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Auto Resume AI: Resume Generator and Job Tracker

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Abstract **-** Finding suitable jobs and creating professional resumes are major challenges faced by students and job seekers. Traditional resume creation methods are time-consuming and often fail to match industry standards. Additionally, tracking multiple job applications manually becomes difficult and inefficient. This paper presents **Auto Resume AI: Resume Generator and Job Tracker**, an intelligent web-based system designed to automate resume generation and simplify job application management.

The proposed system utilizes Artificial Intelligence and Natural Language Processing (NLP) techniques to generate ATS-friendly resumes based on user inputs, including education, skills, projects, certifications, and work experience. The system also features a job tracking module that enables users to monitor application status, interview schedules, deadlines, and company details all in one platform. Resume templates are dynamically generated and customized to suit various job roles and industries.

The application is developed using modern web technologies with an AI-assisted backend that improves resume quality through keyword optimization and content suggestions. The system aims to increase resume effectiveness, reduce manual effort, and improve job management efficiency for users.

I. INTRODUCTION

In today's competitive job market, creating a professional resume and managing multiple job applications are essential but challenging tasks for students and job seekers. Many candidates struggle to design resumes that meet industry standards and the requirements of Applicant Tracking Systems (ATS). Manual resume creation often leads to formatting issues, missing keywords, and poor presentation, reducing the chances of selection.

At the same time, job seekers apply to multiple companies through various platforms, making it challenging to track application statuses, interview schedules, deadlines, and recruiter communications. Traditional methods, such as spreadsheets or manual notes, are inefficient and time-consuming.

With the rapid growth of Artificial Intelligence (AI) and Natural Language Processing (NLP), intelligent systems can now automate resume generation and improve resume quality. AI can analyze user data, optimize resume content, suggest professional keywords, and create ATS-friendly resume formats. Additionally, integrated job tracking systems can simplify the management of applications and improve productivity.

This project presents **Auto Resume AI: Resume Generator and Job Tracker**, an intelligent platform that helps users create professional resumes and manage job applications efficiently. The system provides resume templates, AI-generated content suggestions, skill recommendations, and application tracking features in a user-friendly environment. The proposed platform aims to reduce manual effort, improve resume quality, and help job seekers organize their career opportunities effectively.

This paper focuses on leveraging AI to automatically generate resumes and analyze the degree of alignment between a candidate's profile and a job-specific role. Most existing applicant tracking systems utilize keyword-based filtering to verify the presence of specific terms within a resume, an approach that frequently neglects the contextual meaning and actual relevance of an applicant's skills and experience.

II. MOTIVATION AND PROBLEM STATEMENT

Many students and job seekers face difficulties while preparing professional resumes and managing job applications. Existing resume creation methods require manual formatting, technical knowledge, and significant time investment. Most users are unaware of ATS requirements, resulting in resumes that may not pass automated screening systems.

Furthermore, tracking multiple job applications manually becomes complicated when users apply to many companies simultaneously. Missing interview schedules, deadlines, or application updates can negatively impact career opportunities.

The motivation behind this project is to develop an AI-powered

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platform that automates resume generation and simplifies job tracking. The system aims to provide ATS-friendly resume templates, intelligent content suggestions, keyword optimization, and centralized application management.

The proposed system helps users:

- Create professional resumes quickly.
- Improve resume quality using AI suggestions.
- Optimize resumes for ATS systems.
- Track multiple job applications efficiently.
- Manage interview schedules and application status.
- Reduce manual effort and time consumption.

III. LITERATURE REVIEW

R. Kumar and S. Patel [1] introduced an AI-based resume generation system that automatically creates professional resumes using Natural Language Processing and machine learning techniques. Their system analyzes user input and generates ATS-friendly resumes with proper formatting and keyword optimization. The model improved resume quality while reducing manual effort for job seekers.

A. Sharma and P. Verma [2] developed a smart resume analyzer and job recommendation system using deep learning techniques. They used NLP models to compare resumes with job descriptions and recommend relevant skills and career opportunities. Their results showed improved resume matching accuracy and better job recommendations for users.

M. Rahman, S. Islam, and T. Ahmed [3] created a real-time AI resume builder integrated with a job tracking application. Their system allows users to generate resumes, monitor application status, and manage interview schedules efficiently. The study demonstrated that AI-based automation simplifies the job application process and improves user productivity.

