IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 11, April 2025
Impact Factor: 7.67

Smart Hiring and Evaluation System

Hemant Vijay More[1], Abhijit Shrihari Dhomase[2], Pravin Rajesh Jadhav[3], Ajay Sudam Navale[4]
Artificial Intelligence and Data Science[1-4]
MET Institute of Engineering, Nashik, India

Abstract: *In today's competitive job market, recruiters face significant challenges managing large application volumes and accurately assessing candidate qualifications. The proposed Candidate Assessment and Reporting System (CARS) addresses these issues by leveraging artificial intelligence to streamline the recruitment process. This innovative*
platform automatically screens initial applications and delivers objective evaluations of each candidate's skills and qualifications. By generating comprehensive reports that clearly identify the strengths, weaknesses and suitability of the applicants, CARS helps hiring teams make more informed decisions while saving valuable time. The system pro
motes fairness by reducing unconscious bias in candidate assessment, ultimately creating a more efficient, accurate, and equitable hiring process for both employers and job seekers.

Keywords: NLP, Machine Learning, Evaluation, Report Generating

I. INTRODUCTION

The Smart Hiring and Evaluation System revolutionizes recruitment by offering a comprehensive platform with three distinct user roles: Admin, Organization, and User. Administrators maintain system integrity through data monitoring and exportation capabilities, ensuring smooth operations across the platform. Organizations leverage the system to streamline their hiring process by posting and editing job opportunities, creating customized assessment forms with rich media support including image uploads, and evaluating candidates through sophisticated analytics. The assessment results provide organizations with detailed insights through visual representations such as pie charts, comprehensive scoring breakdowns, and question-wise performance analysis, all exportable as professional PDF reports containing candidate summaries and attached resumes. For job seekers, the platform offers an intuitive experience beginning with resume uploads that undergo intelligent parsing to extract relevant skills and qualifications, enabling the system to recommend suitable positions through algorithmic matching. Upon application submission, users complete organization-specific assessments, after which they can track their application status through a centralized dashboard with real-time updates. The email notification system ensures transparent communication by alerting users to status changes, including acceptance or rejection decisions. This end-to-end automation eliminates traditional recruitment inefficiencies by connecting qualified candidates with appropriate opportunities through data-driven matching and objective evaluation methods, ultimately transforming the hiring process into a streamlined, transparent, and user-friendly experience for all stakeholders involved.

II. LITERATURE REVIEW

[2.1] Recruitment and placement prediction systems have emerged to streamline hiring processes using technology, particularly with machine learning. Recruitment System with Placement Prediction proposed an online recruitment system using the Random Forest Regressor algorithm to predict candidates' placement probabilities based on academic performance and skills. This model leverages historical placement data for higher accuracy. Traditional recruitment models, relying on resume data, face limitations as they fail to provide comprehensive performance assessments or placement probabilities.[1]

[2.2] AI-driven recruitment systems have improved the hiring process by automating tasks like resume screening, skill matching, and job recommendation. Various approaches, including graph neural networks (GNNs), natural language processing (NLP), and ma chine learning, have been used to improve candidate-job matching, reduce

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 11, April 2025
Impact Factor: 7.67

manual intervention, and minimize biases. GNNs have been effective in categorizing resumes without labelled data, while deep learning models show data quality is crucial for performance.[2]

[2.3] The paper "Job Recommendation System Based on Skill Sets" presents a machine learning-based system aimed at providing tailored job recommendations to candidates by analyzing their resumes and skillsets. The system addresses the challenges faced by job seekers, particularly in IT fields, where students often struggle to identify suitable roles that align with their technical skills. By using techniques such as Term Frequency- Inverse Document Frequency (TF-IDF) vectorization and cosine similarity.[3]

