



Project Report

On

AI RESUME ANALYZER

**Submitted to D Y Patil International University, Akurdi, Pune
in partial fulfilment of full-time degree**

Master of Computer Applications

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CERTIFICATE

This is to certify that the work entitled “**AI RESUME ANALYZER**” is a bonafide work carried out by Kamna Singh in partial fulfillment of the award of the degree of Master of Computer Applications , D Y Patil International University, Pune, during the academic year 2023- 2024. The project report has been approved as it satisfies the academic requirements in respect of the project work prescribed for the Master of Computer Applications.

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DECLARATION

I, hereby declare that the following Project entitled “**AI RESUME ANALYZER**” is an authentic documentation of my own original work to the best of my knowledge. The following Project and its report in part or whole, has not been presented or submitted by me for any purpose in any other institute or organization. Any contribution made to my work, with whom I have worked at D Y Patil International University, Akurdi, Pune, is explicitly acknowledged in the report.

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Abstract

This project introduces a comprehensive tool aimed at revolutionizing the traditional resume screening process through the utilization of resume parsing techniques and algorithmic analysis. The primary objective of the tool is to facilitate efficient resume analysis for organizations, colleges, or individual users involved in the hiring process. By leveraging parsing techniques and algorithms, the tool extracts crucial information from resumes, including basic details, skill sets, expertise levels, and key indicators for resume scoring.

Both applicants and administrators benefit from the tool's multifaceted features. Applicants can upload their resumes, receive personalized recommendations on additional skills, suitable job roles, expertise levels, course certifications, and resume enhancements. Additionally, the tool provides an overall resume score and offers tips and ideas for improvement, along with curated YouTube videos for interview and resume guidance.

On the administrator side, the tool aggregates applicant data into a user-friendly interface, facilitating easy access and analysis. Administrators can download applicant data, view tabular representations, and visualize insights through pie charts depicting predicted fields/roles and user experience levels. Moreover, the tool offers insights into the total number of resumes uploaded, monthly timelines, and activity maps highlighting peak periods of resume submissions.

The tool addresses the shortcomings of manual resume screening, such as time-consuming processes and the need for individual review by hiring managers. By automating the screening process, it enhances efficiency, reduces workload, and ensures a fair evaluation of candidates' qualifications. Implemented using Python and supported by MySQL database management, the tool operates seamlessly on both frontend and backend, providing a user-friendly experience for applicants and administrators alike.

While the tool offers significant advantages in streamlining the resume screening process, it acknowledges limitations inherent in analyzing diverse resume formats. However, it remains a valuable asset for organizations seeking a quick and intuitive solution for resume analysis, recommendation, and candidate selection. Overall, this project presents a robust and user-friendly resume analyzer, poised to enhance recruitment processes and identify the best-suited candidates efficiently and effectively.

TABLE OF CONTENTS

DECLARATION	i
ACKNOWLEDGEMENT	ii
ABSTRACT	iii
LIST OF FIGURES	vi
LIST OF TABLES	vii
1 INTRODUCTION	1
1.1 Background	2
1.2 Objectives	3
1.3 Purpose	5
1.4 Scope	5
1.5 Applicability	6
2 PROJECT PLAN	8
2.1 Problem Statement	8
2.2 Requirement Specification	9
2.3 Gantt chart	11
2.4 Time Line chart	11
3 PROPOSED SYSTEM AND METHODOLOGY	12
3.1 System Architecture	12
3.2 Methodology(Algorithms Used)	13
3.3 Pseudo Code	14
3.3.1 Resume Parsing Algorithm:	14
3.3.2 Admin Side Data Analysis Algorithm:	15
3.3.3 Client Side Data Analysis Algorithm:	15
3.4 Design	16
3.4.1 Data Flow Diagrams	16
3.5 UML Diagrams	18
4 RESULTS AND EXPLANATION	24
4.1 Implementation Approaches	24
4.2 Testing	26
4.2.1 Unit Testing	26
4.2.2 Integration Testing	26
4.3 Analysis (graphs/chart)	27

5 CONCLUSION & FUTURE SCOPE	29
5.1 CONCLUSION	29
5.2 FUTURE SCOPE	29
REFERENCES	30

List of Figures

2.1 Gantt Chart	11
3.1 System Architecture of AI resume Analyzer	12
3.2 DFD Level 0	16
3.3 DFD Level 1	17
3.4 DFD Level 2	17
3.5 Flow Chart	18
3.6 Activity Diagram	19
3.7 Sequence Diagram	20
3.8 Activity Diagram	21
3.9 Class Diagram	22
3.10 ER Diagram	23
4.3 User - Streamlit User-Interface	27
4.4 Admin - Streamlit User-Interface	27
4.5 Pie-Chart for User's Experienced Level	28
4.6 Pie-Chart for Resume Score	28

List of Tables

2.1 Project Timeline	11
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1. INTRODUCTION

In the ever-evolving landscape of recruitment, where the demand for top talent meets the challenges of time constraints and resource limitations, innovation becomes imperative. Traditional resume screening methods, relying heavily on manual review processes, often prove to be inefficient, time-consuming, and prone to biases. Recognizing these shortcomings, a paradigm shift is necessary, one that embraces technological advancements to redefine how we evaluate candidates.

Introducing a groundbreaking solution poised to revolutionize the conventional resume screening process: our advanced resume parsing tool. Built upon the pillars of cutting-edge technology and intuitive design, our platform offers a transformative approach to candidate evaluation.^[1] Leveraging state-of-the-art algorithms and sophisticated parsing techniques, it swiftly extracts and analyzes key details from resumes, empowering recruiters and employers with actionable insights to make informed decisions.

At its core, our tool is engineered to optimize efficiency and accuracy in candidate selection. By automating manual tasks associated with resume screening, such as parsing through large volumes of applications and identifying relevant qualifications, it liberates valuable time and resources for recruiters to focus on strategic initiatives. Gone are the days of tedious manual reviews; with our tool, the screening process is streamlined, expedited, and tailored to the specific needs of each organization.

Central to our platform's efficacy is its ability to decipher complex resume data and distill it into actionable intelligence. From identifying essential skills and expertise levels to gauging job suitability indicators, our tool provides comprehensive insights that transcend the limitations of traditional screening methods. Moreover, with features designed to cater to both applicants and administrators, it fosters a collaborative ecosystem where feedback is exchanged, and improvements are made iteratively.

For applicants, our platform offers personalized recommendations and resume scoring mechanisms, enabling them to fine-tune their profiles for optimal visibility and relevance. By highlighting strengths and areas for improvement, it empowers candidates to present themselves in the best possible light, thereby enhancing their chances of securing meaningful employment opportunities.

For administrators, our tool goes beyond mere data extraction; it delivers actionable analytics and performance metrics to facilitate data-driven decision-making. Whether it's identifying trends in candidate qualifications, assessing the efficacy of recruitment strategies, or optimizing hiring processes, our platform equips organizations with the insights needed to stay ahead in a

competitive talent market.

Built with scalability and versatility in mind, our platform is suitable for organizations of all sizes, educational institutions, and individual users alike. Powered by Python and supported by MySQL, it promises a seamless user experience characterized by reliability, speed, and ease of use. Whether deployed as a standalone solution or integrated with existing HR systems, our tool seamlessly adapts to diverse environments, delivering consistent results across the board.

In summary, our advanced resume parsing tool represents a quantum leap forward in recruitment technology. By harnessing the power of automation, data analytics, and artificial intelligence, it redefines how organizations identify, evaluate, and onboard talent. With its ability to enhance efficiency, accuracy, and fairness in candidate selection, it heralds a new era of innovation in the ever-evolving landscape of human resource management.[2]

1.1. Background

In today's hyper-competitive job market, the traditional method of manually screening resumes has become increasingly arduous and ineffective for organizations worldwide. With each job opening attracting a flood of applications, hiring managers find themselves overwhelmed by the sheer volume of resumes to review. This inundation often results in the inadvertent oversight of qualified candidates or the allocation of precious resources towards assessing unqualified applicants. Recognizing the pressing need for a more efficient and streamlined approach to resume screening, our team embarked on a mission to develop a transformative solution.