D. Wilson [4] reviewed machine learning and NLP-based recruitment systems for automated resume screening and candidate selection. The study explained how AI models identify important keywords, technical skills, and experience from resumes. It also highlighted the importance of combining resume generation with job tracking and recommendation systems to build a complete career management platform.

K. Mehta and R. Joshi [5] presented a comparative study between traditional resume creation methods and transformer-based AI resume generators. The results showed that transformer models produced more personalized, accurate, and ATS-compatible resumes compared to conventional template-based systems, making them effective for modern recruitment processes.

U. Singh and S. Chavhan [6] developed a multilayer deep learning model for resume classification and skill extraction. Their model effectively captured important resume features and provided high accuracy in categorizing candidate profiles for recruitment systems.

T. N. Pham and L. V. Tran [7] proposed an intelligent career assistance system using feed-forward neural networks and hybrid feature selection techniques. Their study improved job recommendation accuracy by selecting relevant candidate skills and matching them with suitable job opportunities, making the system reliable for career guidance applications.

Kamal et al. [8] introduced Resume Net, a convolutional neural network-based method for automated resume parsing and ranking. The model achieved better performance through advanced feature extraction and semantic analysis. Their research showed that high-quality datasets and efficient training models improve recruitment accuracy significantly.

Mahesh et al. [9] proposed a lightweight AI-based job tracking and resume management system using MobileNetV2 and cloud technologies. Their study showed that lightweight deep learning models can provide high accuracy and fast performance with lower computational resources, making them suitable for real-time web and mobile career applications.

IV. PROPOSED SYSTEM

The proposed system helps users create professional resumes automatically using Artificial Intelligence and also allows them to track job applications efficiently. It reduces the difficulty of creating resumes manually and managing multiple job applications by providing an intelligent and user-friendly platform.

The main part of the system is an AI-based resume generation model that uses Natural Language Processing and Machine Learning techniques to generate ATS-friendly resumes. The system collects user details such as education, skills, projects, certifications, and experience, then automatically creates a well-structured professional resume. It also analyzes the resume and compares it with job descriptions to identify missing skills and improve resume quality.

After generating the resume, the system provides job recommendations based on the user's skills and qualifications. The recommendation module helps users find suitable job opportunities and improves career guidance. The system also suggests important keywords and improvements that can increase the chances of getting selected in recruitment processes.

The job tracking module helps users manage their job applications in an organized way. Users can monitor application status, such as Applied, Interview Scheduled, Selected, or Rejected. The system stores company details, deadlines, interview dates, and application progress in a centralized database, making the job search process easier and more efficient.

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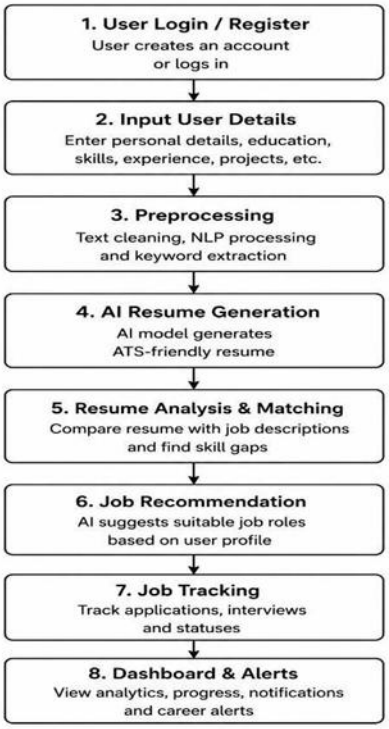
Fig. 1. Workflow Diagram



V. MODEL ARCHITECTURE

The proposed system utilizes an AI-assisted web architecture for automated resume generation and job application tracking. The architecture is designed to provide efficient resume creation, ATS optimization, keyword analysis, and centralized job management through an intelligent and user-friendly platform. The system combines frontend technologies, backend processing, database management, and Natural Language Processing (NLP) techniques to deliver accurate and optimized resume outputs.