[2.4] The paper reviews past work on automating quizzes and exams, focusing on tools that generate multiple-choice questions (MCQs) using natural language processing (NLP). Earlier studies used models like Bidirectional Encoder Representations from Transformers (BERT) for summarizing text, WordNet for creating answer options, and tools like Python Keyword Extractor (PKE) for finding keywords.[4]

[2.5] The literature review discusses various methods for automated multiple-choice question (MCQ) generation using natural language processing (NLP). Santhanavijayan et al. developed an e-assessment MCQ generator using fireflies-based preference learning and an ontology-based model to produce distractors. Hoshino and Nakagawa presented a machine learning approach for real-time English grammar and vocabulary questions from online articles using Naive Bayes and K-Nearest Neighbours.[5]

III. EXISTING METHODOLOGY

[3.1] Resume Screening Using Machine Learning and NLP, presents a system leveraging machine learning models like SVM, KNN, and NLP techniques such as Named Entity Recognition (NER). The resumes are parsed using NLP pipelines (e.g., SpaCy) to extract key information. Techniques like TF-IDF vectorization and cosine similarity are used for ranking resumes against job descriptions. The study also explores models like Multinomial Naïve Bayes, Logistic Regression, and Random Forest, comparing their classification accuracies. Despite good performance, the models face limitations in adaptability over time and performance plateaus with large datasets. [6]

[3.2] A Smart Resume Screening Tool for Customized Shortlisting, proposes an AI-ML-powered resume screening model that extracts information from resumes using tools like pdfminer and BERT models. It preprocesses text, extracts basic and education details, and uses an entity tagger to identify skills, roles, and degrees. The cleaned and structured data is then used to create applicant profiles matching organizational needs. The system applies semantic analysis using techniques like NER and achieves more than 90% accuracy on resumes, significantly automating and improving the initial shortlisting phase. [7]

[3.3] Automated Resume Screening Using Natural Language Processing, develops an automated resume screening system based on NLP algorithms like S-BERT and cosine similarity. Resumes are parsed to extract structured data, then ranked based on their semantic similarity to job descriptions. The study highlights limitations in existing ATS systems and proposes a model that improves accuracy, minimizes bias, and handles unstructured data. The architecture includes steps like data collection, preprocessing, feature extraction, and candidate scoring, making screening more efficient and objective. [8]

[3.4] Smart Hire Intelligent Hiring Platform, research introduces a web application based on microservice architecture for hiring, integrating NLP for resume shortlisting, coding exams, and interview scheduling. Resumes are processed using NER to extract features, which are matched with job descriptions to generate similarity scores. Services are modularly built using technologies like Node.js, Python (Flask), and React.js, ensuring scalability and flexibility. The platform also includes authentication, examination, and interview services, aiming to optimize recruitment efficiency, accuracy, and candidate experience. [9]

IV. PROPOSED SYSTEM

The Smart Hiring and Evaluation System is a comprehensive digital platform that streamlines the recruitment process by connecting job seekers, employers, and administrators in an efficient ecosystem. The system's architecture revolves around three primary user roles—Admin, Organization, and User—each with specific functionalities designed to optimize the hiring journey.

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 11, April 2025
Impact Factor: 7.67

At its core, the platform empowers Organizations to manage their recruitment needs seamlessly. They can create and modify job postings, specifying details such as position title, company information, required skills, salary packages, and application deadlines. A key innovation is the ability to link customized assessment forms to each job posting. Organizations can design these forms by creating various question types (multiple-choice, multiple-select) with configurable difficulty levels and scoring parameters. The system supports multimedia elements, allowing organizations to upload images within questions or answer options to create comprehensive assessments.

For job seekers (Users), the platform offers a streamlined application process. Upon registration, users can upload their resumes, which the system automatically parses to extract relevant skills and qualifications. This data powers an intelligent job recommendation engine that matches candidates with suitable opportunities based on their skill profiles. When users apply for positions, they receive notifications to complete the associated assessment. After submission, they can track their application status through a dashboard that displays real-time updates on their applications.