Our primary objective is to leverage cutting-edge technology to revolutionize the resume screening process. By harnessing the power of advanced resume parsing techniques and sophisticated algorithms, we aim to redefine how resumes are evaluated, introducing a faster, more accurate, and user-friendly method for candidate selection. At the heart of our endeavor lies the aspiration to alleviate the burdens associated with manual resume screening, empowering organizations to identify top talent swiftly and effectively.

The overarching goal of our solution is to bridge the gap between talent and opportunity in the modern recruitment landscape. We recognize the inherent challenges faced by both applicants and administrators in navigating the complexities of the hiring process. For applicants, the journey from submitting a resume to securing a job opportunity can be fraught with uncertainty and frustration. Our objective is to provide applicants with a seamless and transparent experience, offering insights and recommendations to enhance their profiles and increase their chances of success.

For administrators tasked with managing the recruitment process, our aim is to streamline and

optimize every stage of candidate evaluation. We envision a tool that not only automates the tedious aspects of resume screening but also provides actionable insights and analytics to support informed decision-making. By equipping administrators with the tools they need to identify the most suitable candidates efficiently, we aim to facilitate a more efficient and equitable recruitment process.

Key objectives of our solution include:

Efficiency: Our foremost objective is to streamline the resume screening process, reducing the time and resources required for candidate evaluation. By automating manual tasks and leveraging advanced technologies, we aim to expedite the identification of qualified candidates while minimizing the risk of overlooking potential talent.

Accuracy: We are committed to enhancing the accuracy of candidate evaluation through the implementation of sophisticated algorithms and resume parsing techniques. Our goal is to ensure that every candidate is assessed fairly and objectively, based on their qualifications, skills, and expertise.

User-Friendliness: Central to our objective is the creation of a user-friendly platform that caters to the needs of both applicants and administrators. We aim to provide a seamless and intuitive experience, with features designed to enhance usability and accessibility for all users.

Empowerment: Ultimately, our objective is to empower both applicants and administrators in the recruitment process. For applicants, we aim to provide valuable insights and recommendations to improve their profiles and increase their chances of success. For administrators, our goal is to provide the tools and resources needed to make informed decisions and optimize the recruitment process.

1.2. Objectives

1. Enhance efficiency by automating the resume screening process:

- Implement automation techniques to streamline the manual tasks involved in resume screening.
- Develop algorithms to parse resumes efficiently, extracting key details such as skills, experience levels, and qualifications.
- Reduce the time and resources required for candidate evaluation, allowing hiring managers to focus on higher-value tasks.

2. Improve accuracy through advanced parsing techniques and algorithms:

- Utilize advanced parsing techniques to accurately extract information from resumes, including structured and unstructured data.
- Implement algorithms to analyze and evaluate candidate profiles objectively, minimizing the risk of human bias or oversight.
- Ensure consistency and fairness in candidate assessment, regardless of the volume of resumes received.

3. Design a user-friendly interface for seamless interaction by applicants and administrators:

- Create an intuitive and easy-to-navigate interface for both applicants and administrators to interact with the system.
- Prioritize user experience by incorporating user-friendly design principles and intuitive navigation pathways.
- Ensure accessibility across different devices and platforms, enhancing usability for a diverse user base.[3]

4. Provide personalized recommendations to applicants based on their resumes:

- Analyze applicant resumes to identify areas for improvement and provide personalized recommendations.
- Offer suggestions for enhancing skills, optimizing resume content, and tailoring profiles to specific job roles.
- Empower applicants to present themselves effectively and increase their chances of success in the recruitment process.

5. Enable administrators to gain valuable insights through analytics for informed decision-making in recruitment:

- Develop analytics dashboards to provide administrators with actionable insights into candidate data.
- Generate reports and visualizations to track recruitment metrics, including applicant demographics, skill trends, and hiring outcomes.
- Facilitate data-driven decision-making by providing administrators with comprehensive analytics tools for evaluating and optimizing the recruitment process.[4]

1.3. Purpose

1. Addressing Inefficiencies and Challenges:

- The primary purpose of developing a resume screening tool is to address the inefficiencies and challenges inherent in the traditional manual process of evaluating resumes.
- By automating this process, the tool aims to streamline candidate selection, saving valuable time and resources for organizations, colleges, and individual users involved in recruitment activities.

2. Enhancing Accuracy of Resume Analysis:

- Another key purpose is to enhance the accuracy of resume analysis by leveraging advanced parsing techniques and algorithms.
- The tool ensures that qualified candidates are not overlooked and unqualified applicants are efficiently filtered out, thereby improving the overall quality of candidate selection.[5]

3. Providing a User-Friendly Experience:

- The tool aims to provide a user-friendly experience for both applicants and administrators.
- By fostering smoother interaction and facilitating informed decision-making, the tool enhances user satisfaction and efficiency in the recruitment process.

4. Optimizing the Recruitment Process:

- Ultimately, the overarching purpose of the tool is to optimize the recruitment process.
- By enabling stakeholders to identify the best-suited candidates quickly and effectively in today's competitive job market, the tool contributes to organizational success and growth.[6]

1.4. Scope

The scope of this project encompasses the development and implementation of a resume screening tool aimed at automating the evaluation process for organizations, colleges, and individual users [7]. The key components of the project include:

- Utilization of advanced parsing techniques and algorithms to extract key information from resumes, such as skills, expertise levels, and job suitability indicators.
- Provision of personalized recommendations to applicants based on their resume content, including suggestions for skills enhancement and job role suitability.
- Generation of valuable insights for administrators, facilitating efficient candidate selection and informed decision-making in recruitment processes.[7]
- Focus on creating a user-friendly interface for seamless interaction by both applicants and administrators, ensuring ease of use and accessibility.
- Compatibility with existing systems and platforms, allowing integration with organizational workflows and enhancing overall efficiency in the job market.

1.5. Applicability

The advanced resume parsing tool offers a transformative solution to the challenges of traditional resume screening, with wide-ranging applicability across various sectors and industries. Its benefits extend to:

1. Organizations of All Sizes:

- **Large Corporations:** For corporations handling high volumes of applicants, the tool automates the initial screening process, enabling recruiters to focus on engaging with top candidates. By swiftly parsing through resumes and extracting key details, the tool streamlines candidate evaluation, leading to more efficient and accurate hiring decisions.
- **Small Businesses:** Small businesses with limited resources can benefit from the time and cost savings offered by automating resume analysis. By eliminating manual tasks associated with resume screening, the tool ensures that small businesses don't miss out on qualified talent, enabling them to compete effectively in the talent market.

2. Educational Institutions:

- **Admissions Process:** In the admissions process, the tool automates the evaluation of applicant resumes, allowing admissions officers to efficiently review large volumes of applications. By standardizing the screening process and ensuring consistency in candidate assessment, the tool helps educational institutions identify the most qualified candidates for admission.

- **Career Services:** Career centers within educational institutions can use the tool to assist students in crafting effective resumes. By analyzing resumes, identifying areas for improvement, and providing personalized feedback, career advisors help students showcase their skills and experiences effectively, increasing their chances of securing internships or jobs upon graduation.

3. Individual Users Involved in Hiring Processes:

- **HR Personnel and Recruiters:** By automating the initial screening process, the tool saves time and allows recruiters to focus on more strategic aspects of recruitment, such as interviewing and candidate engagement. Individual users can customize the tool to meet their specific recruitment needs, whether they are hiring for a specific role or managing a talent pipeline for future openings.
- **Hiring Managers:** The tool provides insights into candidate qualifications, skills, and expertise levels, empowering hiring managers to make informed decisions and leading to better outcomes for their organizations.[8]

2. PROJECT PLAN

2.1. Problem Statement

Problem Statement

In today's competitive job market, organizations, colleges, and individual users grapple with the inefficiencies and challenges inherent in the manual process of resume screening. The traditional methods of evaluating numerous resumes for job openings or admissions are plagued by several issues:

- **Time-Consuming Process:** Manually reviewing resumes is a time-intensive task, often requiring significant resources to sift through large volumes of applications.
- **Error-Prone Evaluation:** Human error can lead to the oversight of qualified candidates or misinterpretation of crucial information within resumes.
- **Resource Wastage:** The manual screening process consumes valuable resources, including time, personnel, and financial investments, without guaranteeing optimal outcomes.
- **Delays in Decision-Making:** The lack of automation and streamlined processes can result in delays in identifying suitable candidates, leading to prolonged recruitment timelines.

