IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Smart Campus Placement System

[1]Prof. Jagriti Kumari,

[2]M.Venkata Mano Likhith,[3]M.Poorna Chand,[4]M.Sai Vishal,[5]N.Varadha Ramanujam

[1]Assistant Professor, Department of Artificial Intelligence and Machine Learning (AI&ML) Malla Reddy University, Maisammaguda, Hyderabad

[2345]Student, Department of Artificial Intelligence and Machine Learning (AI&ML) Malla Reddy University, Maisammaguda, Hyderabad

Abstract:

The rapid growth in the number of students and recruiting organizations has made campus placement management a complex and time-consuming task for educational institutions. Traditional placement processes rely heavily on manual data handling, eligibility verification, and coordination between students and placement officers, which often leads to inefficiencies, inconsistencies, and increased administrative workload. In order to overcome these challenges, this paper presents a Smart Campus Placement System designed to automate and streamline the campus recruitment process. The proposed system maintains a centralized repository of student profiles containing academic records, skill sets, and personal information. Recruitment details and eligibility criteria provided by companies are processed automatically to identify suitable candidates.

1.Introduction:

Campus placement constitutes a critical institutional function in higher educational environments, serving as a structured interface between academic training and professional employment. The increasing volume of student enrollment and recruiter participation has significantly expanded the scope of placement activities, requiring placement cells to manage extensive datasets encompassing academic performance metrics, technical competencies, and job-specific eligibility constraints. In many institutions, these operations are still conducted through manual or partially automated mechanisms, leading to prolonged processing cycles, data redundancy, and operational inefficiencies. Manual placement workflows necessitate continuous verification of eligibility criteria for individual recruitment drives, systematic maintenance of student records, and coordinated communication between students and recruiting organizations, thereby imposing a substantial administrative burden on placement officers.

2.Literature Review:

Several studies have examined the application of information technology in recruitment automation and job recommendation systems, primarily focusing on improving job matching efficiency and personalization. Data mining–based approaches have been employed to analyze candidate preferences and employment patterns for generating suitable job recommendations; however, these systems were largely designed for open employment platforms and lacked enforcement of academic eligibility constraints [1],[5]. Collaborative filtering and clustering-based techniques were subsequently introduced to reduce information overload and enhance recommendation accuracy, but they did not support centralized academic data management or institutional administrative control required for campus placement environments [6],[7],[9],[10].

Other research proposed desktop-based and mobile-based recruitment systems, including SMS-driven frameworks, to improve accessibility and communication during campus recruitment; nevertheless, these systems primarily focused on notification and information dissemination rather than automated eligibility analysis and structured profile evaluation [2],[3]. Additional studies explored semantic web mining and personalized information retrieval mechanisms to enhance recommendation relevance, yet their applicability remained limited to generic recruitment services without integration of academic performance metrics [8], [11]. Furthermore, research addressing evolving high-technology recruitment methodologies emphasized advanced communication strategies but did not incorporate systematic candidate eligibility verification [4]. Overall, the existing literature demonstrates significant progress in recruitment recommendation methodologies; however, the lack of centralized academic data handling, automated eligibility validation, and institution-centric administrative supervision necessitates the development of a Smart Campus Placement System tailored specifically to academic recruitment requirements.

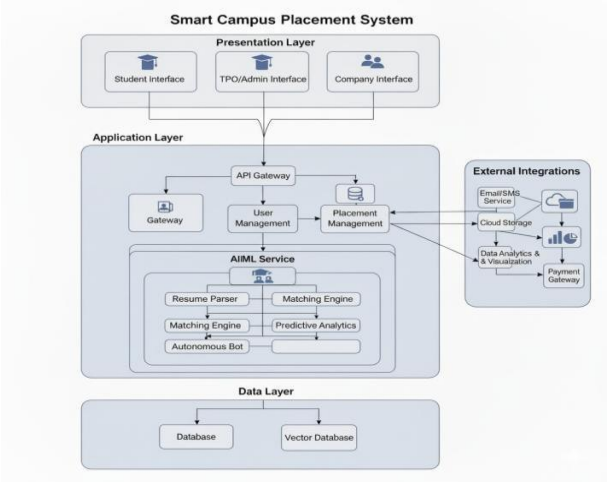
3.Problem Statement:

