



Smart Recruitment System Using Django with Resume-To-Job Match Analysis

M. S. V. S. K. Prabhavath, A. Lakshmi Narasimha, G. Pujitha, Ch. Aishwarya, A. Likhitha

Department of Computer Science and Engineering, D.N.R. College of Engineering & Technology, Balusumudi, Bhimavaram, Andhra Pradesh, India

To Cite this Article

M. S. V. S. K. Prabhavath, A. Lakshmi Narasimha, G. Pujitha, Ch. Aishwarya & A. Likhitha (2026). Smart Recruitment System Using Django with Resume-To-Job Match Analysis. International Journal for Modern Trends in Science and Technology, 12(04), 837-845. <https://doi.org/10.5281/zenodo.19644307>

Article Info

Received: 17 March 2026; Revised: 07 April 2026; Accepted: 10 April 2026.

Copyright © The Authors ; This is an open access article distributed under the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

KEYWORDS

Job Portal, Django, Resume Matching, Admin Dashboard, Log Entry, Job Applications, Recruitment System, Match Score, User Authentication, Web-Based Hiring Platform

ABSTRACT

The Smart Recruitment System is a Django-based web application that automatically matches candidate with suitable jobs using resume analysis. It extracts skills, experience, education from resume and compares them with job requirements using NLP techniques like TF-IDF and spaCy. The system calculates a match percentage and ranks candidates accordingly, Recruiters can post jobs and view top matches, while candidates can see relevant job opportunities. This system makes the recruitment process faster, easier, and efficient. The Agency Verse Job Portal is a dynamic web-based platform built using the Django framework that streamlines the recruitment process by connecting job seekers with employers. The platform includes a dedicated admin dashboard that displays applicant details, match scores, and suggestions based on the compatibility of their profiles with the job requirements. Additionally, all significant user and admin interactions are tracked using Django's native logging system (Log Entry), providing accountability and insight into application flow. This system enhances recruitment efficiency, reduces manual screening workload, and improves the overall candidate experience, making it ideal for HR departments and employment agencies.

1. INTRODUCTION

Organizations develop and sustain themselves by innovating new ideas to compete in the digital era. Innovation has led to a reduction in manual effort and an increase in machine-driven processes, especially with the integration of Artificial Intelligence (AI) in business

operations, which enhances efficiency and overall performance [1][2]. In modern recruitment processes, corporate firms and hiring agencies are required to process a large number of resumes daily. Handling such a vast volume of textual data is both time-consuming and stressful

for human recruiters. Data collected from resumes exists in various formats such as PDF, DOCX, single-column,

double-column, and free-form layouts, which may not be directly suitable for processing in specific applications. This leads to the need for resume parsing, which is the process of converting unstructured resume data (PDF, DOCX, JPEG, etc.) into a structured format. This transformation enables easier analysis, interpretation, and decision-making. Organizations increasingly rely on Information Extraction techniques to convert unstructured data into meaningful and organized formats [5].

Converting resumes into structured data significantly improves the efficiency of studying, analyzing, and understanding candidate profiles. However, manual extraction of such information is time-intensive and prone to human error. Therefore, it is essential to develop an automated intelligent system capable of extracting relevant information and determining candidate suitability for specific job roles. The growing adoption of AI in human resource management highlights its role in automating recruitment processes, improving decision-making, and reducing bias in hiring [4][6]. Additionally, global workforce trends emphasize the importance of AI-driven tools in talent acquisition and workforce transformation [3].

The foundation of this project is a resume automation system designed to streamline recruitment processes. The system includes an admin panel where administrators can log in and manage uploaded resumes. It utilizes technologies such as Regular Expressions (Regex), Natural Language Toolkit (NLTK), and SpaCy's phrase matcher to extract key information including Name, Address, Email, Phone Number, Nationality, Skills (both hard and soft skills), Education, Experience, Years of Experience, and Languages. The extracted information is then converted into a structured format (JSON) and stored in a database for further processing.