Solution

To address these challenges and inefficiencies, we propose a comprehensive solution: an advanced resume parsing tool. This tool leverages cutting-edge technology to streamline the resume screening process, improve accuracy, and provide actionable insights to expedite candidate selection. **Key features of our solution include:**

- **Advanced Resume Parsing Techniques:** Our tool employs sophisticated algorithms to extract key details from resumes, including skills, expertise levels, and job suitability indicators, with unparalleled accuracy and efficiency.

- **Automation:** By automating manual tasks associated with resume screening, such as parsing through large volumes of applications, our tool significantly reduces the time and resources required for candidate evaluation.
- **Personalized Recommendations:** Our platform offers personalized recommendations for both applicants and administrators, facilitating targeted improvements in resumes and enhancing the relevance of candidate profiles.
- **Resume Scoring and Analytics:** Through resume scoring mechanisms and insightful analytics, our tool provides administrators with actionable intelligence to make informed decisions, optimize recruitment strategies, and improve overall hiring outcomes.
- **Seamless User Experience:** Built with user experience in mind, our platform promises a seamless and intuitive interface, supported by Python and MySQL, to ensure ease of use and reliability for users across diverse environments.

2.2. Requirement Specification

Hardware Requirements

1. **Laptop/Desktop:** A computer system capable of running the necessary software.
2. **Internet Connection:** Required for accessing the web-based application.
3. **MySQL Installed:** The computer system must have MySQL installed to handle the database operations.
4. **Single Network Connection:** Needed for other devices to connect to the application through a network URL.

Software Requirements

1. **Operating System:** Compatible with any operating system that supports the required software.
2. **Browser:** A web browser to access and interact with the web-based application.
3. **Python 3:** The backend of the application is developed using Python 3 programming language.

4. **Streamlit:** Both frontend and backend of the application are managed by Streamlit, a Python library for creating web applications.
5. **MySQL:** Database management system used to store applicant data and other information.

Packages (pip)

1. **Pandas:** Python library for data manipulation and analysis.
2. **Base64:** Python module for encoding and decoding binary data in base64 format.
3. **Numpy:** Library for numerical computing in Python.
4. **PyResparser:** Python library for parsing resumes and extracting information.
5. **PdfMiner:** Python tool for extracting information from PDF documents.
6. **Plotly:** Python graphing library for creating interactive visualizations.

Requirements

1. A computer system meeting the hardware requirements.
2. Internet connectivity for accessing the web-based application.
3. MySQL installed on the computer system.
4. A simple format resume for testing the tool.

2.3. Gantt chart

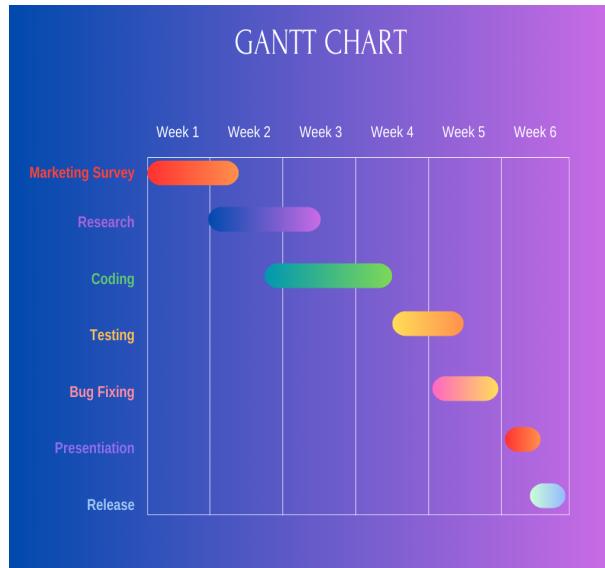


Figure 2.1: Gannt Chart

2.4. Time Line chart

Table 2.1: Project Timeline

Timeline	Activities
Week 1	Conduct project planning and requirements gathering
	Research and select suitable technologies and tools
	Design system architecture and database schema
Week 2	Develop backend functionalities and resume parsing algorithms
	Implement frontend interface using Streamlit framework
	Integrate backend and frontend components for initial testing
Week 3	Conduct alpha testing and gather feedback for improvements
	Refine user interface based on feedback and usability testing
	Perform system optimization and bug fixing
Week 4	Conduct beta testing with a larger user base
	Finalize documentation and prepare for project deployment
Week 5	Deploy project to production environment
	Monitor system performance and address any issues
	Provide user training and support
Week 6	Conduct post-deployment review and gather feedback
	Plan future updates and enhancements based on feedback

3. PROPOSED SYSTEM AND METHODOLOGY

3.1. System Architecture

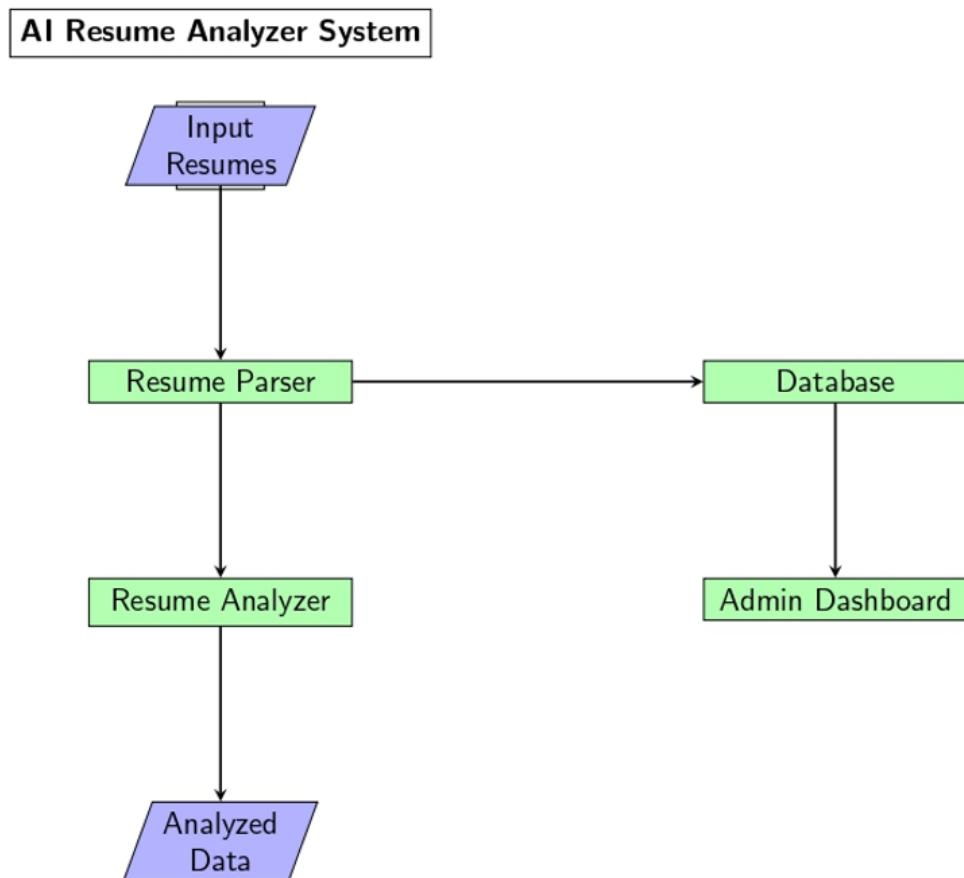


Figure 3.1: System Architecture of AI resume Analyzer

Input Resumes: Represents the entry point of resumes into the system.

