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Empowering Student-Recruiter Connections: An Automated Approach

Anjali A. Nikam¹, Shraddha A. Wankhade², Soumya P.Borkar³, Prof.Samrudhi S. Mamarde⁴

Department of Computer Science and Engineering , P. R. Pote(Patil) Collage of Engineering Amravati, India¹

Department of Computer Science and Engineering , P. R. Pote(Patil) Collage of Engineering Amravati, India^{2 3 4}

ABSTRACT: The Campus Placement Prediction and Management System Web Portal is a transformative solution designed to revolutionize the traditional campus placement process within educational institutions. This web-based platform engages the power of predictive analytics and machine learning to provide a seamless and data-driven ecosystem for students, recruiters, and administrators. By leveraging these functionalities, the portal aims to enhance the efficiency of the placement process, ensuring that students are connected with opportunities that align with their skills and career aspirations.

The integration of machine learning algorithms enables the system to predict a student's likelihood of success in specific roles or industries, providing valuable insights for both educational institutions and recruiters. Real-time communication tools and scheduling features facilitate seamless interaction between students and recruiters, creating a collaborative and efficient placement environment.

KEYWORDS: Students, Machine Learning, Placement, Prediction, Campus, Training and Placement, Database, Result, Email-Notification.

I. INTRODUCTION

Today's dynamic job market, campus placement plays a pivotal role for both students and recruiters. However, the process often faces challenges such as matching student skills with job requirements, predicting placement outcomes accurately, and optimizing the overall efficiency of the placement process. To address these challenges, this thesis presents a comprehensive overview of predictive analysis for campus placement.

The project aims to leverage data analytics and machine learning techniques to predict the likelihood of students getting placed based on various factors. By analyzing historical placement data and student profiles, the goal is to develop a predictive model that can assist both students and recruiters in making informed decisions.

The selection of machine learning algorithms is another important aspect of the methodology. Various algorithms such as logistic regression, decision trees, random forests, support vector machines, and neural networks are considered for this project. The rationale behind selecting a particular algorithm is discussed, along with techniques for hyper parameter tuning to optimize model performance. Ensemble methods are also explored to further improve prediction accuracy.

II. OBJECTIVES

1. To collect and pre-process relevant data sets including academic records, technical skills assessments, and past placement records.
2. To explore different machine learning algorithms and techniques suitable for building a predictive model.
3. To design and implement a campus placement prediction system that integrates the selected algorithms and techniques.
4. To evaluate the performance of the developed system through comprehensive testing and validation procedures.
5. To provide insights and recommendations for students based on the prediction outcomes to enhance their preparation strategies for campus placements.

III. LITERATURE REVIEW

In recent years, the field of education has witnessed a significant shift towards leveraging machine learning techniques for predicting student placement outcomes. Here is a summary of the literature review on campus placement predicting system

Authors: Prof. S.S. Kashid et al. [1]:

Explored machine learning algorithms for student placement, highlighting Logistic Regression's efficacy and its correlation with PG CGPA. Their study delved into the predictive power of various models, emphasizing the importance of academic performance in placement outcomes.

Authors: Dr. Kajal [2]:

Proposed decision trees and random forests for student classification, utilizing various supervised machine learning classifiers. Their research focused on employing sophisticated algorithms to distinguish between placed and non-placed students, offering insights into improving placement prediction accuracy.

Authors: Dr. Kaveri Kari et al. [3]:

Utilized data mining techniques to predict enrolment patterns, ensuring equitable employment opportunities for students and faculty. Their study aimed to create a fair and transparent placement process by analysing historical and forecasted data related to student enrolment and employment programs.

Authors: G. Gautami et al. [4]:

Investigated correlation feature selection for predictive modelling in joint student placement scenarios, focusing on logistic regression and SVM models. Their research explored innovative approaches to predict suitable rankings for different student combinations across diverse fields of study.