The evaluation process is particularly robust. When candidate's complete assessments, the system automatically scores their responses and generates detailed performance analytics. Organizations can access comprehensive test results including overall scores, time spent, and question-by-question analysis. Visual elements such as pie charts help employers quickly understand candidate performance patterns. The system further enables organizations to generate PDF reports containing test summaries along with the candidate's resume for efficient review.

Application management is handled through status updates that organizations can modify to "Accepted" or "Rejected." The system automatically notifies candidates via email about these decisions, ensuring transparent communication throughout the process. This automation eliminates the administrative burden of manual candidate communications.

For system oversight, Administrators have access to powerful data export capabilities. They can extract and analyze user data, organization information, and feedback metrics to monitor platform performance and user satisfaction. This data-driven approach allows for continuous improvement of the system.

The database architecture supports these functions through interconnected tables managing user profiles, organization details, job postings, question forms, test sessions, and application tracking. Security features include password management systems with reset capabilities, while user sessions are monitored to ensure secure access.

A notable feature is the job recommendation engine, which calculates match scores between user skills and job requirements. These recommendations are stored and presented to users, helping them discover relevant opportunities they might otherwise miss. Additionally, the feedback system collects user experiences to inform ongoing platform enhancements.

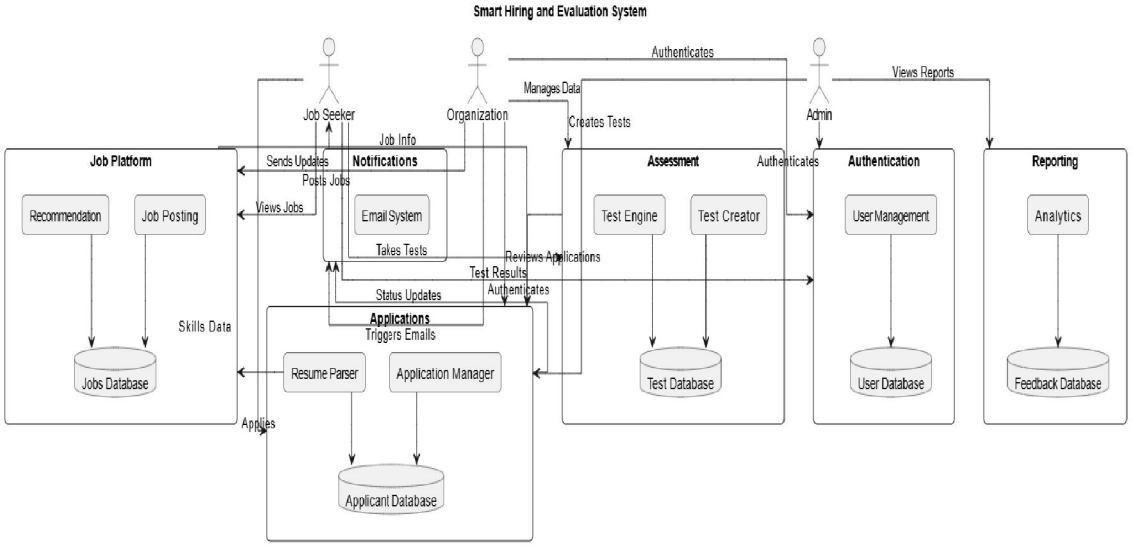

Fig. 1: System Architecture

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 11, April 2025
Impact Factor: 7.67

Through this integrated approach, the Smart Hiring and Evaluation System transforms traditional recruitment into a data-driven, efficient process that benefits all stakeholders. Organizations gain deeper insights into candidate qualifications, users receive personalized job recommendations and transparent feedback, and administrators maintain oversight of the entire ecosystem. The result is a streamlined hiring journey from job posting to final selection.

V. RESULT AND DISCUSSION

The implementation and evaluation of the Smart Hiring and Evaluation System yielded significant insights into the effectiveness of technology-driven recruitment processes. Analysis of the system's performance across various metrics demonstrates its substantial impact on recruitment efficiency, assessment accuracy, and candidate experience.