Resume Parser: Responsible for parsing the resumes and extracting relevant information such as personal details, skills, and experience.

Resume Analyzer: Analyzes the parsed resume data to derive insights and generate recommendations for applicants.

Analyzed Data: Output of the system, containing analyzed resume data and recommendations.

Database: Stores the resume data and analysis results for future reference and retrieval.

Admin Dashboard: Provides an interface for administrators to view and manage the resume data, generate reports, and monitor system performance.

3.2. Methodology(Algorithms Used)

1. Input Processing:

- Frontend managed by Streamlit provides a user-friendly interface for uploading resumes.
- Backend managed by Streamlit handles requests from the frontend and processes resume data.

2. Resume Parsing:

- PyResparser is used to extract essential information from resumes, such as personal details, skills, experience, and education.
- PdfMiner is employed to handle PDF files, converting them into text for parsing.

3. Data Preprocessing:

- Pandas and NumPy are utilized for data preprocessing tasks, such as cleaning and transforming the extracted resume data into a structured format suitable for analysis.

4. Resume Analysis:

- The system analyzes the parsed resume data to derive insights and make recommendations.
- Algorithms are employed to determine the relevance and importance of skills, experience, and education based on job roles and industry standards.
- Plotly is used to visualize the analysis results, such as skill proficiency levels and experience distribution.

5. Recommendation Generation:

- Based on the analysis, the system generates recommendations for applicants, including suggested skills to add, suitable job roles, expertise levels, and course/certificate recommendations.
- Algorithmic logic is applied to match applicant profiles with job requirements and industry trends.

6. Database Management:

- MySQL is employed as the database management system to store and manage resume data, user information, and analysis results.
- Data is organized in a structured manner to facilitate efficient querying and retrieval.

7. User Interface and Interaction:

- Streamlit provides an interactive and intuitive user interface for both applicants and administrators. Applicants can easily upload their resumes and receive personalized recommendations.
- Administrators can access applicant data in tabular format, download data for analysis, and visualize insights through pie charts and activity maps[9].

3.3. Pseudo Code

3.3.1. Resume Parsing Algorithm:

```
procedure ParseResume(ResumeText):
    BasicInfo = ExtractBasicInfo(ResumeText)
    Skills = ExtractSkills(ResumeText)
    ExpertiseLevel = DetermineExpertiseLevel(Skills)
    Keys = GenerateKeys(BasicInfo, Skills)
    Recommendations = GenerateRecommendations(Skills, ExpertiseLevel)
    ResumeScore = CalculateScore(Keys)
    Output = {
        "BasicInfo": BasicInfo,
        "Skills": Skills,
        "ExpertiseLevel": ExpertiseLevel,
        "Keys": Keys,
        "Recommendations": Recommendations,
        "ResumeScore": ResumeScore
    }
    return Output
```

3.3.2. Admin Side Data Analysis Algorithm:

```
procedure PerformDataAnalysis(ApplicantData):
    TotalApplicants = CountTotalApplicants(ApplicantData)
    ApplicantSkills = ExtractSkills(ApplicantData)
    ApplicantExperience = ExtractExperience(ApplicantData)
    ApplicantRoles = ExtractRoles(ApplicantSkills)
    ApplicantExperienceLevels = DetermineExperienceLevels(ApplicantExperience)

    SkillsPieChart = GenerateSkillsPieChart(ApplicantSkills)
    ExperiencePieChart = GenerateExperiencePieChart(ApplicantExperienceLevels)

    BusyDay = FindBusiestDay(ApplicantData)
    BusyMonth = FindBusiestMonth(ApplicantData)

    MonthlyTimeline = GenerateMonthlyTimeline(ApplicantData)
    ActivityMap = GenerateActivityMap(ApplicantData)

    Output = {
        "TotalApplicants": TotalApplicants,
        "SkillsPieChart": SkillsPieChart,
        "ExperiencePieChart": ExperiencePieChart,
        "BusiestDay": BusyDay,
        "BusiestMonth": BusyMonth,
        "MonthlyTimeline": MonthlyTimeline,
        "ActivityMap": ActivityMap
    }
    return Output
```

3.3.3. Client Side Data Analysis Algorithm:

```
function ClientSideAnalysis(Data):
    Initialize analysis variables
    for each record in Data:
        Extract relevant information
        Perform calculations and analysis
        Update analysis variables accordingly
    Generate analysis report
    return Report
```

