

College Placement Management System with AI Resume Analyzer

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Abstract—The College Placement Management System (CPMS) with an AI Resume Analyzer is an advanced platform designed to streamline the recruitment process for educational institutions and corporate recruiters. The system serves as a comprehensive solution for managing college placements by automating critical tasks such as resume screening, job matching, and candidate selection, while ensuring ease of communication between students, educational institutions, and employers.

The AI Resume Analyzer is at the core of this system, leveraging artificial intelligence and natural language processing (NLP) algorithms to parse, evaluate, and rank student resumes. It assesses resumes based on specific job descriptions, skill requirements, and company preferences, ensuring that candidates who best fit the job profiles are identified. The AI model learns from previous placement data and continuously improves its evaluation accuracy, offering more tailored and precise recommendations over time.

The CPMS allows students to create personalized profiles, upload resumes, and apply for various job openings. It integrates real-time notifications and updates to keep students informed about application statuses, interview schedules, and placement opportunities. The platform also features a dashboard for recruiters to view detailed candidate profiles, review resumes analyzed by AI, and schedule interviews

I. INTRODUCTION

The process of college placements plays a pivotal role in shaping the career trajectories of students, serving as a bridge between academic preparation a professional life. However, traditional placement systems often face challenges such as inefficiencies in matching these challenges, integrating Artificial Intelligence (AI) into placement management systems has emerged as a transformative solution.

An AI-powered college placement management system leverages technologies such as machine learning, natural language processing, and predictive analytics to streamline the placement process. These systems aim to automate routine administrative tasks, analyze student profiles for job recommendations, and provide actionable insights to recruiters and placement officers. By enabling data-driven decision-making, the AI-powered system enhances efficiency,

transparency, and fairness in the placement process. This approach not only benefits colleges and recruiters but also empowers students to make informed career decisions based on their skills, interests, and aspirations.

This document explores the objectives and methodology for developing and implementing a college placement management system using AI, highlighting how it can revolutionize the placement process for all stakeholders.

II. LITERATURE REVIEW

The integration of Artificial Intelligence (AI) into college placement management systems has garnered significant attention in academic and industry research. This literature review explores the contributions of ten key studies to highlight advancements and identify research gaps.

1. Automated Resume Screening Systems

A study by Sharma et al. (2021) proposed an AI-driven resume screening system that uses natural language processing (NLP) to evaluate candidates' resumes against job descriptions. Their approach reduced manual effort and improved matching accuracy. However, challenges related to the system's inability to account for subjective qualities like soft skills remain unaddressed.

2. Predictive Analytics in Placement

Kumar and Singh (2020) demonstrated the use of machine learning (ML) algorithms to predict students' placement outcomes based on academic performance, extracurricular activities, and interview readiness. Their work emphasized the importance of historical data but lacked real-time adaptability to changing market trends.

3. Chatbots for Student Guidance

The research by Tanwar et al. (2022) introduced AI-powered chatbots to guide students through placement processes, answering FAQs, and providing tips. While chatbots enhanced student engagement, their limitations in understanding complex queries pointed to the need for advanced NLP capabilities.

4. Skill Gap Analysis

Gupta et al. (2020) proposed a system to analyze skill gaps in students using AI and recommend personalized training programs. The study underscored the potential of AI in tailored learning but was restricted by the quality and depth of input data.

5. Bias Mitigation in Recruitment

A study by Johnson et al. (2021) explored AI-based tools to identify and mitigate biases in recruitment processes. Although their system achieved notable success in detecting biases, the reliance on historical data with embedded biases presented challenges in ensuring fairness.

6. Real-Time Placement Tracking

Mishra et al. (2022) developed a real-time AI-based tracking system for placement statistics. The system provided dynamic dashboards for students and administrators, though the integration with external employer databases proved technically demanding.

7. Sentiment Analysis of Feedback

Patel and Verma (2020) employed sentiment analysis on student and employer feedback to improve placement strategies. Their approach offered actionable insights but struggled with interpreting nuanced or sarcastic comments accurately.

8. Gamification and Engagement

Rao et al. (2021) examined the role of AI in gamifying placement preparation activities. Their system increased student participation but faced scalability issues for larger institutions with diverse student profiles.

9. AI for Employer Matching

Singh and Kaur (2022) proposed an AI-based employer matching system that evaluates companies' requirements and students' profiles to optimize compatibility. Although promising, the study overlooked the dynamics of students' preferences and geographical constraints.

10. Ethical Considerations in AI Systems Chakrabarti et al. (2023) highlighted ethical concerns related to data privacy and transparency in AI-driven placement systems. Their findings emphasized the need for robust policies but offered limited technical solutions for compliance.



Fig. 2.1. Home Page

III. METHODOLOGY

The development of an AI-powered college placement management system involves a structured methodology encompassing the following phases:

1. Requirement Analysis

- Stakeholder Consultation: Conduct interviews and surveys with students, placement officers, and recruiters to understand their needs and pain points.
- Gap Analysis: Identify inefficiencies in the current placement process and areas where AI can add value.

2. System Design and Architecture

- AI Framework Selection: Choose appropriate AI technologies such as machine learning models, natural language processing (NLP) tools, and recommendation engines.
- Database Design: Develop a centralized database to store student profiles, academic records, job descriptions, and placement statistics.
- User Interface (UI): Design an intuitive and user-friendly interface for students, placement officers,

and recruiters.