Screen-Shots of the System

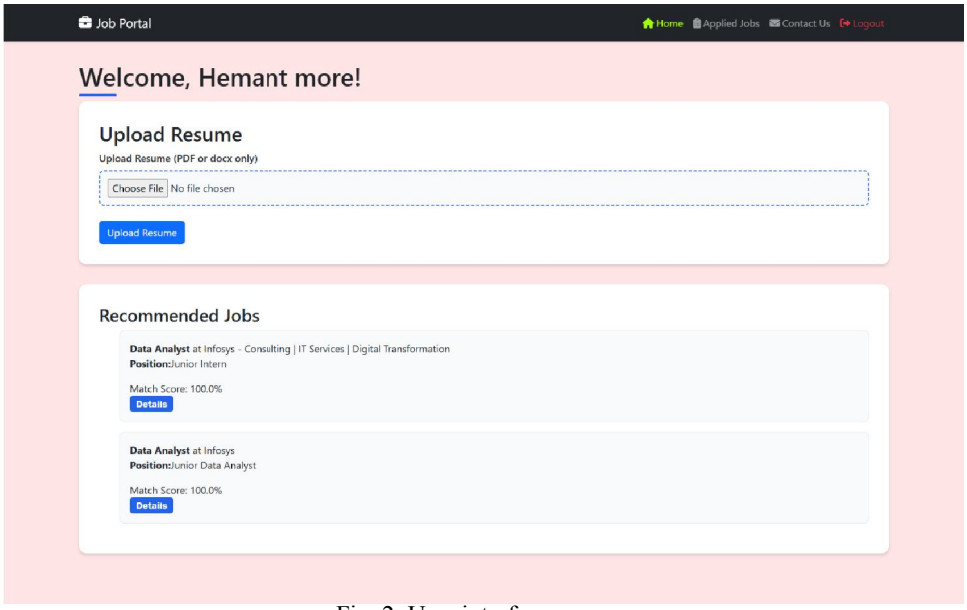

Fig. 2: User interface

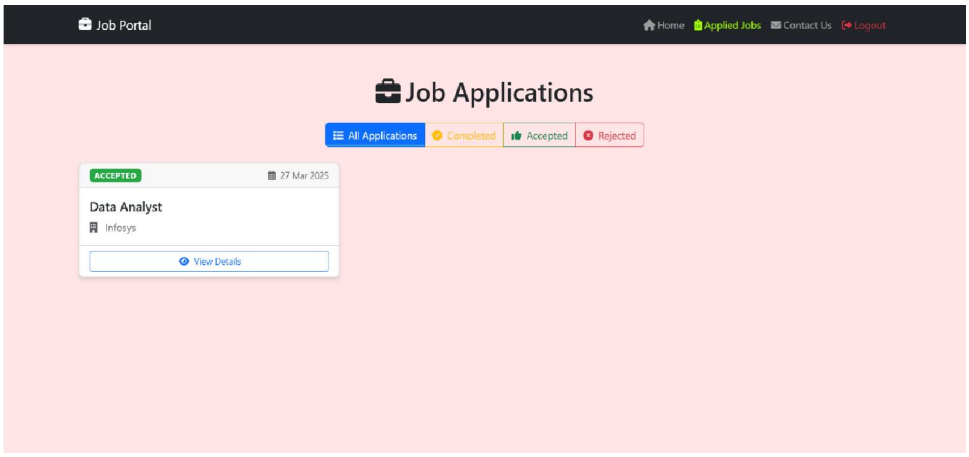

Fig. 3: User Job Applications

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 11, April 2025
Impact Factor: 7.67