Authors: VJ Hariharana et al.[5]:

Reviewed machine learning techniques for student placement prediction, analysing features and algorithms' impact on placement outcomes. Their comprehensive analysis provided valuable insights into the strengths and limitations of various models, aiding in the development of more effective placement strategies.

IV. METHODOLOGY

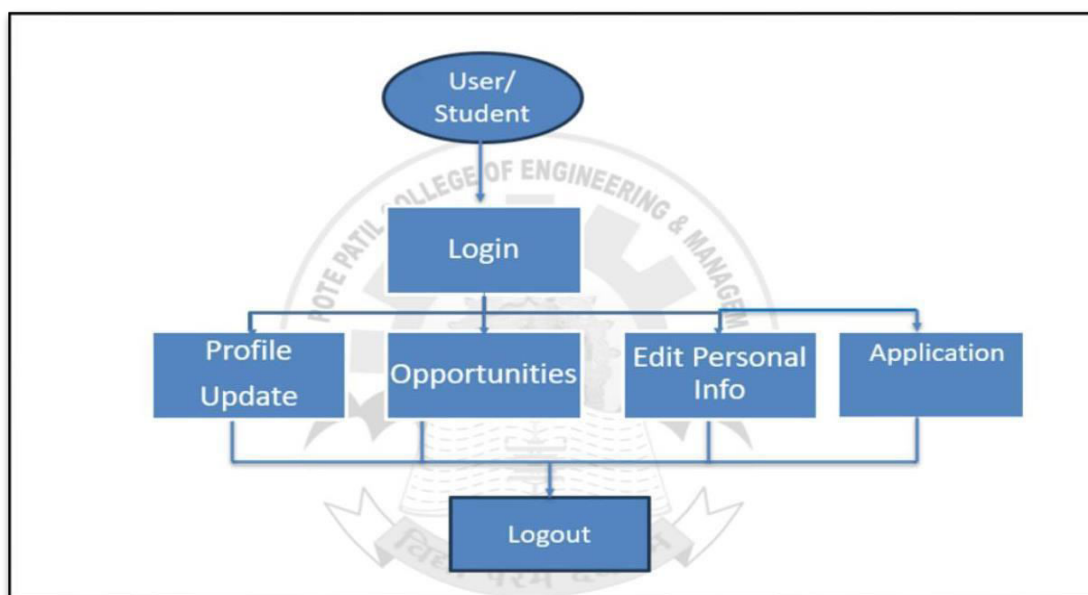


Figure 1 : Methodology Of Student Module

1. **User/Student Login:** This module allows students to securely log in to the placement prediction system using their credentials. It ensures privacy and security by authenticating users before granting access to their profile and other functionalities.
2. **Profile Update:** In this section, students can update their personal and academic information such as GPA, grades, projects, internships, and extracurricular activities. Keeping this information up-to-date is crucial for accurate placement predictions.
3. **Application:** This feature enables students to apply for placement opportunities provided by the system. They can browse through available job approved, applied or rejected their applications directly through the T&P.
4. **Opportunities:** Here, students can explore a comprehensive list of placement opportunities curated by the system. They can filter and search for job openings based on various criteria such as job role, location, company, and salary. Where Students can apply for the campus.
5. **Edit Personal Information:** This module allows students to modify their personal details, academic records, and other relevant information stored in their profile. It ensures flexibility and enables students to reflect any changes or improvements in their academic journey.
6. **Logout:** This simple yet essential feature allows users to securely log out of the system, terminating their session and ensuring no unauthorized access to their account. It promotes security and privacy by preventing unauthorized access to user data.