By leveraging AI and Natural Language Processing techniques, the proposed system enhances recruitment efficiency, reduces manual workload, and improves the accuracy of candidate selection. Such intelligent systems represent a significant advancement in modern hiring practices by enabling faster, unbiased, and data-driven recruitment decisions, ultimately contributing to organizational productivity and growth [1][2].

To overcome these challenges, there is a growing need for innovative platforms that integrate adaptive learning, gamification, and advanced analytics to deliver a holistic educational experience. Adaptive learning systems tailor content based on individual learner performance, enabling personalized learning paths that improve comprehension and retention [2].

Analytics plays a critical role in modern digital learning environments. Educational analytics provides instructors with valuable insights into student behavior, learning patterns, and performance metrics. This data-driven approach enables educators to make informed decisions, customize teaching strategies, and identify students requiring additional support. By combining adaptive learning with analytics, a continuous feedback loop can be established to enhance both teaching and learning outcomes [3].

Purpose

The primary purpose of a Smart Recruitment System using Django is to automate and optimize the initial stages of hiring by leveraging AI-driven analysis to match candidate resumes with specific job requirements. The integration of Artificial Intelligence in recruitment systems enhances organizational efficiency, improves decision-making, and delivers measurable business value through automation and intelligent data processing [1][2].

The system serves the following key objectives:

Automated Resume Screening: To replace manual, time-consuming reviews of hundreds of resumes with an automated engine that extracts technical skills, education, and experience. AI-based automation significantly reduces human effort and improves the speed of recruitment processes [1][5].

Intelligent Job Matching: To calculate a precise "match percentage" between a candidate's profile and a job description using Natural Language Processing (NLP) and similarity models such as Cosine Similarity or KNN. AI-driven matching systems improve accuracy by understanding semantic relationships between skills and job requirements [2][4].

Bias Reduction: To promote fairer hiring by evaluating candidates based on objective data and predefined criteria rather than subjective human judgment. AI systems help

reduce unconscious bias in recruitment, leading to more inclusive hiring practices [6].

Skill Gap Identification: To provide feedback to both recruiters and candidates by highlighting missing skills required for a specific role. This aligns with modern workforce trends emphasizing continuous learning, upskilling, and reskilling in AI-driven environments [3][6].

Candidate Ranking: To generate a ranked list of the most qualified applicants, enabling recruiters to focus on top-tier candidates. AI-based ranking systems improve hiring effectiveness by prioritizing the best matches [1][2].

Operational Efficiency: To significantly reduce the time-to-hire and administrative costs associated with traditional recruitment workflows. AI-enabled systems streamline recruitment pipelines and enhance overall organizational productivity [1][3].

Motivation

Developing a smart recruitment system using Django with resume-to-job matching addresses the critical inefficiencies and biases inherent in traditional hiring processes. The integration of Artificial Intelligence (AI) into recruitment workflows has been shown to significantly improve efficiency, accuracy, and decision-making in organizations [1][2].

Efficiency and Time Savings: Manual resume screening is a major bottleneck, with recruiters often spending only a few seconds reviewing each resume. AI-driven systems automate the extraction and ranking process, significantly reducing screening time and improving productivity [1][5].

Increased Matching Accuracy: Traditional keyword-based searches often fail to identify qualified candidates due to variations in terminology. Smart recruitment systems leverage Natural Language Processing (NLP) and machine learning models such as KNN to understand semantic relationships and compute document similarity, thereby improving matching accuracy [2][4].

Reduction of Human Bias: Automated systems help mitigate unconscious biases related to gender, age, or ethnicity by focusing strictly on skills, qualifications, and experience. This leads to more fair and inclusive hiring practices [6].

Actionable Candidate Feedback: These systems can identify skill gaps and provide meaningful feedback to candidates regarding missing qualifications. This aligns with modern workforce trends that emphasize continuous learning, upskilling, and reskilling [3][6].

Cost Reduction: Automation of repetitive recruitment tasks such as resume screening and interview scheduling reduces operational costs and improves overall efficiency in hiring processes [1][3].