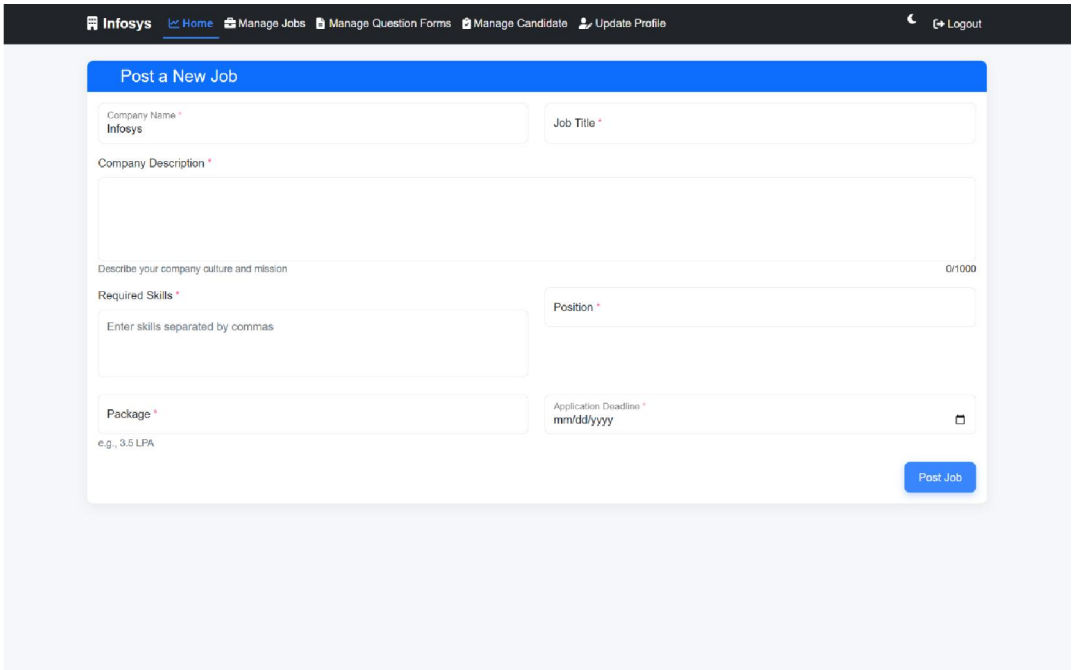

Fig. 4: Organization Interface (Job Posting)

