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COLLEGE PLACEMENT MANAGEMENT SYSTEM WITH AI BASED RESUME ANALYSER

A one stop solution for students, companies and colleges.

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Abstract : The rapid evolution of technology has necessitated a paradigm shift in traditional methods of college placement management. This project introduces an innovative solution, an AI-based College Placement Management System (CPMS), designed to streamline and enhance the entire placement process. Leveraging the power of artificial intelligence, the system aims to optimize the matching of students with potential employers, ensuring efficient and effective placement outcomes. The AI-based CPMS incorporates advanced algorithms to analyze and interpret diverse data sets, including student profiles, academic achievements, and industry requirements. Machine learning techniques are employed to identify patterns, trends, and preferences, facilitating personalized recommendations for both students and employers. This not only improves the accuracy of matching's but also enhances the overall experience for stakeholders involved in the placement process.

INTRODUCTION

This is a project that is based on Artificial Intelligence and Data Mining that deals with the placement management system for the colleges and Resume Analyser for the students.

In this project we use the AI based algorithms and segregate the resume of the students based on the keywords that they input and use the necessary algorithm and hereafter concluding the jobs that the student is eligible for.
Then we have the college placement management system that contains 3 parts

1) Admin Login
   Here the college admins will log into and manage the students and the companies accordingly.
2) Student login
   Here we have the students that log in and upload their resume for the companies to see.
3) Company login
   The companies will get the list of resumes and can select the candidate they think is appropriate for them and notify them or the college for further processing.

The AI-based CPMS serves as a centralized platform that seamlessly integrates with academic databases, student profiles, and employer requirements. By employing advanced algorithms and machine learning models, the system analyzes vast datasets to understand the unique skills, preferences, and potential of individual students. This enables the generation of personalized recommendations for career opportunities, ensuring a more precise and tailored match between students and prospective employers.

Another unique property of this project is that it consists of an AI based Resume Analyzer which uses the technologies and analyses the resumes of students and gives them numerous inputs like Resume Score, Courses to do, Job best suited for, writing tips etc

NEED OF THE STUDY.

In the current situation there are thousands of unemployed people finding a job but they are not able to get selected in the companies, the reason is they don't know the trend of current technology & fields. May be they are lacking the skills of resume writing. There is a high chance that they didn't have done any particular certifications in particular field. So our ideas is to implement Artificial Intelligence in this field. AI Technology is playing a very vital role in changing our life in many ways. There are many sectors

which benefited after implementing AI technology in it. Now it's time for evolution in this very field. With the use of Artificial Intelligence every field is growing widely.

With this project our aim is to use AI in job sectors. This system can be used by any fresher, graduate or experienced people. Our future aim to create same module for companies also, so with this application companies can directly shortlist the people using AI. We are using the core concepts of Natural Language Processing for analyzing the resume. This is just our first step for implementing Artificial Intelligence in the field of Job Recruitment sector.
This can perhaps be used into many sectors like placements, job search, resume shortlist, resume analysis and many more sectors beyond.

Scope of the Project and the Model

1) Increased Efficiency: Automation significantly speeds up processes that would be time-consuming when performed manually. Tasks that once took hours or days can be completed in a fraction of the time, leading to increased overall efficiency.
2) Reduced Errors: Manual processes are prone to human errors, such as data entry mistakes or oversights. Automation minimizes these errors, enhancing accuracy and reliability. This is especially crucial in tasks that require precision and consistency.
3) Cost Savings: Automation can lead to substantial cost savings over time. It reduces the need for manual labor, decreases the likelihood of errors that might incur additional costs, and allows for resource allocation to more strategic and value-added activities.
4) Consistency and Standardization: Automated processes adhere to predefined rules consistently, ensuring standardization across tasks. This consistency is critical for maintaining quality in outputs and meeting compliance or regulatory requirements.
5) Scalability: Automated processes can easily scale to handle increased workloads without a proportional increase in resources. This scalability is particularly advantageous in dynamic or growing environments.
6) Faster Turnaround Times: Automation accelerates task completion, resulting in faster turnaround times for various processes. This is especially beneficial in time-sensitive situations, such as responding to customer inquiries or meeting tight deadlines.
7) Improved Data Accuracy: Automation reduces the likelihood of data entry errors and inconsistencies, leading to improved data accuracy.