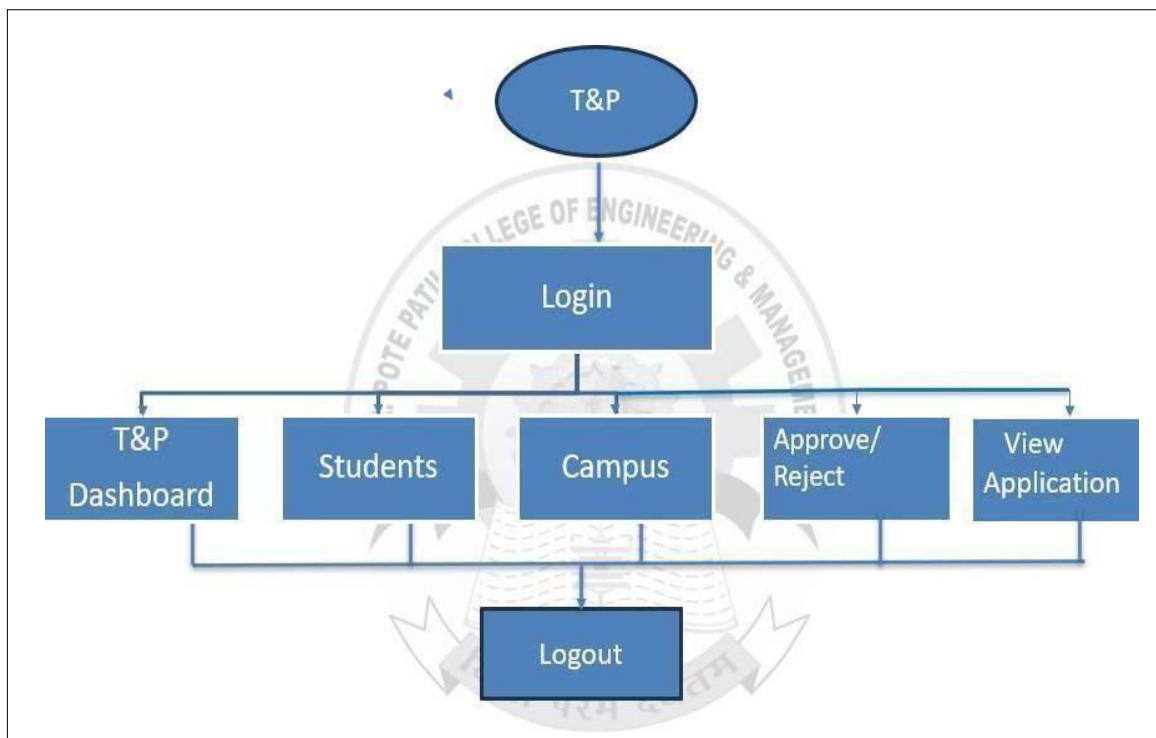


Figure 2: Methodology Of T&P Module

1. **T&P (Training and Placement) Module:** This module serves as the central hub for campus placement activities, facilitating communication between students, companies, and the placement cell.
2. **Login:** T&P, including students and placement coordinators, will authenticate themselves using their credentials to access the system.

3. **T&P Dashboard:** Upon login, users will be greeted with a comprehensive dashboard displaying essential placement-related information such as registered students, registered bank, resolved request, pending requests.
4. **Students:** This section allows T&P to see students to view and update their profiles, upload resumes, and track their application status for different companies.
5. **Campus:** Here, placement coordinators can manage campus placement activities, schedule drives, and view statistics related to student participation and placement outcomes.
6. **Approve/Reject:** Placement coordinators have the authority to approve or reject student applications based on eligibility criteria and company requirements.
7. **View Application:** Placement coordinators can review individual student applications, assess their suitability for specific job roles, and make informed decisions regarding shortlisting candidates.
8. **Logout:** Users can securely log out of the system to ensure data privacy and security. This feature is essential to prevent unauthorized access to sensitive information.