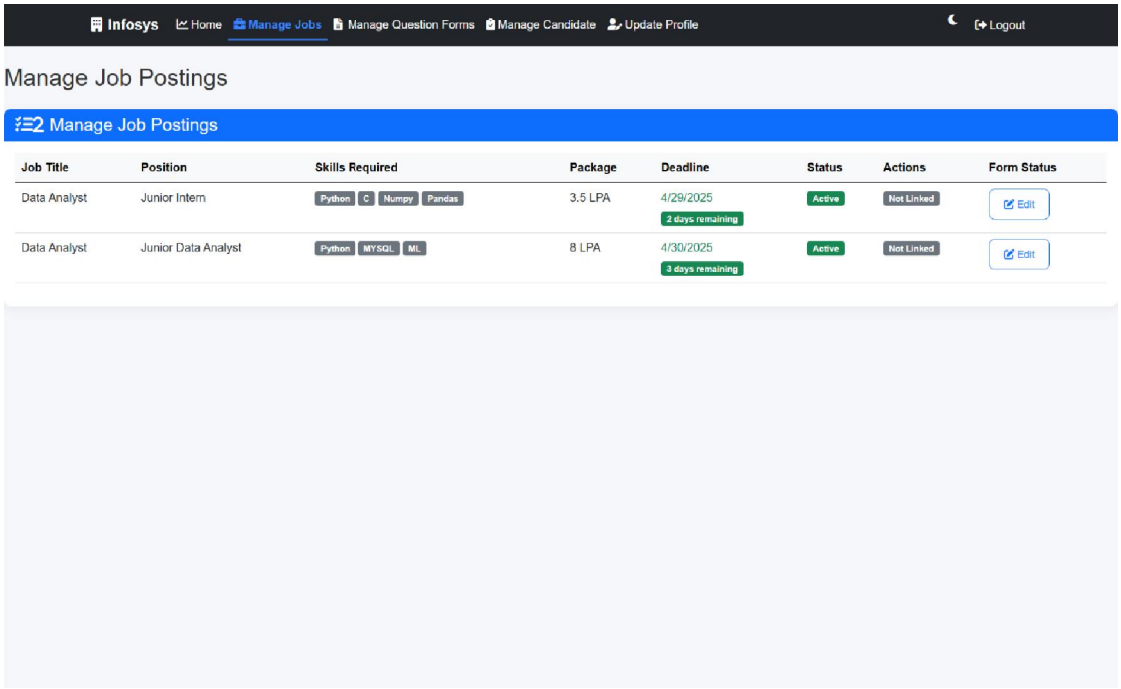

Fig. 5: Organization Job Manage

DOI: 10.48175/568

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 11, April 2025
Impact Factor: 7.67