Literature Survey
A survey by **International Journal for Research in Applied Science & Engineering Technology** Published in April 2022. [1] This paper states that, Manual labour makes documenting and categorizing extremely tough. These analytical techniques result in complicated administration and high analytical expenses, making the system costly and inefficient.

A Study by IEEE **How assessment shapes learning: A perspective from engineering students** published in December 2021.[2] Traditional thinking claims that formative and summative assessment are distinct, implying that formative assessment supports student learning (assessment for learning) and summative assessment measures the student learning that has taken place (assessment of learning).

A study by the **Journal of Emerging Technologies and Innovative Research** published in April of 2021. [4] The increasing advantages of automated systems now are at the highest position as a result many manual processes are automated.

Objectives & Problem Solving
College Placement Management System
The placement process is a time-consuming and complex task for both the recruiters and the candidates. Recruiters often receive many resumes, making it difficult to filter and shortlist suitable candidates for job positions. Candidates, on the other hand, find it challenging to identify job openings that match their skills and preferences. This process can be made more efficient and effective by developing a placement management system that automates the entire process, from candidate registration to job placement.
Some of the major identified problems are –

1) Manual and Time-Consuming Processes: Traditional placement systems often rely on manual processes for tasks such as resume screening, application processing, and communication with employers. This can be time-consuming and prone to human errors.
2) Limited Personalization: Conventional systems may lack the ability to provide personalized career guidance and job recommendations for individual students based on their unique skills, interests, and academic achievements.
3) Inefficient Resume Handling: Handling and parsing resumes manually can be a challenging and error-prone task. Traditional systems may struggle with the efficient extraction of relevant information from resumes, leading to delays and inaccuracies in the candidate selection process.
4) Lack of Data-Driven Insights: Many conventional placement systems lack robust analytics capabilities, making it difficult for administrators to gain insights into placement trends, student performance, and the effectiveness of the placement process. This absence of data-driven decision-making can hinder overall system improvement.
5) Limited Industry Integration: Traditional systems may face challenges in establishing seamless integration with industry requirements and trends. This can result in a is match between the skills acquired by students and the expectations of potential employers.

6) Ineffective Communication Channels: Communication between students, recruiters, and placement offices can be fragmented in conventional systems. Lack of efficient communication channels may lead to misunderstandings, missed opportunities, and delays in the placement process.
7) Challenges in Tracking and Monitoring: Tracking the progress of placements, monitoring the success rates, and identifying bottlenecks in real-time can be challenging in traditional systems. This lack of immediate visibility can impede proactive decision-making.

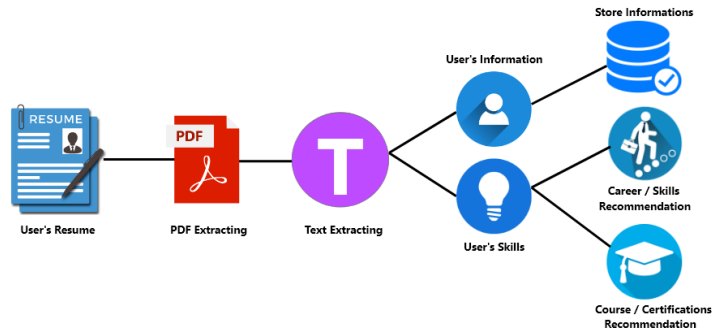
Using the designed all of these problems can be solved in a very efficient manner.