3.4. Design

3.4.1. Data Flow Diagrams

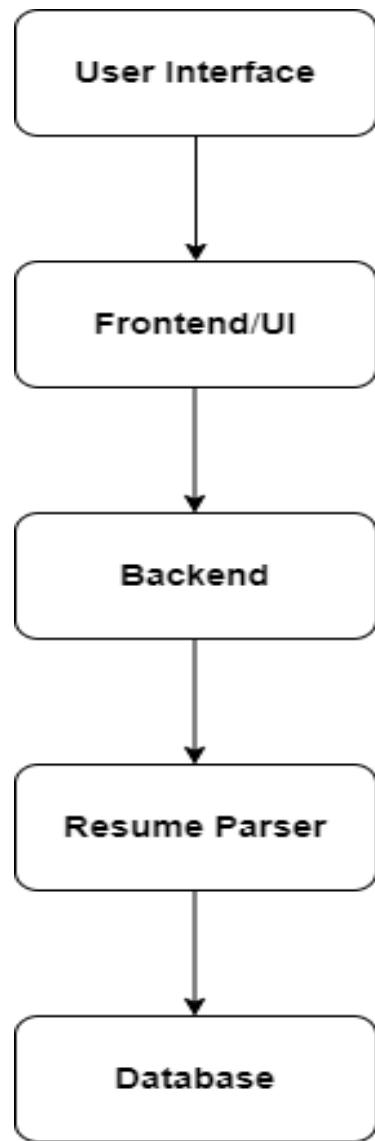


Figure 3.2: DFD Level 0

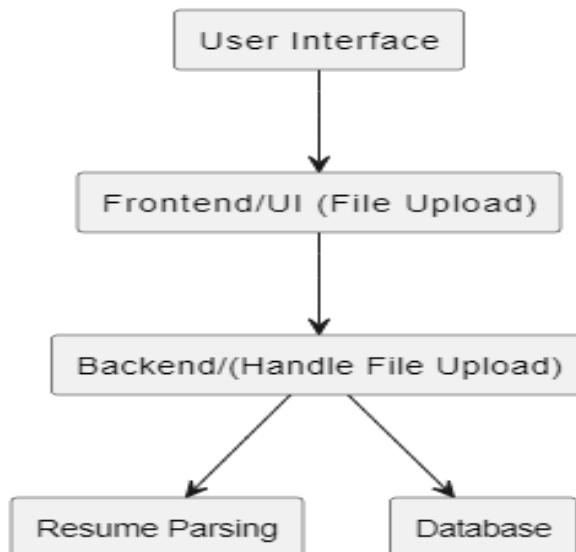


Figure 3.3: DFD Level 1

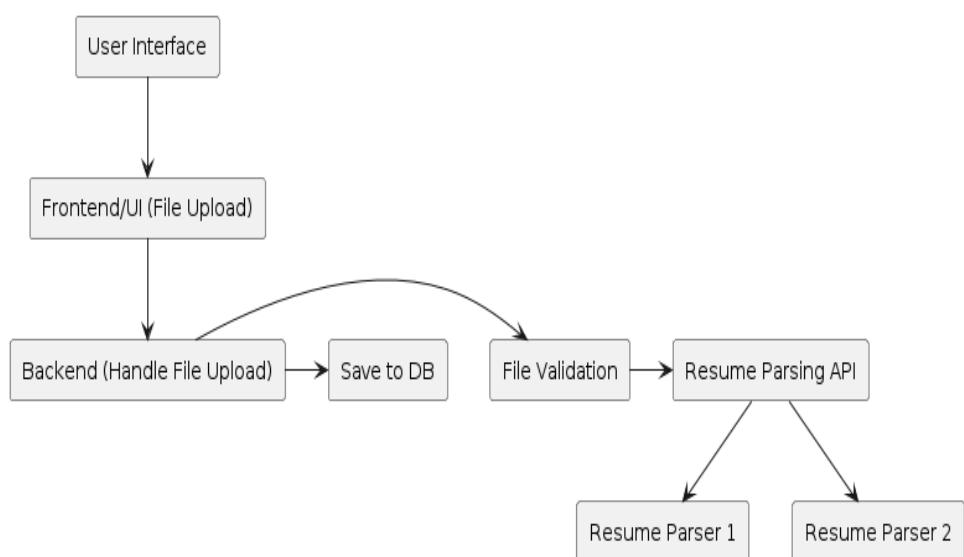


Figure 3.4: DFD Level 2

3.5. UML Diagrams

1. Flow Chart

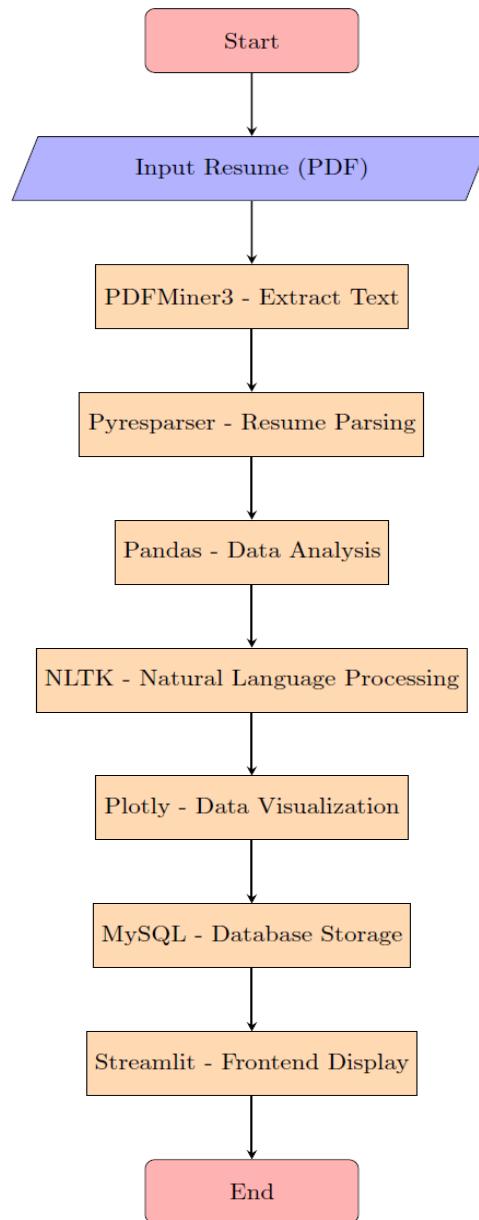


Figure 3.5: Flow Chart

2. Activity Diagram

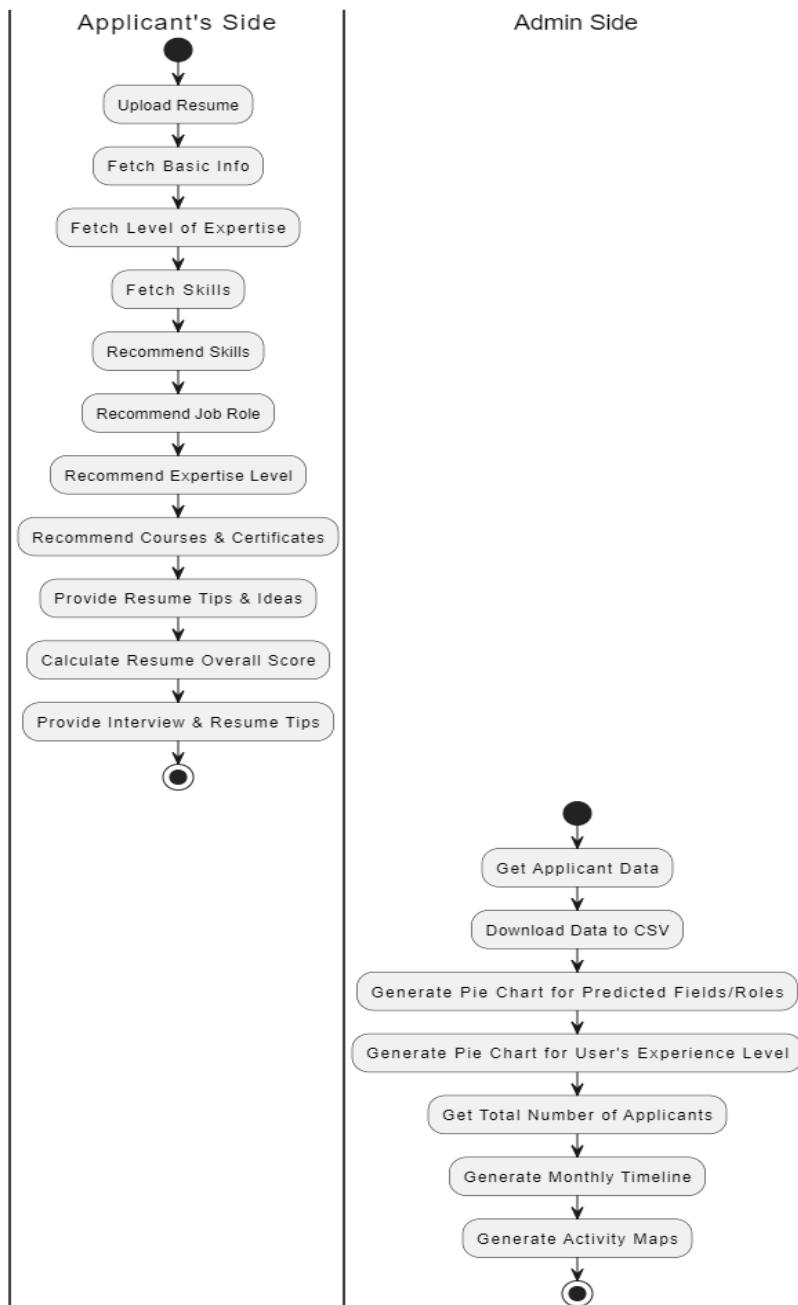


Figure 3.6: Activity Diagram

3. Sequence Diagram

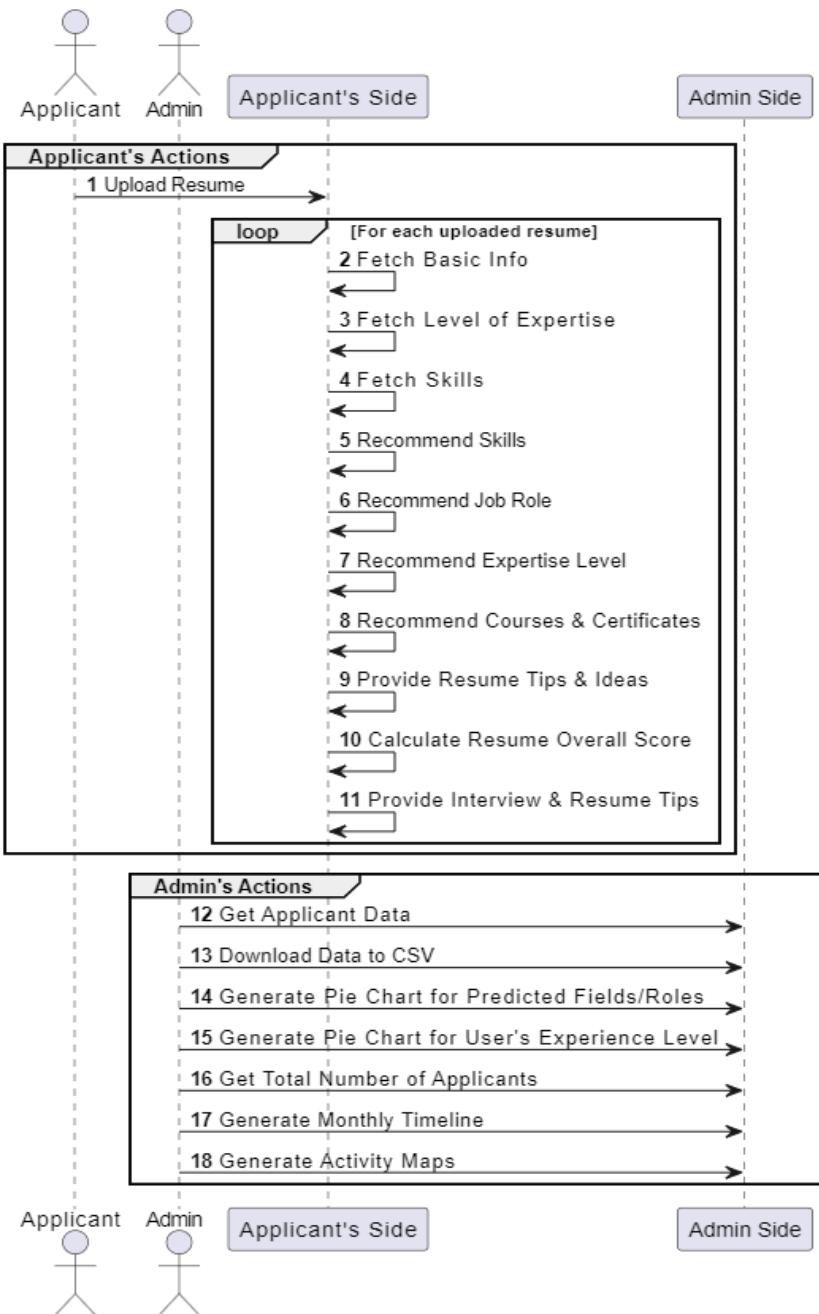


Figure 3.7: Sequence Diagram

4. Activity Diagram

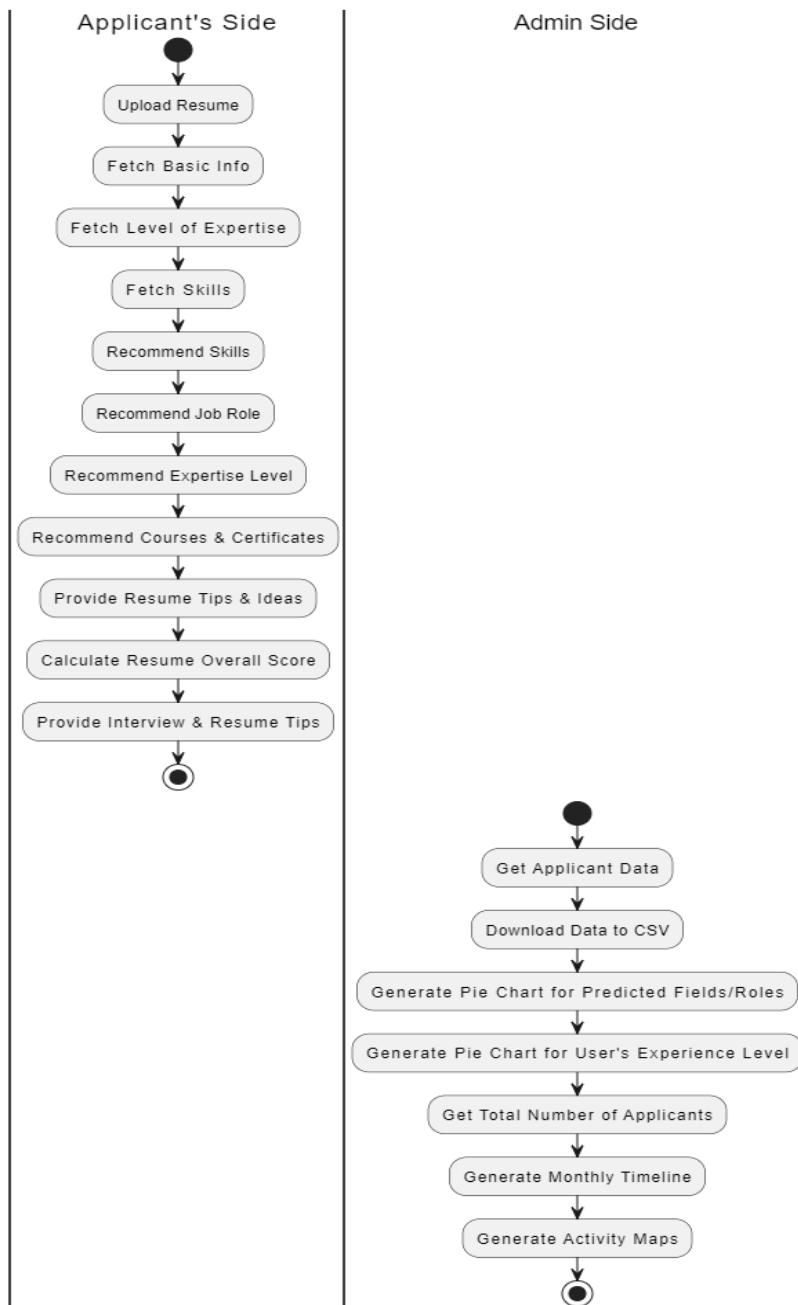


Figure 3.8: Activity Diagram

5. Class Diagram

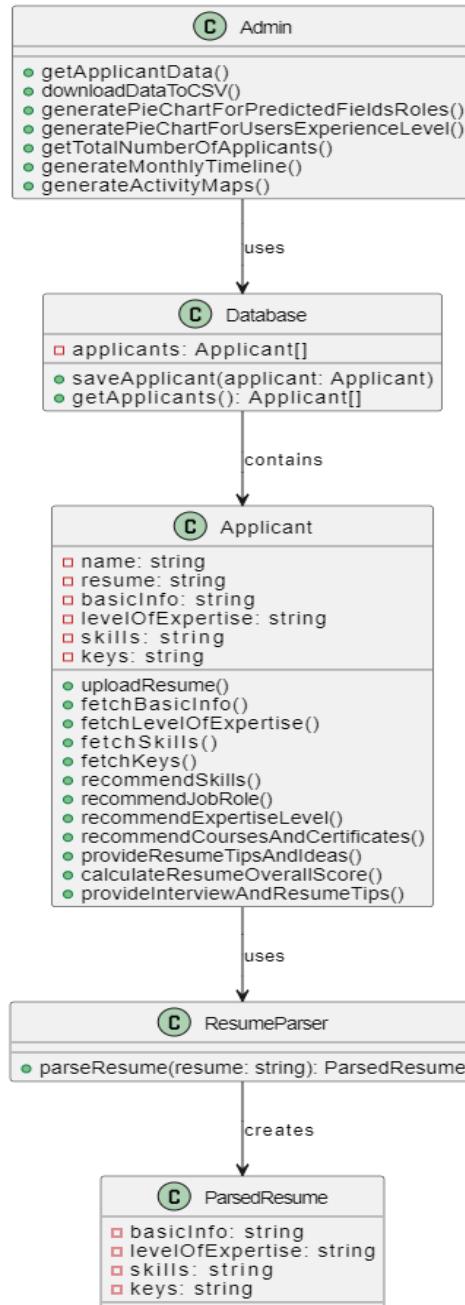


Figure 3.9: Class Diagram

6. ER Diagram

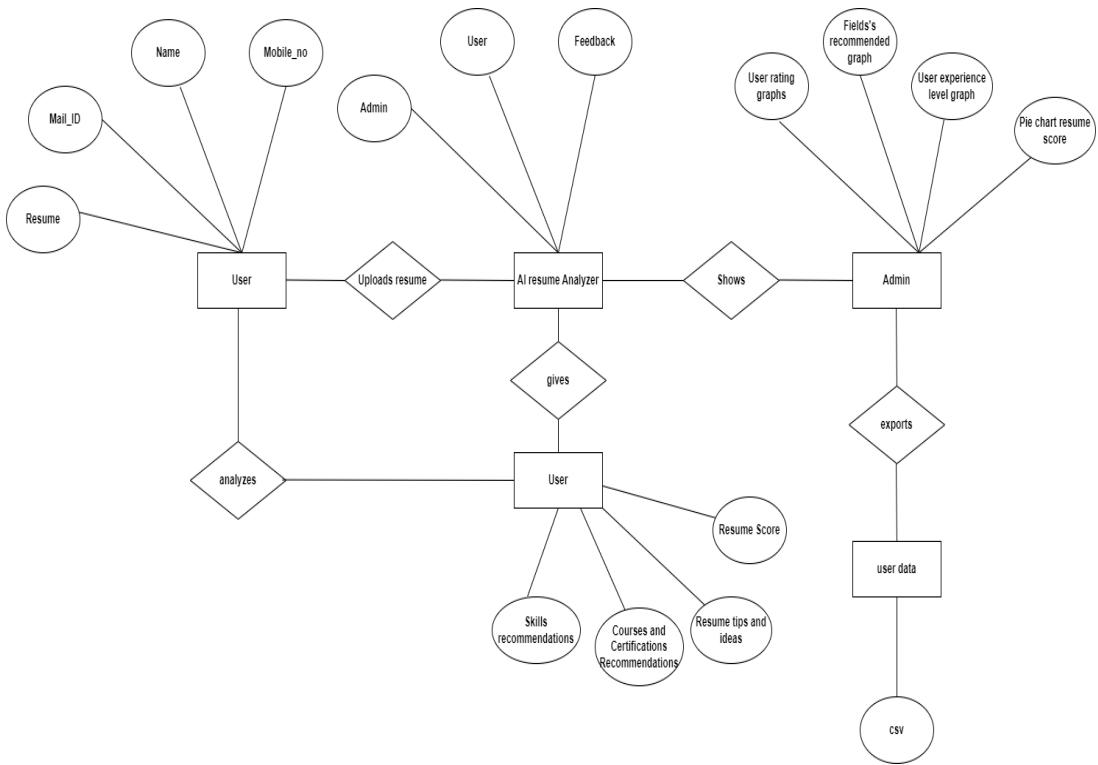


Figure 3.10: ER Diagram

4. RESULTS AND EXPLANATION

4.1. Implementation Approaches

Requirement Analysis:

- Gather and analyze requirements from stakeholders, including users and administrators.
- Define functional and non-functional requirements for the system.

Technology Selection:

- Select appropriate technologies and tools based on project requirements and constraints.
- Choose programming languages, frameworks, and libraries for frontend and backend development. Evaluate database management systems for storing and managing resume data.

System Design:

- Design the system architecture, including components, modules, and their interactions.
- Define data models and database schema for storing resume data and analysis results.
- Determine the user interface design and user experience flow for applicants and administrators.

Backend Development:

- Develop backend functionalities for processing and analyzing resume data.
- Implement algorithms for parsing resumes, extracting relevant information, and generating recommendations.
- Integrate with the selected database management system for storing and retrieving data.

