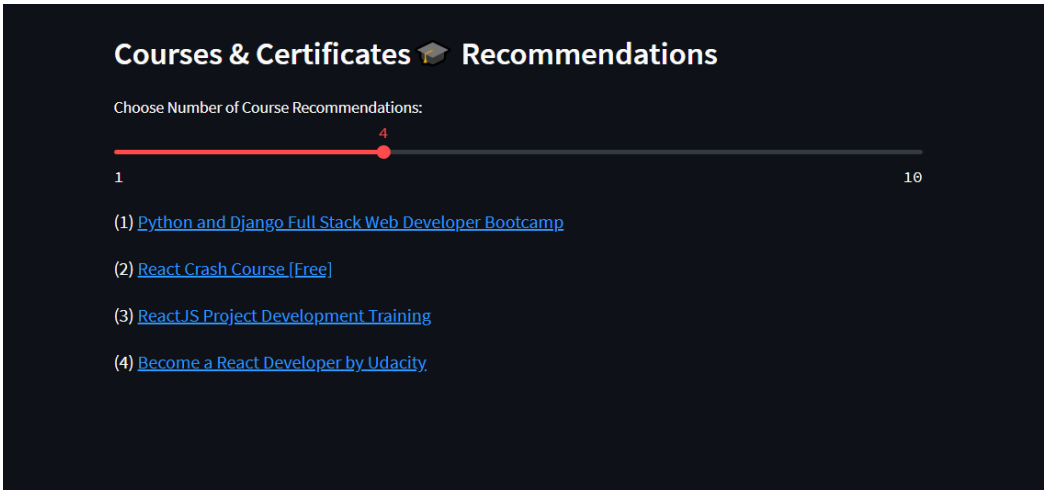

Figure 11. Course Recommendation

- We can get course recommendation according to skills using cosine similarity matrix.