Robust Backend Management: Django's Model-View-Template (MVT) architecture provides a secure and scalable framework for managing recruitment workflows, including authentication, data handling, and application tracking. Its compatibility with AI technologies enhances system reliability and performance [2].

Seamless AI Integration: As a Python-based framework, Django allows seamless integration with AI and data processing libraries such as NLTK for text analysis and Scikit-learn for machine learning models. This enables advanced resume parsing and intelligent decision-making capabilities [5].

Data Privacy and Security: Handling sensitive candidate information requires strong security measures. Django offers built-in protections against common vulnerabilities, ensuring safe management of Personally Identifiable Information (PII) and compliance with data protection standards [3].

Problem Statement

Traditional recruitment systems primarily rely on manual resume screening and basic keyword-based filtering, lacking advanced features such as intelligent resume parsing, semantic job matching, and real-time analytics. As a result:

- Recruiters experience high workload and reduced efficiency due to the need to manually review large volumes of resumes [1][5]
- Candidate evaluation is not personalized or accurately matched to job requirements due to limitations of keyword-based approaches [2][4]
- Organizations lack sufficient data-driven insights for timely and effective hiring decisions [3]

Additionally, traditional hiring processes are often influenced by subjective judgment, leading to unconscious

bias and inconsistencies in candidate selection, which limits fairness and effectiveness in recruitment [6].

Therefore, there is a need for an integrated smart recruitment system that combines AI-driven resume parsing, intelligent job matching, and advanced analytics to create a more efficient, accurate, and unbiased hiring process [1][2].

2 Literature Survey

[1] Influence of Artificial Intelligence (AI) on Firm Performance The Business Value of AI-Based Transformation Projects

Wamba-Taguimdje et al. (2022) examined how AI transformation projects improve firm performance by enhancing decision-making and optimizing business processes. The study highlights that successful AI adoption depends on organizational readiness, leadership involvement, and alignment with core business strategies. It emphasizes the importance of a structured digital transformation approach to achieve better returns on investment. The findings also indicate that AI solutions are scalable across industries and that cultural transformation plays a crucial role alongside technological implementation.

[2] Artificial Intelligence in Business: From Research and Innovation to Market Deployment

Soni et al. (2020) provide an overview of the role of Artificial Intelligence in business, highlighting its transition from research to real-world applications. The study emphasizes how AI enables automation, improves productivity, and supports data-driven decision-making across various domains. It also discusses challenges such as ethical concerns and regulatory issues. The authors conclude that AI plays a key role in reducing costs, driving innovation, and requires continuous learning for sustained benefits.

[3] Global Human Capital Trends in the AI Era

Deloitte (2024) highlights key changes in workforce expectations and the growing role of AI in shaping future employment. The report emphasizes adaptability, human-centric leadership, and collaboration between humans and AI systems. It discusses the need for reskilling, ethical AI integration, and restructuring organizational workflows. The study concludes that balancing technological advancement with employee wellbeing is essential for successful AI-driven transformation.

[4] Upskilling Workforce for AI in Multinational Corporations

Jaiswal et al. (2022) examine how multinational corporations are upskilling employees to adapt to AI-driven environments. The study highlights the importance of continuous learning and effective training models in developing AI-related competencies. It discusses how organizations redefine job roles and improve employee engagement through proactive upskilling. The authors conclude that investing in human capital and adopting flexible learning approaches is essential for successful AI integration.

[5] AI in Training and Development Practices

Maity (2019) explores the role of Artificial Intelligence in enhancing training and development through personalized and adaptive learning systems. The study highlights how AI can automate content delivery, track progress, and provide tailored feedback to improve learning outcomes. It emphasizes the shift toward data-driven and AI-supported learning environments. The paper concludes that integrating AI into training programs increases efficiency, engagement, and overall workforce development effectiveness.

[6] Impact of AI on Workforce Skills and Reskilling

Morandini et al. (2023) examine how AI technologies are reshaping workforce skill requirements, emphasizing the need for upskilling and reskilling. The study highlights the importance of both technical and soft skills in AI-driven environments. It also discusses how organizations can reduce resistance to AI through training and effective communication. The authors conclude that continuous learning and strong leadership are essential for successful digital workforce transformation.