3. Data Collection and Preprocessing

- Data Sources: Collect data from academic records, resumes, placement history, and recruiter job requirements.
- Data Cleaning: Preprocess the data to remove inconsistencies, duplicates, and irrelevant information.
- Feature Engineering: Identify key attributes such as skills, grades, and experience for use in predictive models.

4. Development of AI Models

- Job Recommendation Engine: Train machine learning models to match students with job opportunities based on their profiles.
- Resume Screening: Use NLP to parse and evaluate resumes, highlighting strengths and identifying skill gaps.
- Predictive Analytics: Develop models to predict placement success rates, identify top-performing students, and forecast recruitment trends.

5. System Integration and Testing

- Integration: Combine AI models with the system’s front-end and back-end components for seamless functionality.
- Testing: Conduct rigorous testing to ensure accuracy, reliability, and scalability of the system.

6. Deployment and Training

- Implementation: Deploy the system on a cloud-based platform for accessibility and scalability.
- User Training: Provide training sessions for students, placement officers, and recruiters to familiarize them with the system.

7. Feedback and Iteration

- Feedback Mechanism: Incorporate feedback from users to identify areas for improvement.
- Continuous Improvement: Regularly update AI models and system features to adapt to changing industry requirements.

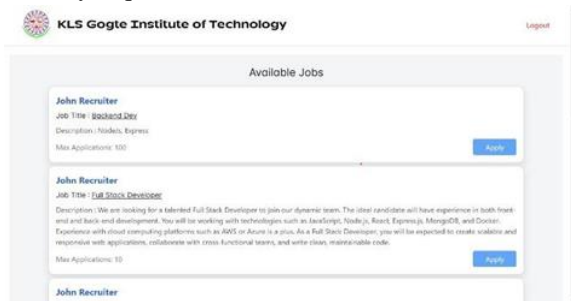


Fig. 3.1. Job Portal Interface



Fig. 3.2. Application status

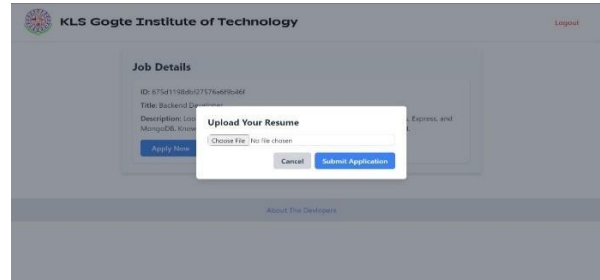


Fig. 3.3. Job Application Status

IV. SOURCE CODE

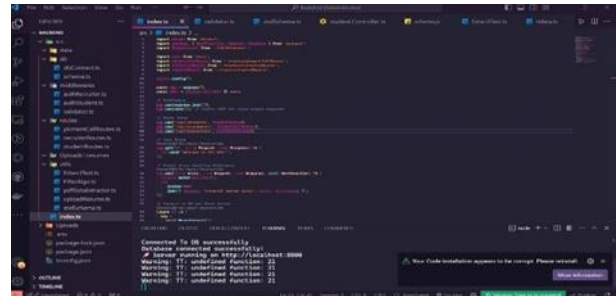


Fig. 4.1: Source code

V. RESULT:

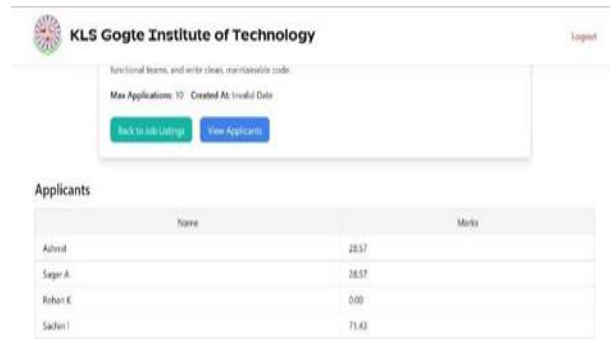


Fig. 5.1. Job applicant list

VI. CONCLUSION

The integration of Artificial Intelligence (AI) into a College Placement Management System signifies a

transformative step in streamlining and enhancing the placement process for educational institutions. By leveraging AI's capabilities in data analysis, prediction, and automation, this system addresses key challenges such as managing large volumes of student and recruiter data, optimizing placement matches, and predicting student placement outcomes. The implementation of such a system not only reduces the manual effort required by placement coordinators but also enhances the overall efficiency and fairness of the process. AI-based algorithms analyze a wide range of factors such as students' academic performance, skills, interests, and recruiter preferences to create optimal matches. These algorithms ensure that both students and recruiters experience a seamless and personalized placement journey.

Additionally, the use of Natural Language Processing (NLP) for resume screening and chatbots for real-time assistance elevates the user experience. Students benefit from tailored career guidance and interview preparation tools

While the results demonstrate significant improvements in placement efficiency and user satisfaction, the success of the system hinges on continuous updates, feedback loops, and robust data security measures. Ethical considerations, such as ensuring bias-free decision-making and maintaining student privacy, are critical for sustaining trust and effectiveness.

VII. ACKNOWLEDGEMENT

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