4.4.4 Comparison between Resume and Job Description:

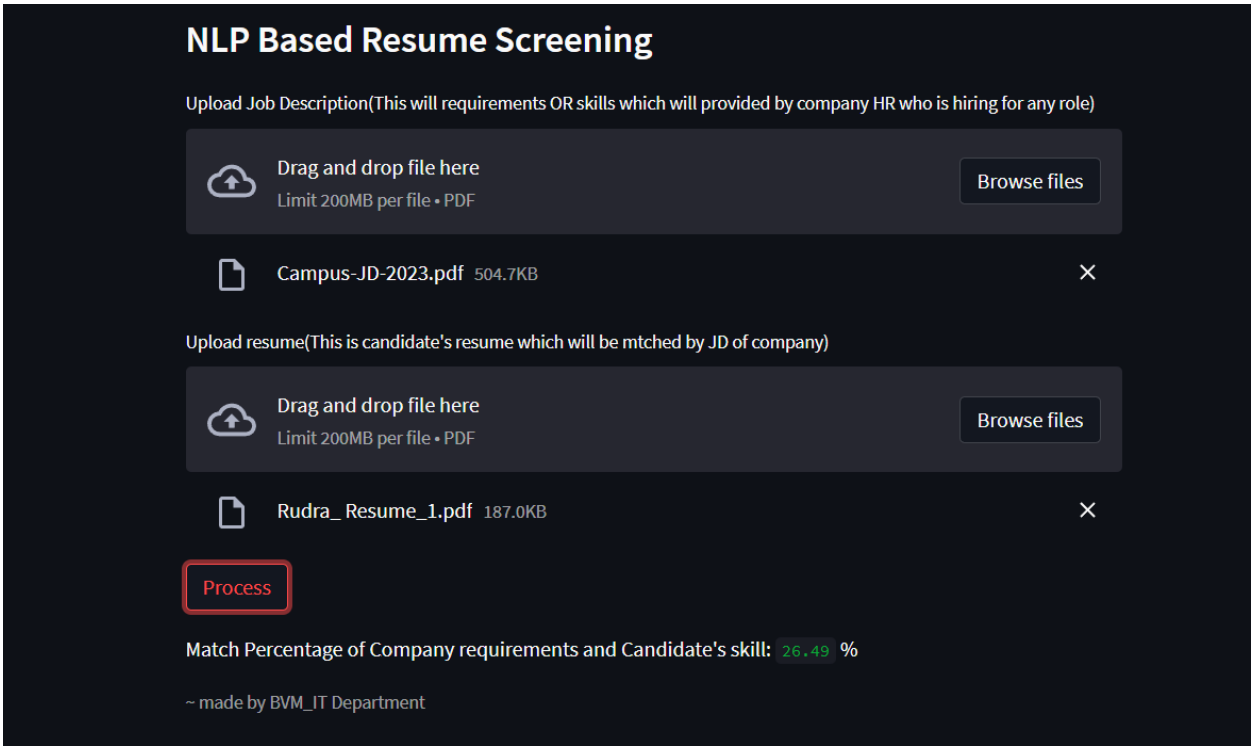

Figure 12. Compare JD and Resume

- To find match between resume and job description for any role we have to upload job description first in our tool then upload resume of the candidate to find match percentage.
- After uploading both documents we can click on process button and we can find match percentage between both the documents using cosine similarity matrix.

4.2 Testing Using Use Cases:

Test Case ID	Test Scenarios	Test Steps	Test Data	Expected Result	Actual result
1	Check Whether the Resume can be uploaded.	Open Vs-code and run the code	Drag and drop your resume file in that area.	We can see uploaded file.	As expected
2	Check if the resume is getting parsed.	Upload your resume in tool and parse it	Detecting basic information from resume	Name, Email, Contact, Skills, Etc.	As expected
3	Check if the skills are recommending	Upload the Resume in website and mention skills in the resume	Detecting skills keywords set	It will give set of recommended skills.	As expected
4	Check if the Courses are recommending	Search keyword for which we have to find courses.	Detecting key word from search input	Give us the set of courses according to our search	As expected
5	Check if match % is giving between JD and resume	Upload JD and resume which we have to compare	Detecting keywords from JD and Resume	Match percentage of JD and Resume.	As expected

CHAPTER 5: CONCLUSION AND FUTURE WORK

5.1 Conclusion & Future Work:

In this, project's aim to help the user get better experience of analyzing the resume. This tool doing this by using natural language processing and for recommendation of the skills by parsing the resume and getting keywords of skills. In proposed work, the courses can be also searched and getting recommendation of courses is also there in our project. It will work on the concept of cosine similarity matrix. Other module to get match % of JD and Candidate's resume will also use same concept as it will count occurrences of each word in both documents and then compare them
With the occurrence of each word. It will be useful for HR manager to find best fit resume for the particular job role.

As a future prospect of this project, we will try to get more accurate in parsing resume and also expand our domain to analyze resume. As of now this tool will be only useful for technical fields. Would like to expand fields for this tool and get more accurate with skills recommendation and matching % of JD and Resumes. Would also like to create one tool which will collect dataset of resumes and then give best one from them.

CHAPTER 6: REFERENCES

6.1 References:

[1] Juneja Afzal AyubZubeda, Momin Adnan AyyasShaheen,Gunduka Rakesh Narsayya Godavari, Sayed ZainulAbideenMohd Sadiq Naseem,"Resume Ranking using NLP And Machine Learning" Department of Computer Engineering, School of Engineering and Technology, 2015.

[2] Mita K Dalal, Mukesh A Zaveri "Automatic Text Classification: A Technical Review" International Journal of Computer Applications, Volume 28, No. 2, August 2011.

[3] Krina Vasa, "Text Classification through Statistical and Machine Learning Methods: A Survey" Volume 4, Issue 2, 2016.

[4] Bhumika, Prof Sukhjit Singh Sehra, Anand Nayyar, "A Review Paper On Algorithms Used for Text Classification," in International Journal of Application or Innovation in Engineering & Management, Volume 2, Issue 3, March 2013

[5] Resume worded- web application for instant feedback of resume.

6.2 Web References:

[1] Node Js

[2] React Js

[3] MongoDB

[4] Python