AI Resume Analyser

1) Efficient Candidate Screening: Resume analysis automates the initial screening process, allowing recruiters to quickly assess a large number of applicants. This efficiency is particularly important when dealing with a high volume of resumes during recruitment drives.
2) Objective Evaluation: Automated resume analysis ensures a more objective evaluation of candidates by focusing on specific criteria and skills outlined in the job description. This reduces the potential for unconscious biases that may influence manual resume screening.
3) Time and Resource Savings: Manual review of resumes is a time-consuming process. Automated analysis significantly reduces the time and resources required for initial candidate screening, enabling recruiters to allocate their time more efficiently.
4) Consistency in Evaluation: Automated systems apply consistent criteria to evaluate each resume, ensuring a fair and standardized process. This consistency is vital for maintaining a level playing field and identifying the most qualified candidates based on merit.
5) Identification of Key Skills and Qualifications: Resume analysis tools extract and highlight key skills and qualifications relevant to the job position. This helps recruiters quickly identify candidates who possess the necessary expertise and qualifications sought by employers.
6) Customization for Specific Roles: Automated resume analysis systems can be customized to prioritize specific skills or qualifications based on the requirements of different job roles. This ensures that the evaluation aligns closely with the needs of individual positions.
7) Scalability: As the number of applicants increases, automated resume analysis scales effortlessly, accommodating a large pool of candidates without compromising the speed or accuracy of the evaluation process.
8) Improved Quality of Shortlisted Candidates: By leveraging resume analysis, recruiters can create a shortlist of candidates who closely match the job requirements. This results in a higher likelihood of selecting individuals who are well-suited for the position, improving the overall quality of the candidate pool.
9) Enhanced Recruitment Experience: Swift and accurate resume analysis contributes to an improved recruitment experience for both candidates and employers. Candidates benefit from a streamlined application process, while employers can focus on engaging with the most promising candidates.

Methodology & Implementation

Smart Resume Analyser



Working of Smart Resume Analyser

We are going to see how actually our system is working behind, we have divided our work in separate tasks, let's understand each steps of it.

PDF Extracting

PDF Extracting is module in which it will automatically get the resume from the user. The condition is that user's resume should be in PDF format. This module will automatically extract the user's data from the resume.

Text Extracting

Text Extracting is the module in which it will fetch the text information from the resume. This text data will be used as language processing to further tasks like recommendations and fetching the user's personal information.

User's Data

After the text extraction, there is next module is fetching the user information, just like for X person find the full name, contact, email, mobile, and skills from the text extraction data.

Career/Skills Recommendations

Now we have fetched the information of user. Now based on user's current skills we will give the career path & skills recommendations, just like if user have skills of Machine Learning then it will give you the career, tools and technology recommendations.

Course/Certifications Recommendations

Now we have fetched the information of user. Now based on user's current skills we will give the courses & certificate recommendations, just like if user have skills of Machine Learning then it will give you the free and paid type of courses and certificates recommendations.

Data Analytics

Now we have attached new module called data analytics, we have good number of the user's data. Now visualization is the best effective technique to understand the data's pattern. Now we are creating the visualizations (Pie Charts) for the admin side. So admin can easily understand the data.

YouTube Video Recommendation

Now we have attached new module called YouTube recommendations. Now our system will recommend the two types of videos to the user. One is for resume preparation topic and another one is for the interview preparation topic. This 2 videos will be recommended to the user. It will be directly scraped from the YouTube. We are not using any official API for the YouTube.

College Placement Management System

User Registration:

Students, recruiters, and placement officers register on the platform using their credentials. The system may require verification to ensure the authenticity of user accounts.

Student Profile Creation:

Students create detailed profiles that include academic achievements, skills, projects, and any relevant experience. This information helps in matching students with suitable job opportunities.

Job Posting:

Recruiters post job opportunities on the platform. Job postings include details such as job descriptions, required skills, eligibility criteria, and application deadlines.

Application Submission:

Students apply for the jobs they are interested in by submitting their resumes and other required documents through the system. The application process may include additional steps like online assessments or interviews.

Shortlisting and Selection:

Recruiters review student applications and shortlist candidates based on their suitability for the positions. The system may facilitate communication between recruiters and students for further assessments or interviews.

Placement Officer Dashboard:

Placement officers have access to a dashboard where they can track the progress of placement activities. They can monitor job postings, student applications, and placement statistics.

