PREDICTIVE ANALYTICS OF CAMPUS PLACEMENT TRENDS USING MACHINE LEARNING

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ABSTRACT

Among an institution's main responsibilities is the assignment of students to certain classrooms. There is a strong relationship between a school's yearly admissions and the placements it offers its pupils. So, in order to improve overall performance, every university works hard to fortify its placement departments. Any help in this area would improve a school's ability to place students. The school and the pupils both come out ahead in the end. This endeavor seeks to forecast the placement opportunities for present students by using data from previous year's student body. We provide this model together with a mechanism for making predictions. Data that was useful for our study was obtained from the same source as the placement prediction by using suitable data pre-processing methods. In terms of recall, accuracy, and precision, this proposed model is tested against pre-existing categorization approaches like Decision Tree and Random Forest. According to the results, the proposed approach is much superior to the other methods mentioned.

Index Terms: Campus placement prediction, machine learning, data preprocessing, Decision Tree, Random Forest, classification, student performance analysis, predictive modeling.

1.INTRODUCTION

Colleges and universities throughout the world rely heavily on placements. Placement data from students' time at the school is the main indicator of its quality. The college's placement rate is a major factor for students while choosing a school. Institutional and student placement outcomes are both enhanced by this approach, which places an emphasis on anticipating and assessing placement requirements [1].Using classification algorithms like Decision Tree and Random Forest, the Placement Prediction system calculates the likelihood of undergraduates getting jobs. The main goal of this model is to forecast how likely it is that a student will get a placement during campus recruiting. Academic information such as the student's overall percentage, backlogs, and credits earned are part of the data set that is examined. Students' past performance is fed into the algorithms.

2.LITERATURE SURVEY

S. B. Mangasuli and Prof. Savita Bakare have suggested a model for forecasting campus placements using Fuzzy Logic and the K-Nearest Neighbour algorithm. The study emphasizes the need of integrating standard classification methods with soft computing approaches to enhance the precision of student placement forecasts. The technique evaluates several academic and personal variables to determine the feasibility of placement.

Placement Prediction System (PPS) is a tool created by Ajay Shiv Sharma and Keshav Kumar. It use Logistic Regression to forecast the probability of students securing employment on campus. Student record training datasets are used to develop the model, highlighting the significance of academic achievement and skill characteristics in forecasting placement results.

Dr. K. David and Jai Ruby examine the potential of classification algorithms to forecast the academic success of college students. The authors provide insights into the use of predictive analytics for forecasting academic achievement via a case study assessing the efficacy of several data mining techniques.

Ankita A. Nichat and Dr. Anjali B. Raut use Decision Tree approaches to predict and evaluate student performance. The authors provide a decision-tree framework for organizing educational data to assist instructors in identifying academically challenging kids and implementing interventions for their success.

Oktariani Nurul Pratiwi employs data mining methods to anticipate class placements. The study aims to assist institutions in developing focused training and development programs to enhance placement results by focusing on the classification of students for suitable placement.

3.EXISTING SYSTEM

College placement dataset was examined using the logistic regression method by Ajay Shiv Sharma, Swaraj Prince, Shubham Kapoor, and Keshav Kumar, resulting in an accuracy of 83.33% [2]. Utilizing the placement dataset obtained from their university, Jai Ruby and Dr. K. David used ID3, J48, REP Tree, NB Tree, MLP, and Decision Table Classification methodologies. ID3 had a subject-level prediction accuracy of 82.1% [3]. Ankita A Nichat and Dr. Anjali B Raut attained an accuracy of 80% [4] using the C4.5 classification algorithm on a placement dataset obtained from their institution.

Utilizing high school data, they used the Naive Bayes and OneR classification techniques. The findings indicate that J48 and Simple Cart achieved an accuracy of 79.61% in their predictions [5]. Ajay Kumar Pal and Saurabh Pal gathered data to investigate and analyze students' academic performance for the primary objective of training and placement. The authors used several categorization approaches and the data mining program WEKA [6]. They determined that the naive Bayes classification model is the optimal strategy for the placement data, with an accuracy of 86.15 percent and requiring no time for model creation. The Naïve Bayes classifier surpassed all other classifiers with an average error of only 0.28.

Enhance your student placement outcomes with the use of a predictive algorithm developed by Ravi Tiwari and Awadhesh Kumar Sharma [7]. The model was constructed using the random tree approach and the data mining program WEKA. The techniques used on the student dataset were ID3, Bayes Net, RBF network, and J48. The Random Tree (RT) method had an accuracy of 73% in model classification and prediction. A success rate of 71% was achieved with ID3 and J48. The Bayes Net is linked with a 70% probability.