3 Proposed Methodology

The Smart Recruitment System using Django is a web-based platform designed to overcome the limitations of traditional recruitment methods by introducing automation, intelligence, and centralization. The system provides a single integrated portal where job seekers can apply for jobs by uploading their resumes, and recruiters can efficiently manage job postings and applications.

A core feature of the proposed system is the resume-to-job matching mechanism, which analyzes the content of uploaded resumes and compares it with job descriptions using text similarity techniques. Based on this analysis, the

system generates a match percentage, enabling recruiters to quickly identify candidates who best meet the job requirements. The system includes a centralized admin dashboard that displays applicant details, match scores, and application statistics in a structured manner. Additionally, the platform uses Django's logging mechanism to record all important administrative activities, ensuring transparency, traceability, and accountability throughout the recruitment process. Overall, the proposed system reduces manual effort, improves decision accuracy, and provides a scalable and cost-effective solution suitable for organizations of different sizes.

3.1 System Architecture

The above diagram illustrates the overall architecture of the **Smart Recruitment System**, designed to automate resume processing and job matching. The system is structured into multiple layers, including the User Layer, Application Layer, and Database Layer, with interactions between job seekers, employers, and administrators.

1. User Layer

The system supports three primary users:

- Job Seeker: Applies for jobs, uploads resumes, and views application status.
- Employer: Posts job vacancies and reviews suitable candidates.
- Administrator: Manages the system, monitors data, and controls recruitment operations.

2. Application Layer (Frontend Interface)

The frontend provides an interactive interface for all users:

- Login/Register Module: Handles user authentication for job seekers and employers.
- Job Seeker Panel: Allows users to apply for jobs and track application status.
- Employer Panel: Enables employers to post job details and manage applicants.
- Application Status Viewer: Displays applied job status for candidates.
- Admin Panel: Provides system control for managing users, job postings, and data.

3. Processing Layer (Backend Logic)

The backend handles system operations and business logic:

- Resume Processing Engine: Extracts structured data from resumes using NLP tools (Regex, NLTK, SpaCy).
- Job Matching System: Matches candidate profiles with job

requirements.

- Application Management: Tracks job applications and updates status.
- Data Management Module: Handles communication between frontend and database.

4. Database Layer

The system uses a centralized database to store and manage data:

- User Data: Stores job seeker and employer details.
- Resume Data: Contains extracted structured information from resumes.
- Job Data: Stores job postings and requirements.
- Application Data: Maintains job application status and candidate records.

5. System Workflow

1. Users log in or register through the system interface.
2. Job seekers upload resumes and apply for jobs.
3. Employers post job vacancies and view applicants.
4. The system processes resume and extracts relevant information.
5. Candidates are matched with job requirements.
6. Data is stored in the database and managed by the administrator.
7. The system updates application status and displays results to users.

6. Key Features of the Architecture

- Automated Resume Parsing using NLP techniques
- Intelligent Job Matching and Candidate Selection
- Centralized Data Management System
- Role-Based Access for Users, Employers, and Admin
- Scalable and Efficient Recruitment Workflow
- Reduced Manual Effort and Faster Hiring Process