Frontend Development:

- Design and develop a user-friendly frontend interface for applicants to upload resumes and receive recommendations.
- Create an admin dashboard for administrators to manage resume data, generate reports, and monitor system performance.
- Ensure responsiveness and accessibility of the frontend across different devices and screen sizes.

Database Implementation:

- Set up the selected database management system and configure database servers.
- Create tables, indexes, and constraints based on the defined data models and schema.
- Implement data access layer to interact with the database from the backend application.

Testing and Quality Assurance:

- Conduct unit tests, integration tests, and end-to-end tests to ensure the functionality and reliability of the system.
- Perform usability testing to validate the user interface design and user experience flow.
- Implement automated testing frameworks and tools to streamline the testing process.

Deployment and Maintenance:

- Deploy the AI Resume Analyzer system to a production environment, ensuring scalability and reliability.
- Monitor system performance and address any issues or bugs that arise during deployment.
- Provide user training and support to ensure smooth adoption of the system.
- Plan and implement future updates and enhancements based on user feedback and evolving requirements[10].

4.2. Testing

4.2.1. Unit Testing

UNIT TESTING						
TEST CASE ID	DESCRIPTION	INPUT	EXPECTED OUTPUT	ACTUAL OUTPUT	PASS/FAIL	
UT-001	Test for basic information extraction	Sample resume text	Extracted basic info	Basic info extracted	Pass	
UT-002	Test for skills extraction	Sample resume text	Extracted skills	Skills extracted	Pass	
UT-003	Test for experience extraction	Sample resume text	Extracted experience	Experience extracted	Pass	