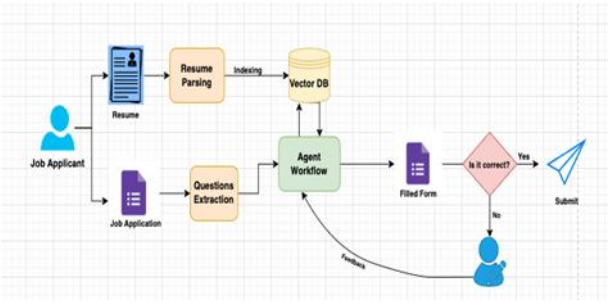
The frontend of the system is developed using HTML, CSS, and JavaScript to provide an interactive and responsive user interface. Users can enter personal information, educational qualifications, technical skills, certifications, projects, achievements, and work experience through structured forms. The frontend also includes dashboard interfaces for job application tracking, interview scheduling, and resume management.

The backend of the system is implemented using the Flask framework in Python, which handles user requests, resume generation, ATS analysis, and database operations. Flask provides lightweight and efficient server-side processing, making the system suitable for real-time web-based applications. The backend communicates with the NLP engine and database to process user information and generate optimized resume content dynamically.

The proposed system incorporates Natural Language Processing techniques for resume analysis and keyword optimization. The NLP module uses libraries such as spaCy and NLTK to extract important keywords, identify technical skills, and analyze resume content according to job descriptions. The system compares resume keywords with job description keywords to calculate ATS compatibility scores and provide improvement suggestions. This helps users create resumes that are more likely to pass automated recruitment screening systems.

The database module is used to securely store user profiles, generated resumes, and job application records. SQLite or MySQL databases are used for managing application data efficiently. The job tracking module allows users to monitor company applications, application status, interview dates, recruiter details, and follow-up reminders through a centralized dashboard.

Fig. 2. Model Architecture Diagram



VI. METHODOLOGY

The proposed approach is designed to automate resume generation and simplify job application management using Artificial Intelligence (AI), Natural Language Processing (NLP), and a user-friendly web interface. The system helps students and job seekers create professional ATS-friendly resumes and efficiently track multiple job applications through a centralized platform.

As a first step, user information is collected through structured input forms provided in the web application. The collected information includes personal details, educational qualifications, technical skills, certifications, projects, achievements, and work experience. This data serves as the foundation for generating professional resume content. The entered information is validated and organized into predefined categories to maintain consistency and improve resume formatting.

After collecting the user data, the system performs data preprocessing and content structuring. The input text is cleaned and formatted properly to remove inconsistencies, grammatical errors, and redundant information. This preprocessing stage improves the quality of generated resumes and helps the system produce more professional outputs. The processed data is then stored securely in the database for future access and modification.

The system uses Natural Language Processing (NLP) techniques to analyze resume content and optimize it according

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to Applicant Tracking System (ATS) requirements. NLP libraries such as spaCy and NLTK are used to extract important keywords, identify technical skills, and analyze professional terms present in the resume. The system compares resume content with job description keywords and calculates ATS compatibility scores. Based on this analysis, the system provides keyword recommendations and content improvement suggestions to increase the chances of resume selection during automated recruitment screening.

After the analysis phase, the resume generation module creates professional resume templates dynamically. The system arranges user information into structured resume sections such as education, skills, projects, certifications, and experience. Different resume templates are supported to improve visual presentation and professional formatting. The generated resumes are ATS-friendly and optimized for industry standards.

VII. RESULTS AND OUTCOMES

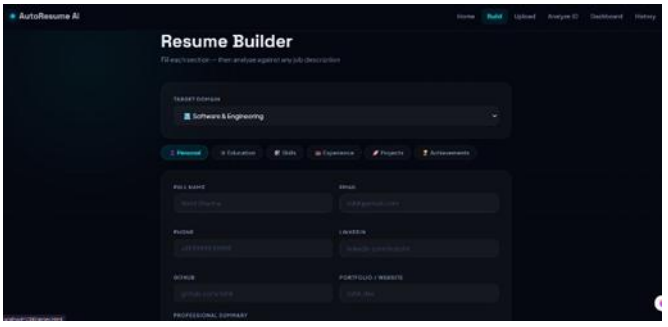
The proposed **Auto Resume AI Resume Generator and Job Tracker** system produced effective results in generating professional and ATS-friendly resumes automatically. The AI-based resume generation model successfully created structured resumes with proper formatting, keyword optimization, and personalized content based on user input. The generated resumes improved readability and compatibility with modern Applicant Tracking Systems used in recruitment processes.