System Architecture diagram

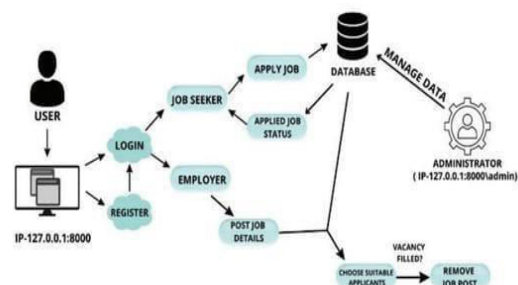


Fig:3.1 System Architecture

3.2 Use Case diagram

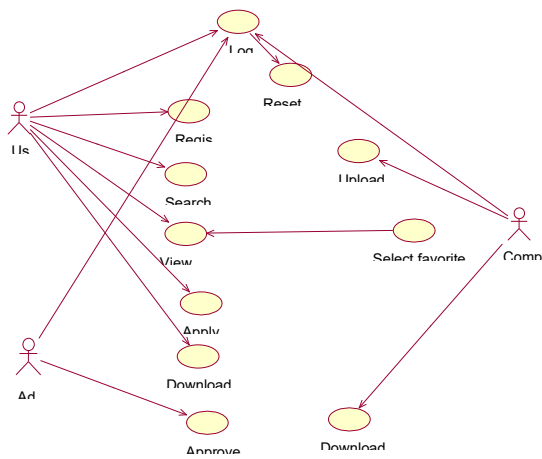


Fig:3.2 Use Case Diagram

A use case diagram in the Unified Modeling Language (UML) is a type of behavioral diagram defined by and created from a Use-case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies between those use cases. The main purpose of a use case diagram is to show what system functions are performed for which actor. Roles of the actors in the system can be depicted.

3.3 Class diagram

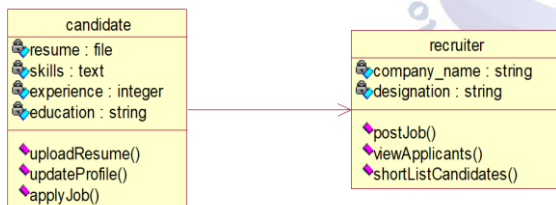


Fig: 3.3 Class Diagram

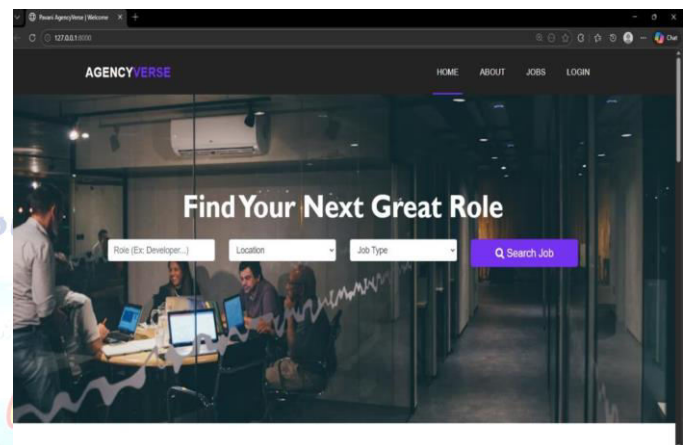
The class diagram is used to refine the use case diagram and define a detailed design of the system. The class diagram classifies the actors defined in the use case diagram into a set of interrelated classes. The relationship or association between the classes can be either an "is-a" or "has-a" relationship. Each class in the class diagram may be capable of providing certain functionalities. These functionalities provided by the class are termed "methods" of the class. Apart from this, each class may have certain "attributes" that uniquely identify the class.

4 Results

User Authentication Interface of Adaptive LMS

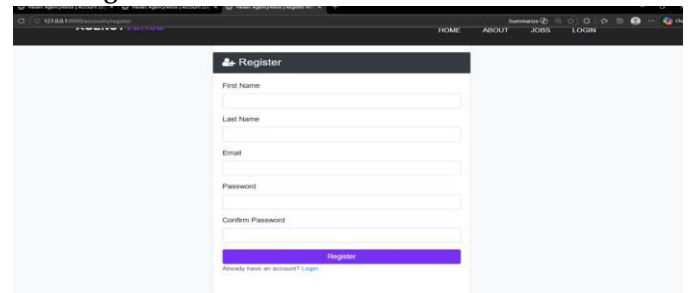
The Smart Recruitment System is an AI-powered platform designed to automate and improve the hiring process. It enables job seekers and employers to interact efficiently through a user-friendly interface. The system uses resume parsing and NLP techniques to extract information and perform intelligent job matching. Overall, it reduces manual effort, improves accuracy, and speeds up recruitment.