Model

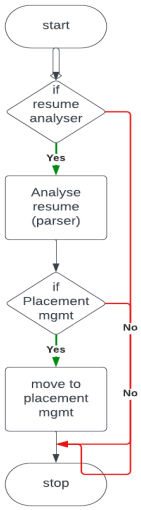
Here in our project we have 2 sections,

Section 1 – here we first have the resume analysis section where in the student has to prepare his/her resume according to the resume format that is provided by the admin and send it for analysis. Then the AI based resume analyser will analyse the resume based on the parsing algorithm and deliver the results. The analyser contains the following

- User's & Admin Section
- Resume Score
- Career Recommendations
- Resume writing Tips suggestions
- Courses Recommendations

- Skills Recommendations
- YouTube video recommendations

Section 2 – Next we use the connected College placement management system where in there are several accounts given to different people like admin, recruiters, students who have their different interface.
Here the student can upload the resume which is analysed by the AI based resume analyser and then the jobs can be shortlisted according to the analysis of the analyser, the recruiters post their jobs along with the requirements and all the necessary skills that the company is looking for. Then on the recommendation of the analyser the student can choose the job he/she wants.



Dataflow Model

System & Software Requirements

	Hardware	Software
Developers	1. 8 GB RAM 2. 256 GB Storage 3. Intel i5 5th Gen +/ AMD Ryzen 5 Processor	1. Anaconda or Python 2. Pycharm IDE 3. Streamlit, PDFMiner 4. Pyparser, NLTK 5. Eclipse 6. VS code 7. Node JS 8. JDK
Users	1. Tablet/PC 2. Laptop	Any Browser

Softwares
JAVA
Python Programming Language
PyCharm IDE
Streamlit
NLTK
XAMP
GitHub
HTML
CSS
React

Database

SRA

Column Name	Data Type	Description
ID	Auto Increment	Unique User ID
User Name	Varchar (50)	Full Name of user
Email ID	Varchar (50)	User Email ID
Resume_score	Varchar (10)	User's auto generated score
Time_stamp	Varchar (50)	Time stamp
Page_no	Varchar (5)	Number of pages
User_Level	Varchar (10)	User Experience
Actual_skills	Varchar (300)	User's actual skills
Recommended_skills	Varchar (300)	User's Recommended skills
Recommended_courses	Varchar (600)	Recommended courses

CPMS

Admin	Students	HOD's	Companies	Openings	Selected	Clg Info
Id	Id	Id	Id	Id	-	Clg Name
Name	Name	Name	Name	Company Name	-	Address
Address	Address	Address	Address	Designation	-	Website
Gender	Gender	Gender	Website	12th	-	Email
DoB	DoB	Department	Phone	Grad GPA	-	Phone
Phone	Phone	Phone	Email	Package	-	Dean
Branch	Branch	Email	Action	Action	-	-
Action	Action	Action	-	-	-	-

Testing & Results

Running

ID	Test Cases	Input Data	Steps of execution	Expected Output	Result
1	User is able to access the web-application	Request from browser	Go to URL	Site UI should be visible	**Pass**
2	All the UI should be working fine	Request from browser	Click on any component	Every component should do task	**Pass**

Upload Resume

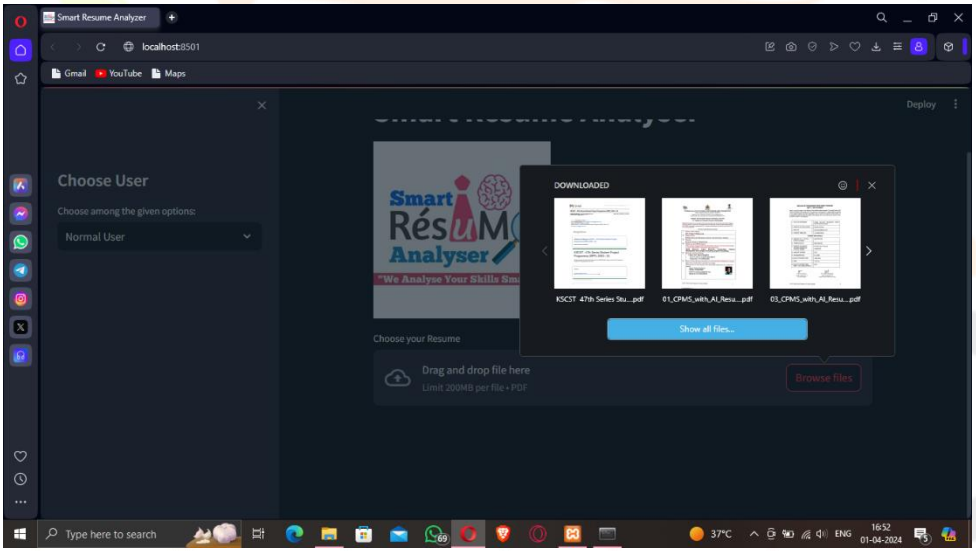
ID	Test Cases	Input Data	Steps of execution	Expected Output	Result
1	User is able to upload Resume	Resume's PDF	Click on the Upload or Drag and Drop	Execution should be start of SRA	**Pass**