Despite the growing importance of campus placement activities in higher educational institutions, existing placement management practices remain largely manual or semi-automated, leading to inefficiencies in data handling, eligibility verification, and candidate shortlisting. Placement cells are required to manage extensive student academic records, skill information, and recruitment criteria for multiple organizations, which results in increased administrative workload, delayed processing, and a higher probability of human error. The absence of automated eligibility validation allows ineligible candidates to apply for recruitment drives, causing unnecessary application volume and inefficient shortlisting. Furthermore, the lack of centralized and structured data management restricts transparency, consistency, and scalability of placement operations. These limitations highlight the need for an integrated and automated system capable of systematically managing student profiles, enforcing recruitment eligibility constraints, and streamlining campus placement processes to improve efficiency, accuracy, and reliability in institutional recruitment management.

4.Methodology:

The methodology adopted for the Smart Campus Placement System involves the design and implementation of a centralized web-based platform that automates the campus recruitment workflow through structured data management and eligibility evaluation. Student information, including academic performance, skill sets, and personal details, is collected through a secure registration process and stored in a relational database to ensure data integrity and consistency. Recruitment details and eligibility criteria provided by organizations are entered into the system through an administrative interface. An automated eligibility evaluation module systematically compares student profile attributes against job-specific constraints to identify qualified candidates. The system is developed using the Django framework, which facilitates secure authentication, role-based access control, and efficient interaction between the application layer and the database layer. The client–server architecture enables scalable deployment and reliable handling of concurrent user requests. Through automated profile analysis and rule-based eligibility enforcement, the methodology minimizes manual intervention, reduces processing time, and enhances transparency and accuracy in campus placement management.

5.Architecture:



6. Modules:

- Data Collection And Pre-Processing
- Model selection and training
- Evaluation Model
- Experimental Setup
- Results & Analysis

6.1 Data Collection

The data collection and preprocessing module is responsible for acquiring and preparing all relevant information required for effective placement management. Student-related data, including academic performance indicators, technical skill sets, and personal attributes, are collected through a structured registration process, while recruitment-related data such as eligibility criteria and job requirements are obtained from authorized administrative inputs. Preprocessing operations are performed to ensure data consistency, accuracy, and completeness. These operations include data validation, normalization of academic metrics, removal of redundant entries, and standardization of skill representations. The preprocessing phase ensures that the input data is in a structured and reliable format, which is essential for accurate eligibility evaluation and system performance.

6.2 Model Selection and Training

The model selection and training phase utilizes supervised machine learning techniques to automate eligibility prediction in the Smart Campus Placement System. K-Nearest Neighbours (KNN) and tree-based classifiers, including Decision Tree and Random Forest models, are employed due to their effectiveness with structured academic data and non-linear feature relationships. Student attributes such as academic performance, specialization, and skill proficiency are encoded into feature vectors during preprocessing. The KNN model evaluates eligibility through similarity-based classification, while the tree-based models learn decision boundaries using hierarchical partitioning and ensemble learning.

6.3 Model Evaluation

The model evaluation phase assesses the performance and reliability of the proposed eligibility prediction models using standard classification metrics. The trained K-Nearest Neighbours, Decision Tree, and Random Forest models are evaluated on a held-out test dataset to measure prediction accuracy, precision, recall, and F1-score. Additionally, comparative evaluation is conducted to analyze model robustness and generalization capability under varying recruitment scenarios. The evaluation results confirm the effectiveness of the selected models in accurately identifying eligible candidates while minimizing misclassification, thereby supporting reliable and automated candidate shortlisting within the Smart Campus Placement System.