Home Page – Agency Verse Recruitment System



This image represents the home page of the AgencyVerse recruitment platform, designed to provide an intuitive entry point for users. It features a clean and modern user interface with a navigation bar that includes options such as Home, About, Jobs, and Login. The central section highlights a job search feature where users can filter roles based on job title, location, and job type. The visually appealing background enhances user engagement and provides a professional look. Overall, the page is designed to offer a seamless job search experience and easy navigation for both job seekers and employers.

User Registration:

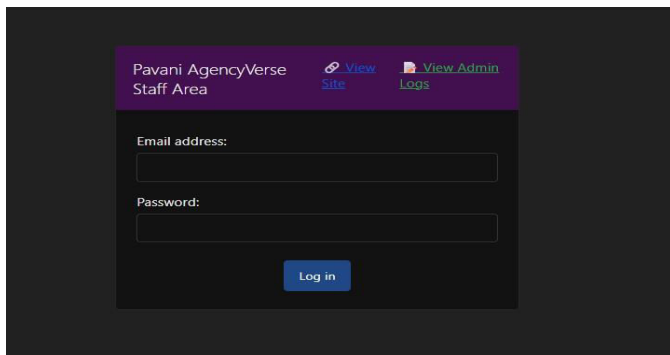


The User Registration Page, which allows new users to create an account. The interface consists of:

- **First Name Field:** Captures the user's first name for identification.

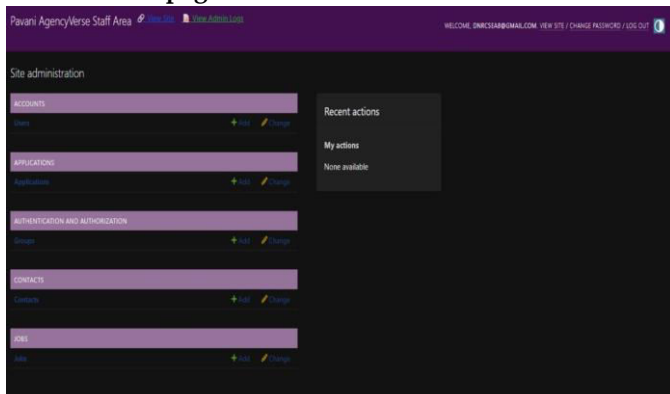
- **Last Name Field:** Stores the user's last name for complete profile details.
- **Email Field:** Used for account creation and future login authentication.
- **Password & Confirm Password Fields:** Ensure secure account setup with password validation.
- **Register Button:** Submits the user details to create a new account in the system.

Admin login page



- **Email Address Field:** Used for admin identification and authentication.
- **Password Field:** Ensures secure login with protected credentials.
- **Log In Button:** Allows the administrator to access the system dashboard.
- **View Site Option:** Enables quick navigation to the main website interface.
- **View Admin Logs Option:** Provides access to system activity and logs for monitoring.

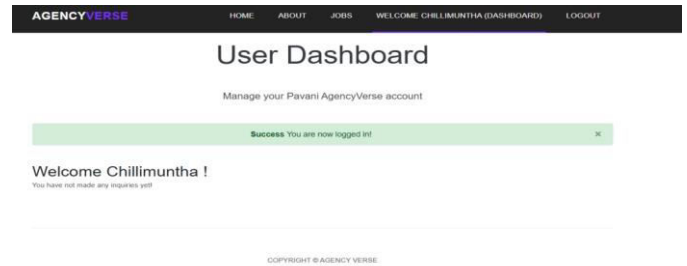
Admin home page:



- **Users Section:** Enables the admin to add and manage user accounts.
- **Applications Section:** Allows tracking and management of job applications.
- **Groups Section:** Manages user roles and permissions within the system.

- **Contacts Section:** Stores and manages contact-related information.
- **Jobs Section:** Allows the admin to add, update, and manage job postings.
- **Recent Actions Panel:** Displays recent administrative activities for monitoring system changes.