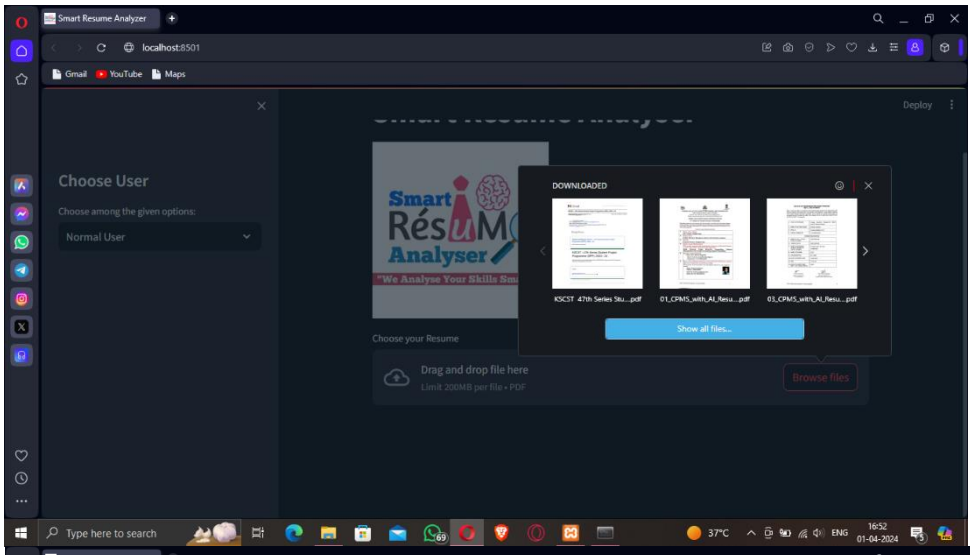
2	User get the message if they are not registered in system	Id, Password	Click on the Login.	No account found	**Pass**