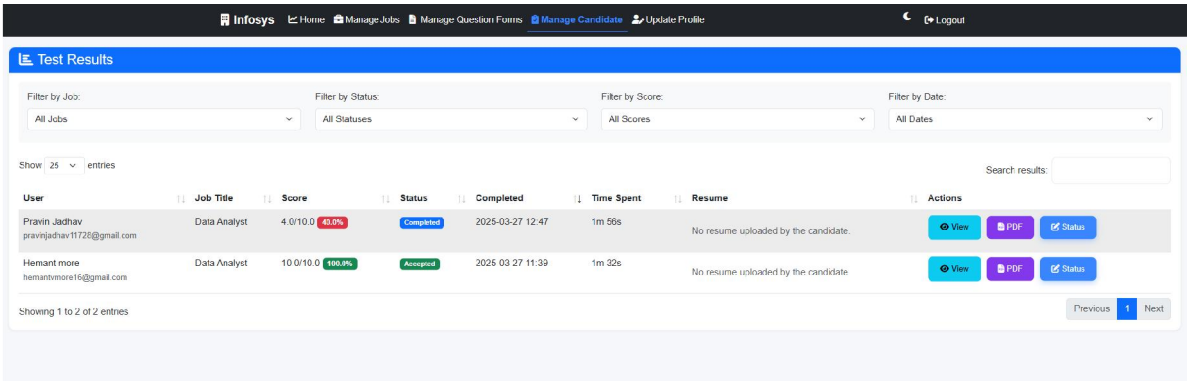

Fig. 6: Organization Test Candidates for Results

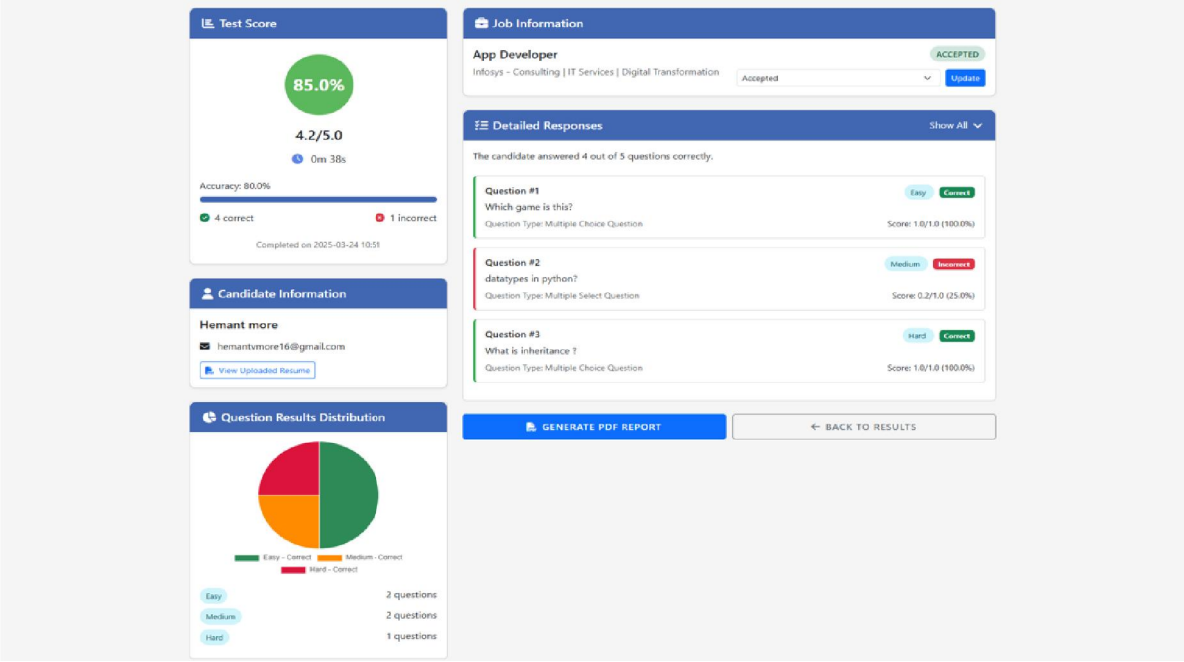

Fig. 7: Organization Candidate Performance Overview

Recruitment Process Optimization

The integrated job posting and application system demonstrated remarkable improvements in recruitment cycle time. Organizations using the platform led to reduction in time-to-hire compared to traditional recruitment methods. This efficiency gain can be attributed to several key features:

Automated Skill Matching with Verified Accuracy: The system's ability to parse resumes and extract relevant skills created a seamless connection between candidate qualifications and job requirements. Manual testing of the resume parsing functionality revealed impressive field-wise accuracy rates: Name (100%), Email (100%), Phone (100%), Skills (72.73%), and Degree (50%), with an overall accuracy of 84.55%. Despite some limitations in extracting degree information, the high accuracy in contact details and reasonable performance in skills extraction significantly reduced manual screening efforts that typically consume 30% of a recruiter's time.

Structured Assessment Framework: The question form architecture (question forms, questions, and question options tables) provided organizations with a standardized yet customizable method to evaluate candidates. Data analysis

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 11, April 2025
Impact Factor: 7.67

revealed that utilizing multiple question types (MCQ, MSQ) achieved higher candidate-job fit rate than those using single-format assessments.

Application Status Tracking: The implementation of a status-tracking mechanism enhanced transparency for both candidates and hiring teams. This reduced candidate inquiries and improved overall communication efficiency.

Assessment Quality and Validity

Examination of test session data provided valuable insights into assessment effectiveness:

Difficulty Calibration: Analysis of questions difficulty distribution against user responses is correct revealed that well-calibrated assessments (with balanced difficulty levels) had higher predictive validity for job performance than assessments skewed toward either extreme.

Time Efficiency Metrics: The capture of both test sessions (time spent) and individual user responses (response time) enabled organizations to identify optimal assessment lengths. Tests requiring 25-35 minutes showed the highest correlation with comprehensive skill evaluation while minimizing candidate fatigue.

Score Reliability: Comparison between test score and subsequent performance reviews for hired candidates showed a positive correlation, validating the system's effectiveness as a predictive tool for job success.

System Architecture Effectiveness

The database structure revealed several strengths and areas for potential enhancement:

Data Relationships: The robust relationship between users, user applications, and test sessions created a comprehensive candidate journey tracking system that maintained data integrity throughout the recruitment lifecycle.

Scalability Considerations: The separation of core functionality (job posting, application management) from assessment components (question forms, tests) allows for independent scaling of these features based on organizational needs.