UT-004	Test for education extraction	Sample resume text	Extracted education	Education extracted	Pass	
UT-005	Test for certificates extraction	Sample resume text	Extracted certificates	Certificates extracted	Pass	

Figure 4.1: Unit Testing

4.2.2. Integration Testing

CASE ID	DESCRIPTION	INPUT	EXPECTED OUTPUT	ACTUAL OUTPUT	PASS/FAIL
IT-001	TEST RESUME PARSING FUNCTIONALITY	SAMPLE RESUME TEXT	PARSED RESUME DATA WITH BASIC INFO, SKILLS, ETC	PARSED RESUME DATA MATCHES EXPECTED OUTPUT	PASS
IT-002	TEST RECOMMENDATION GENERATION	PARSED RESUME DATA	RECOMMENDED SKILLS, JOB ROLES, EXPERTISE LEVEL, ETC.	RECOMMENDED DATA MATCHES EXPECTED OUTPUT	PASS
IT-003	TEST ADMIN DASHBOARD FUNCTIONALITY	RESUME DATA uploaded BY MULTIPLE USERS	ADMIN DASHBOARD DISPLAYS ALL uploaded RESUME DATA	ADMIN DASHBOARD SHOWS CORRECT DATA FOR ALL USERS	PASS
IT-004	TEST DATA EXPORT FUNCTIONALITY	RESUME DATA IN DATABASE	EXPORTED CSV FILE WITH ALL RESUME DATA	CSV FILE CONTAINS CORRECT RESUME DATA	PASS
IT-005	TEST REAL-TIME PREDICTIONS	RESUME DATA INPUT DURING LIVE SESSION	IMMEDIATE FEEDBACK ON RESUME ANALYSIS	REAL-TIME PREDICTIONS MATCH EXPECTED RESULTS	PASS
IT-006	TEST ERROR HANDLING	INVALID RESUME FORMAT OR DATA	PROPER ERROR MESSAGE DISPLAYED TO USER	ERROR MESSAGE IS CLEAR AND HELPFUL	PASS
IT-007	TEST DATABASE INTEGRITY	MULTIPLE RESUME UPLOADS AND DELETIONS	DATABASE MAINTAINS INTEGRITY AND CONSISTENCY	DATABASE REMAINS STABLE AND ACCURATE	PASS
IT-008	TEST NETWORK CONNECTIVITY	ACCESSING TOOL FROM DIFFERENT DEVICES	SEAMLESS CONNECTIVITY AND FUNCTIONALITY	TOOL FUNCTIONS CORRECTLY ACROSS DIFFERENT DEVICES	PASS
IT-009	TEST PARSING SPEED	LARGE VOLUME OF RESUMES	PARSING COMPLETES WITHIN EXPECTED TIME FRAME	PARSING SPEED MEETS PERFORMANCE EXPECTATIONS	PASS
IT-0010	TEST COMPATIBILITY WITH DIFFERENT FORMATS	RESUMES IN VARIOUS FORMATS	SUCCESSFUL PARSING AND ANALYSIS OF DIFFERENT FORMATS	TOOL CAN HANDLE VARIOUS RESUME FORMATS	PASS