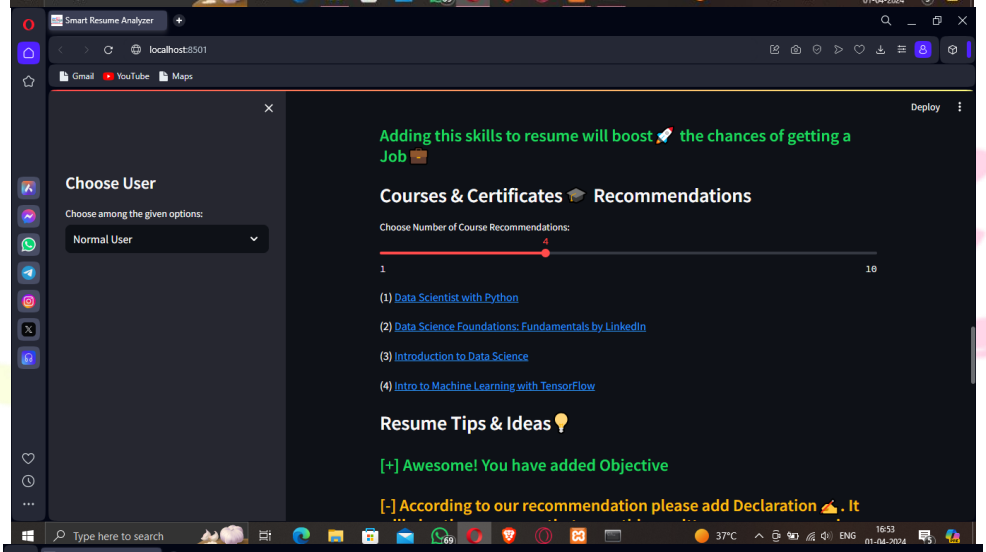
Resume Analyser

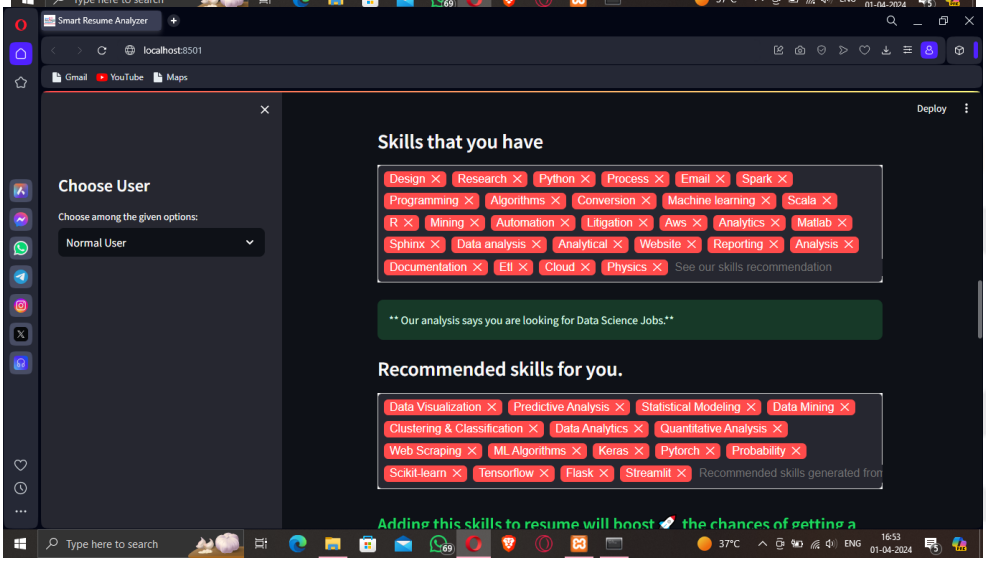
ID	Test Cases	Input Data	Steps of execution	Expected Output	Result
1	System is able to fetch the User's information from the uploaded resume	User's Resume	Automatic	User's Data	**Pass**
2	Page numbers of resume should be generated	User's Resume	Automatic	Experience according to the resume pages	**Pass**
3	User's skills should be generated	User's Resume	Automatic	User's Skills	**Pass**
4	Recommended Career path	User's Skills	Automatic	Recommended Career Path	**Pass**
5	Courses & Skills should be recommended	User's Skill	Automatic	Recommended skills & courses	**Pass**
6	Resume Writing tips & suggestions should be generated	User's Skills	Automatic	Resume writing tips and suggestions	**Pass**
7	Resume Score should be generated	User's Skills	Automatic	Resume Score	**Pass**
8	YouTube Videos should be recommended	User's Skills	Automatic	YouTube Videos related to resume/interview tips	**Pass**