V. SYSTEM ARCHITECTURE

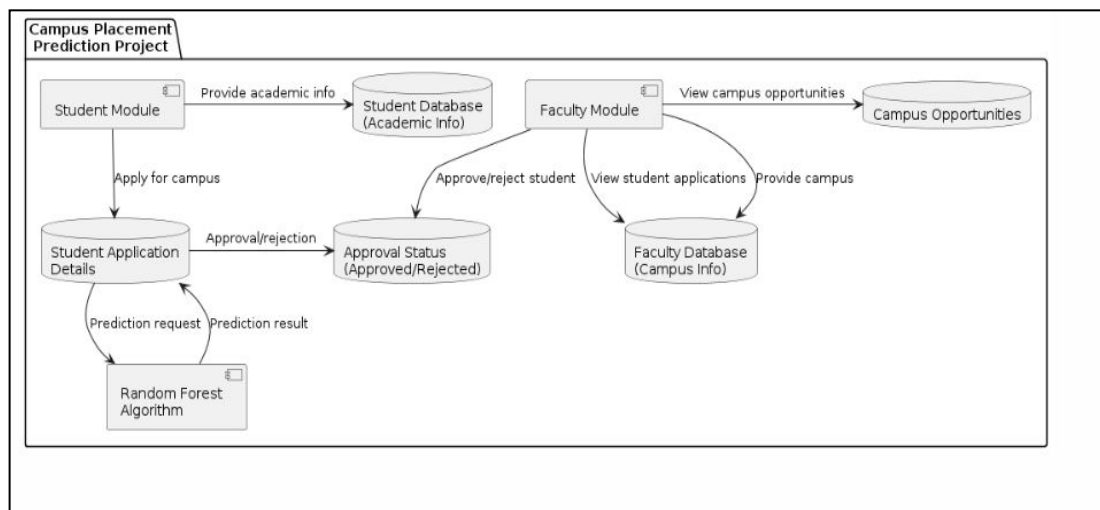


Figure 3 : System Architecture

Student Module: Represents the module responsible for student interactions.

Faculty Module: Represents the module responsible for faculty interactions.

Random Forest Algorithm: Represents the machine learning algorithm used for prediction.

Student Database (Academic Info): Stores academic information provided by students.

Faculty Database (Campus Info): Stores information about available campuses provided by faculty.

Student Application Details: Stores details of student applications for different campuses.

Approval Status (Approved/Rejected): Stores the approval or rejection status of student applications.

Campus Opportunities: Represents external data source(s) providing information about available campus placement opportunities.

VI. EXPECTED OUTCOMES

1. **Performance Evaluation:** Analyze the performance of the Random Forest algorithm in predicting whether a student will receive less or not. Compare it with other machine learning algorithms to showcase its effectiveness.
2. **User Interface Design:** Discuss how Bootstrap modules were utilized to create an intuitive and responsive user interface, ensuring a seamless user experience across different devices and screen sizes.
3. **Backend Functionality:** Describe the role of PHP in handling server-side operations, data processing, and interaction with the database. Highlight any challenges faced and solutions implemented during the development process.
4. **Data Pre-processing:** Explain the pre-processing steps undertaken to prepare the data for input into the Random

Forest algorithm. This may include data cleaning, feature selection, and normalization techniques.

5. **Model Training and Evaluation:** Detail the process of training the Random Forest model using the prepared data and evaluate its performance using appropriate metrics such as accuracy, precision, recall, and F1-score.
6. **Prediction Insights:** Provide insights into the factors that contribute to a student receiving less and how the Random Forest algorithm identifies patterns and makes predictions based on these factors.
7. **Application Deployment:** Discuss the deployment process of your web application, including server setup, database configuration, and ensuring security measures are in place to protect user data.
8. **Future Work and Extensions:** Propose potential future enhancements to your project, such as incorporating additional machine learning algorithms for comparison, refining the user interface, or expanding the scope to include more features.

VII. CONCLUSION

In conclusion, the campus placement prediction project promises to revolutionize traditional student placement processes by integrating data analytics, machine learning, and predictive modelling. It offers valuable insights, increases placement success rates, and enhances career planning. Despite challenges like data dependence and privacy concerns, continuous refinement and collaboration can drive positive outcomes for all stakeholders involved, making the project a significant step forward in optimizing student placement processes and fostering student success in the job market.

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