User Dashboard:



1. Dashboard Overview

The User Dashboard provides a clear overview of user-related information and system status. It displays key elements such as:

- **Welcome Message:** Greets the logged-in user with their name for personalization.
- **Login Status Notification:** Confirms successful login into the system.
- **User Activity Section:** Indicates whether the user has performed any actions such as job applications or inquiries.

2. Navigation Panel

The top navigation bar allows users to access different modules easily:

- **Home:** Redirects to the main landing page
- **About:** Provides information about the platform
- **Jobs:** Allows users to explore available job opportunities
- **Dashboard:** Displays the current user dashboard
- **Logout:** Enables secure exit from the system

3. User Controls

The dashboard includes essential user control options:

- **Account Management:** Users can manage their profile and personal details
- **Session Control:** Logout option ensures secure session termination
- **Status Alerts:** Displays system messages such as successful login

4. Key Features of the User Dashboard

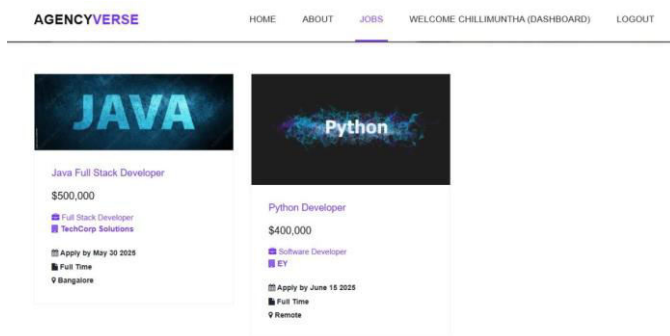
Personalized User Experience with welcome and status updates

- Easy Navigation across different system modules
- Real-Time Feedback through system notifications
- Secure Access with authentication and session

management

- Simple and User-Friendly Interface Design

OUTPUTS



1. Page Overview

The Jobs page displays multiple job postings in a card-based layout. Each job listing includes essential details such as job title, salary, company name, job type, application deadline, and location, enabling users to quickly scan and compare opportunities.

2. Job Cards Section

Each job is presented in a structured card format with the following details:

- **Job Title:** Displays the role (e.g., Java Full Stack Developer, Python Developer)
- **Salary Information:** Shows the offered compensation package
- **Company Name:** Identifies the hiring organization
- **Job Type:** Indicates whether the role is full-time or part-time
- **Application Deadline:** Specifies the last date to apply
- **Location:** Shows job location (onsite/remote)

3. Navigation Panel

The top navigation bar provides easy access to:

- **Home:** Redirects to the landing page
- **About:** Provides platform details
- **Jobs:** Displays available job listings
- **Dashboard:** Accesses user dashboard
- **Logout:** Allows secure exit from the system

4. Key Features of the Jobs Page

- Organized Job Listings with clear and structured information
- Easy Job Comparison through card-based UI
- User-Friendly Navigation for seamless browsing
- Real-Time Job Availability Updates
- Clean and Responsive Interface Design

5 Conclusion

The Smart Recruitment System using Django with Resume-to-Job Match Analysis provides an intelligent and automated solution to modern recruitment challenges. The system successfully integrates web development and Natural Language Processing (NLP) techniques to analyze resumes and match them with job descriptions efficiently. By using algorithms like TF-IDF and Cosine Similarity, the system calculates accurate similarity scores, reducing manual screening time and human bias in hiring. The Smart Recruitment System demonstrates how AI-driven solutions can transform traditional hiring processes into a faster, smarter, and more reliable digital system. The Organization gets a lot of applicants for each job posting. It is difficult to locate the proper candidate's application from a sea of resumes. It takes a lot of time and resources to categorization a candidate's resume. An automated resume parser is developed to get the necessary information from the resume of a candidate. The candidate's resume will be suggested by the system to HR. The email was sent to the candidates based on their resume rank. A normal resume is a compilation of information about a person's work experience, academic background, qualifications, and personal details. These elements might be present in a variety of ways or not at all. It's difficult to keep up with the jargon used in resumes. A resume is made up of corporate names, institutions, degrees, and other information that can be written in a variety of ways. It will take time to review all the resume by an individual. Machine works faster than human and their accuracy to do any task was also good. Therefore, I have made a system which includes machine learning that extract the important information from resumes within a minute or less than a minute. The hiring individual can use this system for hiring any individual.