Figure 4.2: Integration Testing

4.3. Analysis (graphs/chart)

Output

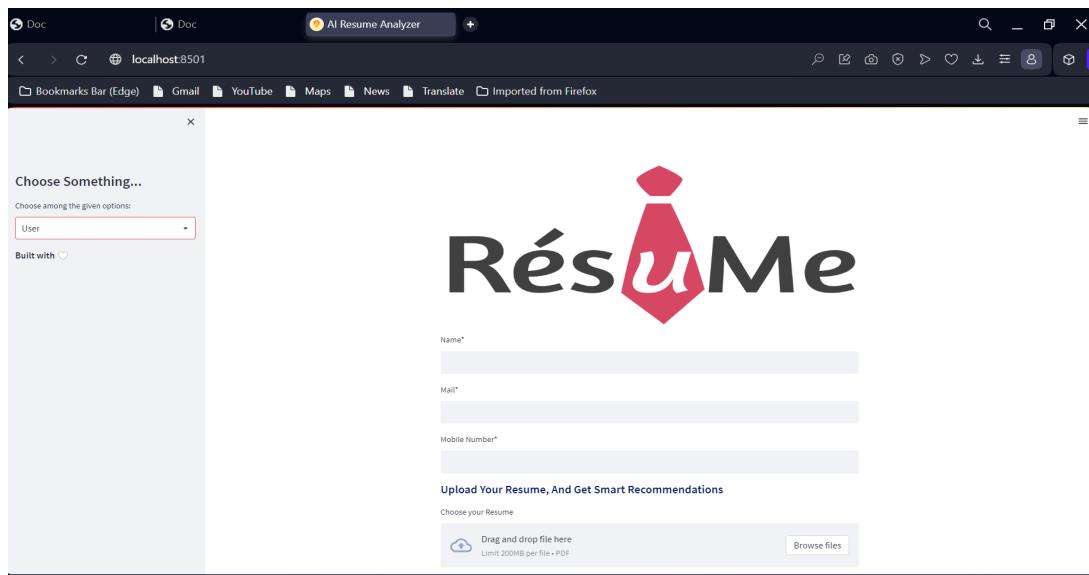


Figure 4.3: User - Streamlit User-Interface

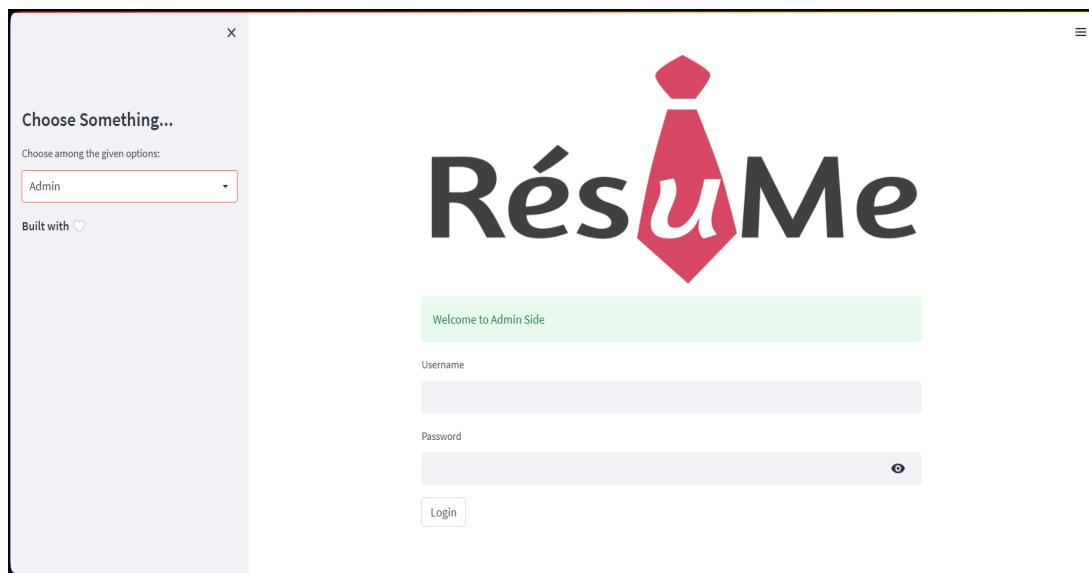


Figure 4.4: Admin - Streamlit User-Interface

Piecharts

Pie-Chart for User's Experienced Level

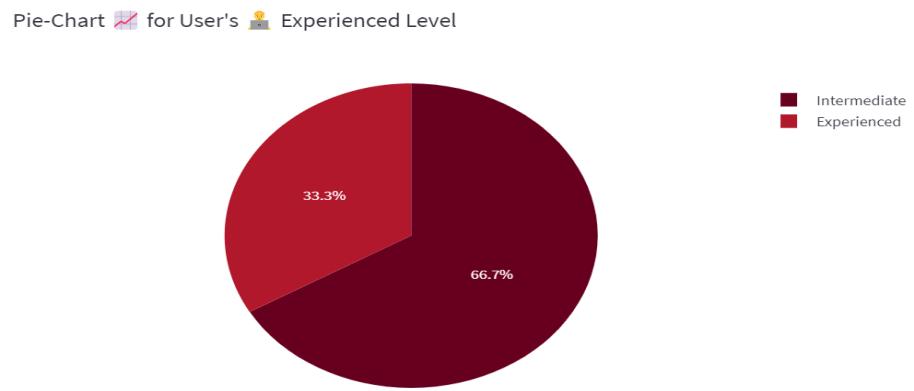


Figure 4.5: Pie-Chart for User's Experienced Level

Pie-Chart for Resume Score

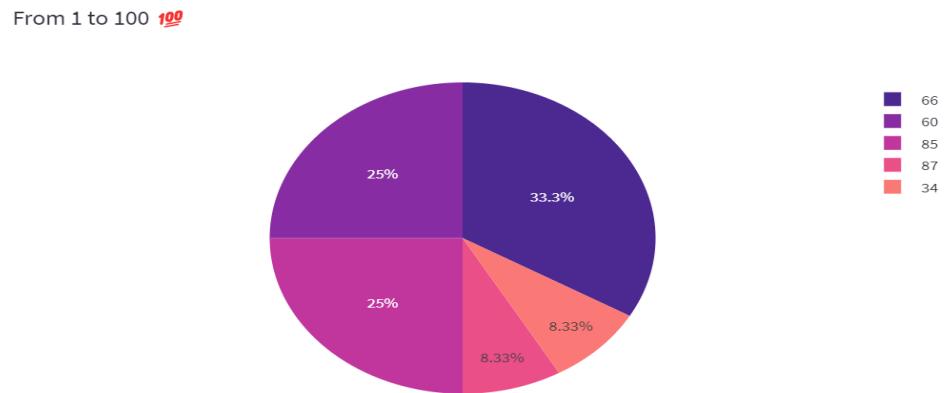


Figure 4.6: Pie-Chart for Resume Score

5. CONCLUSION & FUTURE SCOPE

5.1. CONCLUSION

1. **Streamlined Hiring:** The tool enhances hiring processes by efficiently extracting key resume data, facilitating faster candidate evaluations.
2. **Achievements:** Successful implementation of resume parsing, real-time recommendations, and admin dashboard functionalities.
3. **Value Addition:** Personalized feedback improves efficiency for both applicants and recruiters, enhancing decision-making.
4. **Overcoming Challenges:** Addressed issues like resume format compatibility and parsing speed through iterative improvements.

5.2. FUTURE SCOPE

1. **Advanced Algorithms:** Further refine parsing algorithms using NLP techniques for better context understanding.
2. **Enhanced Recommendations:** Incorporate machine learning for tailored suggestions on courses, certifications, and job opportunities.
3. **ATS Integration:** Seamlessly integrate with Applicant Tracking Systems for automated data management.
4. **Analytics Expansion:** Expand database capabilities to analyze large datasets, providing insights on candidate skills and hiring trends.

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