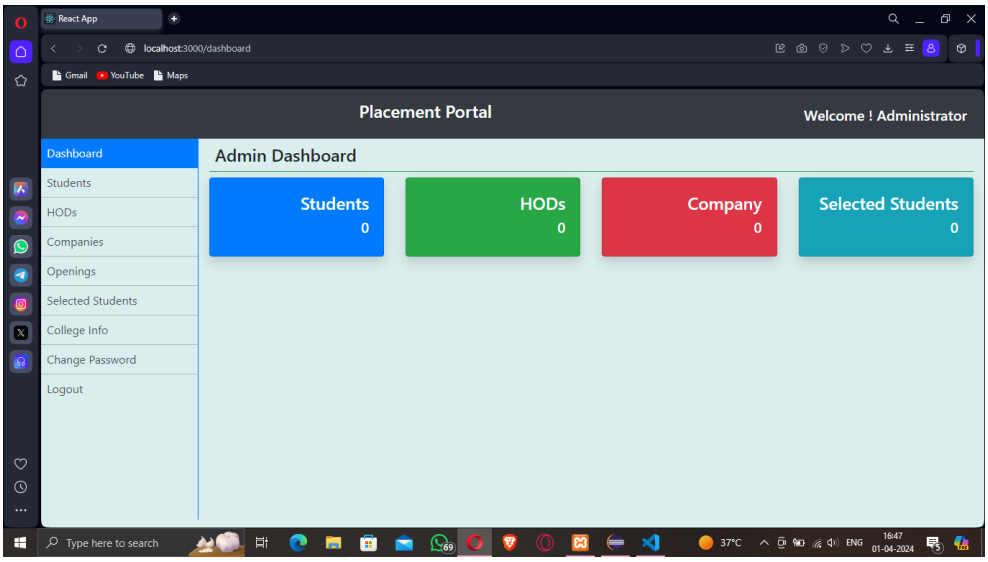
Results




Smart Resume Analyzer
localhost:8501
Choose User
Choose among the given options:
Normal User
Deploy
Choose your Resume
Drag and drop file here
Limit 200MB per file • PDF
Browse files
DOWNLOADED
Show all files...


Smart Resume Analyzer
localhost:8501
Choose User
Choose among the given options:
Normal User
Deploy
Adding this skills to resume will boost 🚀 the chances of getting a Job 💼
Courses & Certificates 🎓 Recommendations
Choose Number of Course Recommendations:
1
10
(1) Data Scientist with Python
(2) Data Science Foundations: Fundamentals by LinkedIn
(3) Introduction to Data Science
(4) Intro to Machine Learning with TensorFlow
Resume Tips & Ideas
[+] Awesome! You have added Objective
[-] According to our recommendation please add Declaration ✍. It


Smart Resume Analyzer
localhost:8501
Choose User
Choose among the given options:
Normal User
Deploy
Skills that you have
Design Research Python Process Email Spark
Programming Algorithms Conversion Machine learning Scala
R Mining Automation Litigation Aws Analytics Matlab
Sphinx Data analysis Analytical Website Reporting Analysis
Documentation Etl Cloud Physics See our skills recommendation
** Our analysis says you are looking for Data Science Jobs.**
Recommended skills for you.
Data Visualization Predictive Analysis Statistical Modeling Data Mining
Clustering & Classification Data Analytics Quantitative Analysis
Web Scraping ML Algorithms Keras Pytorch Probability
Scikit-learn Tensorflow Flask Streamlit Recommended skills generated from
Adding this skills to resume will boost 🚀 the chances of getting a



Conclusion

The purpose of this project is to learn the Natural Language Processing. We have research too many skills, tools and technologies for different types of IT jobs. Then we have done NLP processing that can recommend the Skills, Courses and career field. We learn to create one-page application development using Streamlit python. We have gathered the knowledge of Plotly for the visualization and Data analytics which is created in Admin Side. We have covered this project according to scheduled time. In this project we learn time management, Non-technical skills like documentations, diagrams drawing, Technical skills like NLP, Database handling, Visualization, Web scraping, Web development and many more things from this project.

Also to conclude the implementation of a Smart Placement Management System offers an array of benefits that significantly enhance efficiency, productivity, and overall effectiveness within various industries. By harnessing advanced technologies such as artificial intelligence, machine learning, and data analytics, organizations can optimize resource allocation, streamline processes, and ultimately achieve better outcomes. The system empowers decision-makers with real-time insights and predictive capabilities, enabling them to make informed choices that drive success. Moreover, by automating repetitive tasks and minimizing human error, it frees up valuable time and resources, allowing teams to focus on high-value activities. As we navigate an increasingly complex and dynamic business landscape, investing in a Smart Placement Management System is not just advantageous but imperative for staying competitive and future-ready.

Refernces

[1] International Journal for Research in Applied Science & Engineering Technology Published in April 2022.
[2] How assessment shapes learning: A perspective from engineering students published in December 2021.
[3] International Journal of Research Publication and Reviews published on June 2022.
[4] Journal of Emerging Technologies and Innovative Research published in April of 2021.
[5] International Research Journal of Engineering and Technology published in June of 2020.