6 Future Scope

AI-Based Job Recommendations System can suggest suitable jobs based on skills, experience, and interests. Mobile Application Development Android and iOS apps for anytime, anywhere access. Real Time Notifications Email, SMS, or app alerts for new jobs and application status. Online Interview Feature Built-in video interview facility for recruiters and candidates. Resume Builder Tool Help users create professional resumes inside the portal Skill Assessment Tests Conduct online tests to evaluate candidate abilities Multi-Language Support Support for different regional and global languages Integration with Social Platforms Connect with LinkedIn, GitHub, etc., for

profile import AI Chatbot Assistance 24/7 support for user queries and guidance Cloud-Based Deployment Improve scalability, performance, and data security

Conflict of interest statement

Authors declare that they do not have any conflict of interest.

REFERENCES

- [1] S.-L. Wamba-Taguimdje, S. Fosso Wamba, J. R. Kala Kamdjoug, and C. E. Tchatchouang Wanko, "Influence of artificial intelligence (AI) on firm performance: The business value of AI-based transformation projects," *Bus. Process Manag. J.*, vol. 26, pp. 1893–1924, 2022. [CrossRef]
- [2] N. Soni, E. K. Sharma, N. Singh, and A. Kapoor, "Artificial Intelligence in Business: From Research and Innovation to Market Deployment," *Procedia Comput. Sci.*, vol. 167, pp. 2200–2210, 2020. [CrossRef]
- [3] Deloitte, "2024 Global Human Capital Trends." [Online]. Available: <https://www2.deloitte.com/ro/en/pages/human-capital/articles/2024-Global-Human-Capital-Trends.html>. [Accessed: Mar. 10, 2024].
- [4] A. Jaiswal, C. J. Arun, and A. Varma, "Rebooting employees: Upskilling for artificial intelligence in multinational corporations," *Int. J. Hum. Resour. Manag.*, vol. 33, pp. 1179–1208, 2022. [CrossRef]
- [5] S. Maity, "Identifying opportunities for artificial intelligence in the evolution of training and development practices," *J. Manag. Dev.*, vol. 38, pp. 651–663, 2019. [CrossRef]
- [6] S. Morandini, F. Fraboni, M. D. Angelis, G. Puzzo, D. Giusino, and L. Pietrantonio, "The Impact of Artificial Intelligence on Workers' Skills: Upskilling and Reskilling in Organizations," *Informing Sci. Int. J. Emerg. Transdiscipl.*, vol. 26, pp. 39–68, 2023. [CrossRef] [PubMed]
- [7] M. H. Jarrahi, "Artificial intelligence and the future of work: Human-AI symbiosis in organizational decision making," *Bus. Horiz.*, vol. 61, pp. 577–586, 2018. [CrossRef]
- [8] World Economic Forum (WEF), "The Future of Jobs Report 2018," Centre for the New Economy and Society, Geneva, Switzerland, 2018. [Online]. Available: https://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf. [Accessed: Feb. 19, 2024].
- [9] C. B. Frey and M. A. Osborne, "The future of employment: How susceptible are jobs to computerization?" *Technol. Forecast. Soc. Chang.*, vol. 114, pp. 254–280, 2017. [CrossRef]
- [10] IBM, "Global AI Adoption Index 2022," 2023. [Online]. Available: <https://www.ibm.com/watson/resources/ai-adoption>. [Accessed: Mar. 7, 2024].
- [11] D. Vrontis, M. Christofi, V. Pereira, S. Y. Tarba, A. Makrides, and E. Trichina, "Artificial intelligence, robotics, advanced technologies, and human resource management: A systematic review," *Int. J. Hum. Resour. Manag.*, vol. 33, pp. 1237–1266, 2021. [CrossRef]