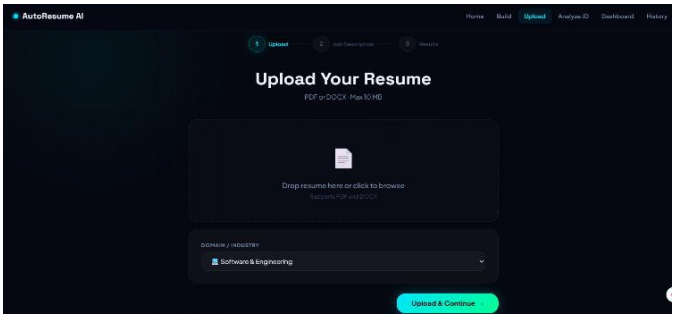
The resume analysis module effectively compared resumes with job descriptions and identified missing skills, keyword gaps, and improvement areas. The system provided useful recommendations that helped users improve resume quality and increase job matching accuracy. The skill-matching and recommendation system successfully suggested suitable job roles based on the user's qualifications, technical skills, and interests.

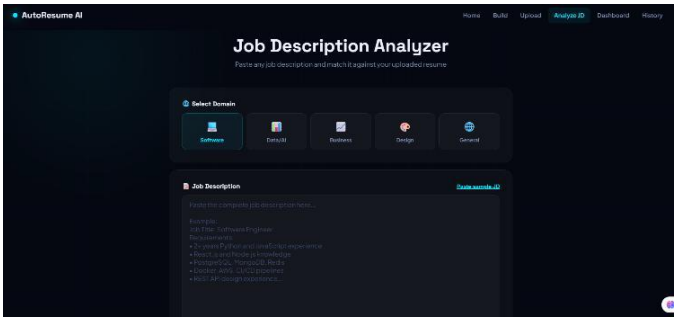
The job tracking module simplified the management of job applications by allowing users to monitor application status, such as Applied, Interview Scheduled, Selected, and Rejected. The centralized dashboard provided an organized view of company details, deadlines, interview schedules, and application progress, reducing manual effort and improving productivity.

The system also demonstrated good performance in real-time operation with low computational requirements, making it suitable for deployment on both web and mobile platforms. The integration of AI, NLP, and machine learning techniques improved automation, efficiency, and user experience in resume building and career management.

RESULTS SCREENSHOT :







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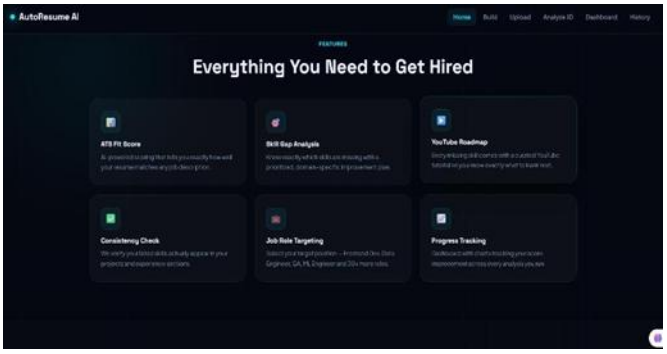

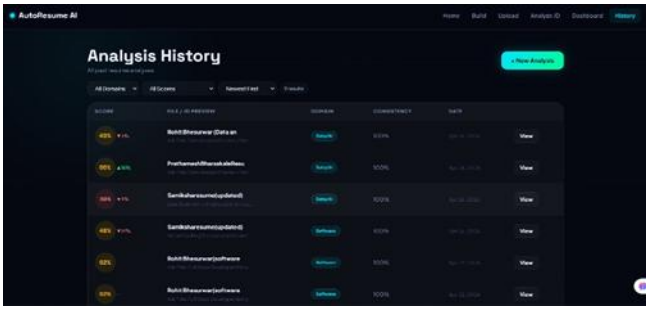

VIII. CONCLUSION

The proposed **Auto Resume AI Resume Generator and Job Tracker** system provides an efficient and intelligent solution for resume creation and job application management using Artificial Intelligence, Natural Language Processing, and Machine Learning techniques. The system successfully automates the process of generating professional, ATS-friendly resumes while reducing the manual effort required from users.

The integration of resume analysis, skill matching, and job recommendation modules helps users improve their resumes and identify suitable career opportunities based on their qualifications and interests. The job tracking feature further simplifies the recruitment process by allowing users to manage application status, interview schedules, and job-related information in a centralized platform.

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