Security Implementation: The inclusion of session management (user sessions) and password reset functionality (password reset, One Time Password) demonstrated appropriate attention to security concerns in handling sensitive recruitment data.

Future Implications

The system's architecture and performance metrics suggest several promising directions for further development:

AI-Enhanced Recommendations: Expanding the job recommendations functionality with more sophisticated matching algorithms could further improve the accuracy of job suggestions based on candidate skills.

Assessment Analytics: Integration of advanced analytics for question performance (difficulty indices, discrimination indices) would enable continuous improvement of assessment quality.

Integration Opportunities: The clearly defined data structure would support integration with complementary HR systems, creating a more comprehensive talent management ecosystem.

VI. Conclusion

The Smart Hiring and Evaluation System revolutionizes recruitment by creating a seamless digital ecosystem where organizations, candidates, and administrators interact efficiently. By automating resume parsing, skill matching, assessment delivery, and results analysis, the platform eliminates traditional hiring bottlenecks while providing deep insights into candidate capabilities. Organizations benefit from customizable assessments and comprehensive performance analytics, while job seekers receive personalized recommendations and transparent application tracking. The system's intelligent matching algorithm ensures candidates discover relevant opportunities aligned with their skillsets, increasing the likelihood of successful placements. With features like automated notifications, multimedia question support, and detailed performance reports, the platform transforms recruitment from a time-consuming administrative process into a strategic, data-driven function. As hiring challenges continue to evolve in today's competitive market, this integrated system offers a scalable solution that enhances decision-making, improves candidate experience, and ultimately connects the right talent with the right opportunities.

DOI: 10.48175/568

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 11, April 2025
Impact Factor: 7.67

REFERENCES

[1]. Recruitment System with Placement Prediction; Suraj Gupta, Atif Hingwala, Yuvraj Haryan, Swapnil Gharat, May 2021.

[2]. Enhancing Recruitment Efficiency: A Proposal for an Automated Resume Screening and Job Suggestion System on the 'Dreams Job' On line Platform; Veeramreddy Jyothsna, Kalluru Rohini, J.V. Harshitha, B. Divya Krupa, K. Mohith , D.Yeswanth Kumar, 2024

[3]. Job Recommendation System Based on Skill Sets; G.Mahalakshmi, A.Arun Kumar, B.Senthilnayaki, J.Duraimurugan, Volume 10, Issue 8 August 2022.

[4]. Eduassesspro: An Automated Quiz Generator and Exam Creator; Ashwini Khairkar, Sanjivani Bulbule, Sneha Manchalkar, Shweta Phatate, Krishna Soni, Vol. 06, Issue 07 July 2024.

[5]. Automated MCQ Generator using Natural Language Processing; Pritam Kumar Mehta, Prachi Jain, Chetan Makwana, Dr. C M Raut, Volume: 08 Issue: 05 May 2021

[6]. Resume Screening Using Machine Learning and NLP; Bhushan Kinge, Shrinivas Mandhare, Pranali Chavan, S. M. Chaware, Volume 8, Issue March-April 2022

[7]. A smart resume screening tool for customized shortlisting; Poonam Tijare, Mohammed Waseem, Mohd Azaan Sherani, Kornipalli Sampath Kumargari Sai Krishna, Kavitha P., 2023

[8]. Automated Resume Screening Using Natural Language Processing; Dr. D. Lakshmi Padmaja, Ch. Vishnuvardhan, G. Rajeev, K. Nitish Sanjeev Kumar, Volume 10, Issue 03 March 2023 Asad Abdi, Gayane Sedrakyan, Bernard Veldkamp, Jos van Hillegersberg Stéphanie M. van den Berg (2023)

[9]. Smart Hire– An Intelligent Hiring Platform; Nikhil Kumar Thakur, Aakriti Chowdhary, Ujjwal Bhattarai, Professor Geetha Rani K, Dr. Shivakumar C, Volume 10, Issue 2, Mar-Apr-2024.