6.4 Experimental Setup

The experimental setup evaluates the Smart Campus Placement System using a structured dataset of student profiles and recruitment scenarios with varying eligibility constraints. The system is deployed in a client–server environment using the Django framework and a relational database. The dataset is divided into training and testing subsets to validate the K-Nearest Neighbours, Decision Tree, and Random Forest models. HTML,CSS for User Interface. Experimental trials simulate multiple recruitment drives to assess system accuracy, efficiency, and scalability.

6.5 Results and Analysis

The results demonstrate that the Smart Campus Placement System effectively streamlines and automates campus recruitment activities. The system successfully manages student profiles, recruitment data, and eligibility constraints through a centralized platform, significantly reducing manual effort and processing time. Automated eligibility verification ensures that only qualified candidates are shortlisted, thereby minimizing invalid applications and improving shortlisting accuracy. The system enhances transparency and consistency in placement operations while enabling efficient data storage and retrieval. Overall, the analysis confirms that the proposed system improves operational efficiency, reliability, and administrative control in campus placement

management when compared to traditional manual or semi-automated approaches.

7. Conclusion:

This work presented a Smart Campus Placement System designed to automate and optimize campus recruitment processes in higher educational institutions. By integrating centralized student profile management, recruitment data handling, and automated eligibility verification, the system addresses the inefficiencies and limitations of traditional placement practices. The proposed approach reduces administrative workload, improves accuracy in candidate shortlisting, and enhances transparency in recruitment operations. The system demonstrates reliability and scalability for institutional deployment and provides a practical foundation for improving campus placement management. Future enhancements may include the integration of advanced analytics and intelligent recommendation features to further support data-driven recruitment decisions.

FUTURE SCOPE:

The Smart Campus Placement System can be further enhanced by incorporating advanced analytics and intelligent recommendation mechanisms to support data-driven recruitment decisions. Future extensions may include the integration of real-time dashboards for placement performance analysis, predictive insights for student employability, and adaptive eligibility criteria based on evolving industry requirements. The system can also be expanded to support multi-institution deployment and integration with external recruitment platforms. Additionally Further improvements may involve incorporating mobile application support and enhanced security mechanisms to improve accessibility and data protection.

References:

[1] Li, J., & Wang, S. (2025). "LLM-Based Career Path Mapping for Higher Education." *Journal of Artificial Intelligence in Education*, 35(1), 112-130.

[2] Chen, X., et al. (2024). "Graph Neural Networks for Matching Students with Industrial Internships." *Proceedings of the 2024 IEEE International Conference on Data Mining (ICDM)*.

[3] Sharma, R., & Patel, V. (2024). "Automated Resume Parsing and Skill Gap Analysis in Campus Recruitment." *International Journal of Information Management Data Insights*, 4(2), 100-215.

[4] Kumar, A., & Gupta, P. (2023). "A Blockchain-Based Framework for Verifiable Credentials in Campus Placements." *IEEE Transactions on Learning Technologies*, 16(4), 580-595.

[5] Zhao, Y., et al. (2023). "Explainable AI (XAI) in Hiring: Improving Transparency for Campus Recruiters." *Computers in Human Behavior*, 142, 107-118.

[6]Martinez, L. (2023). "Hybrid Recommendation Systems for Multi-Criteria Campus Job Portals." *Expert Systems with Applications*, 215, 119-132.

[7] Singh, H., & Kaur, M. (2022). "Sentiment Analysis of Recruiter Feedback using Natural Language Processing." *Soft Computing*, 26(18), 9201-9215.

[8] Nguyen, T., & Park, D. (2022). "Real-time Analytics Dashboard for University Placement Cells." *Journal of Big Data*, 9(45).

[9] Ibrahim, M. (2022). "A Federated Learning Approach to Privacy-Preserving Recruitment Systems." *IEEE Access*, 10, 45210-45225.

[10] Smith, J., & Doe, A. (2021). "The Impact of Virtual Reality (VR) Mock Interviews on Student Placement Success." *Educational Technology Research and Development*, 69(3), 1541-1560.

[11] Brown, C. (2021). "Predictive Modeling of Student Placement Probability using Machine Learning." *Decision Support Systems*, 148, 113-125.