

AI-Enabled Resume and Job Matching Platform

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Abstract

In the rapidly evolving digital employment landscape, artificial intelligence (AI) is transforming the way candidates connect with job opportunities. This paper presents an AI-Enabled Resume and Job Matching Platform that automates and optimizes the recruitment process for job seekers and administrators. The system allows users to sign up, log in, and create professional resumes and cover letters using guided templates. Uploaded resumes are automatically scanned for skills and keywords, and matched with real-time job openings through trusted APIs such as RapidAPI. An intelligent dashboard provides administrators with real-time statistics on user registrations, resumes, and cover letters generated, along with visual analytics to track engagement. This integrated system minimizes manual effort, ensures accurate job-to-skill matching, and enhances efficiency in recruitment management. The result is a seamless, data-driven job search experience that bridges the gap between job seekers and employers in an intelligent, automated manner.

1. Introduction

Finding employment that aligns with an individual's skills and aspirations remains a significant challenge in today's competitive job market. Traditional recruitment systems rely on manual searches, static resumes, and generalized job portals, resulting in inefficiencies and mismatches between candidate capabilities and employer

requirements.

The **AI-Enabled Resume and Job Matching Platform** addresses these challenges by automating resume creation, skill extraction, and job matching through advanced AI and web technologies. Users can create professional resumes, generate tailored cover letters, and receive instant job recommendations based on their profile data. Administrators benefit from a comprehensive dashboard that tracks user activity, enabling data-driven management of the system. The platform's primary goal is to create a unified digital environment where candidates can access relevant opportunities quickly and where administrators can maintain transparent oversight of system performance.

2.1 Existing System

Existing job portals like LinkedIn, Naukri, and Indeed provide job listings but lack deep AI integration for skill-based matching. Job seekers often spend significant time creating resumes separately, uploading them manually to different portals, and applying individually without intelligent filtering. Employers receive thousands of irrelevant applications, leading to inefficiencies in hiring and screening.

2.1.1 Drawbacks

- Manual and time-consuming job searches
- Low accuracy in job recommendations

- Lack of resume optimization and personalization
- No real-time job integration or data validation
- Limited admin visibility into platform activity

2.2 Proposed System

The proposed system introduces a centralized AI-based platform that automatically analyzes resumes, extracts key skills, and recommends real-time job listings through trusted APIs. The system's features include:

- **AI-driven Resume and Cover Letter Builder** with keyword optimization
- **Real-time Job Matching** using skill-based algorithms
- **Interactive Admin Dashboard** with analytics and visual charts
- **Secure User Authentication** and role-based access control

This automation ensures better alignment between candidate skills and job opportunities, reducing redundancy, enhancing productivity, and ensuring data-driven hiring.

2.3 Feasibility Study

Economic Feasibility

The system leverages open-source frameworks (Python, Django, MySQL) to reduce development cost. Deployment on cloud servers ensures scalability with minimal overhead.

Operational Feasibility

End users find the interface intuitive, supporting quick adoption. Admins can easily track users, monitor activity, and generate performance reports.

Technical Feasibility

Developed using robust technologies (Django, MySQL, RapidAPI), the system ensures reliability,

maintainability, and future scalability. Existing technical resources are sufficient to implement and extend the system.

3. System Specification

Component	Specification
Hardware	i3 Processor or above, 4GB RAM, 500GB HDD
Operating System	Windows 10
Front-End Technologies	HTML5, CSS3, Bootstrap, JavaScript
Back-End Technologies	Python, Django Framework
Database	MySQL
Web Browsers	Chrome, Edge, Internet Explorer

4. System Description

Front End

Developed using **HTML, CSS, Bootstrap, and JavaScript**, the front end ensures a responsive user interface that adapts across devices. It includes forms for registration, login, resume upload, and dashboards for users and admins.

Back End

Implemented using **Python and Django**, the backend manages all logical operations such as user authentication, file handling, resume parsing, and API communications. Django's ORM simplifies database queries, while its in-built security mechanisms ensure data protection.

Database

The **MySQL** database stores structured data for users, resumes, and job listings. It employs relational models to ensure data consistency and integrity, with triggers and stored procedures enhancing automation

5. Project Description

Admin Module

- Manages users, resumes, and cover letters
- Tracks user registrations and document statistics
- Displays activity trends and system analytics through visual charts

User Module

- Enables user registration, login, and resume uploads
- Extracts keywords from resumes using AI
- Matches and displays real-time jobs fetched through RapidAPI
- Allows users to generate resumes and cover letters with guided templates

Public Module

- Provides a home page with system overview, career tips, and employer section
- Offers easy access to registration and login for new users

The project also includes **E-R Diagrams** and **Data Flow Diagrams (DFDs)** that depict data movement between system components.

6. System Testing

Testing was performed at various stages:

- **Unit Testing:** Verified individual components like login, registration, API calls, and keyword extraction.
- **Integration Testing:** Ensured seamless data flow between modules (user ↔ admin ↔ API).
- **System Testing:** Validated full functionality under real-world conditions.

- **Acceptance Testing:** Confirmed compliance with project requirements and user expectations.

All modules passed the test cases successfully, ensuring reliability and robustness of the system.

7. System Implementation

The platform is deployed using Django's built-in server for backend processing and MySQL for persistent data storage. Admin and User interfaces are hosted as dynamic web pages allowing real-time updates. API integration ensures instant job fetching based on extracted keywords. Security measures include password hashing, session management, and restricted admin access.

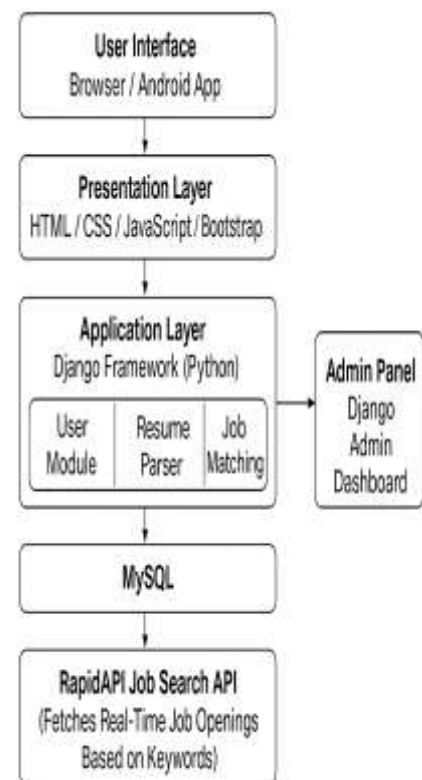


Fig 7.1 Implementation Structure

8. Conclusion and Future Enhancements

Conclusion

The AI-Enabled Resume and Job Matching Platform revolutionizes the job search process by automating resume creation, skill extraction, and

real-time job discovery. The combination of Django's powerful backend, AI-driven matching algorithms, and intuitive design results in a faster, smarter, and more transparent recruitment system. It improves employability for users and decision-making for administrators.

Future Enhancements

- Integration of **advanced NLP and ML models** for enhanced resume parsing
- **Predictive career analytics** to guide users in skill development
- **Chatbot assistants** for resume building and application support
- Integration with **multiple global job portals** for wider reach
- **Mobile app** extension for accessibility and notifications
- Implementation of **premium subscriptions** for advanced analytics and personalized guidance

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