DISADVANTAGES

- The system does not select independent attributes.
- The system does not fix zero-based variables.

4.PROPOSED SYSTEM

The Placement Prediction system uses classification algorithms like Decision Tree and Random Forest to assess the chances of an undergraduate student getting a job with a business. Predicting a student's placement during campus recruitment is the main objective of this method. This takes into account the student's total percentage, credits, and backlogs. Previous years' worth of student data is fed into the algorithms.

ADVANTAGES

- Irrelevant attributes in the dataset were ignored.
- The Random Forest algorithm uses the data to train multiple decision trees.

5.SYSTEM MODEL

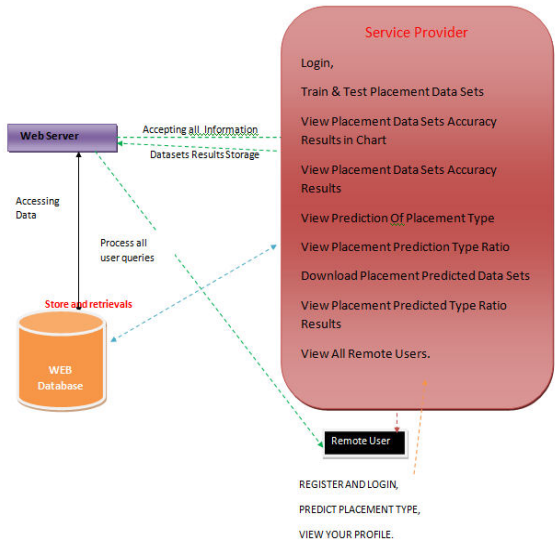


Fig.1 System Model

6. IMPLEMENTATION

Service Provider

A valid login and password are necessary for the Service Provider to access this module. Upon successful login, he will be able to do many tasks, including accessing the Train & Test Placement Data Sets, analyzing the Accuracy Results on a Graph for the Placement Data Sets, evaluating the Type Ratio for the Placement Data Sets, and reviewing the Placement Data Sets for Predictions. Examine the outcomes of the predicted type ratio for placements and review all users who are remote.

View and Authorize Users

The admin may get a comprehensive overview of all registered users. All user information, including email, address, and username, is available to the administrator, who has the authority to approve or reject users as necessary.

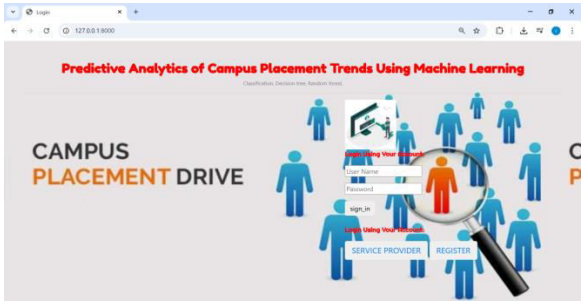
Remote User

Users are a part of this module. Prior to participating in any activity, users must register. Information about registered users is stored in the database. In order to access the system, he has to input the authorized login credentials when the registration process is successful. Features including profile exploration, placement type

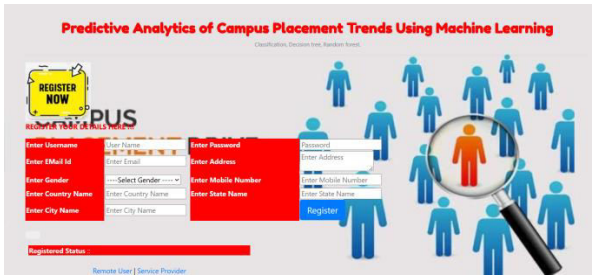
forecasts, and registration are available to users after they log in.

7.RESULTS

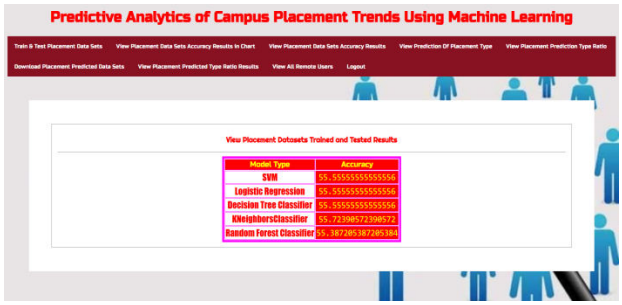
User Login



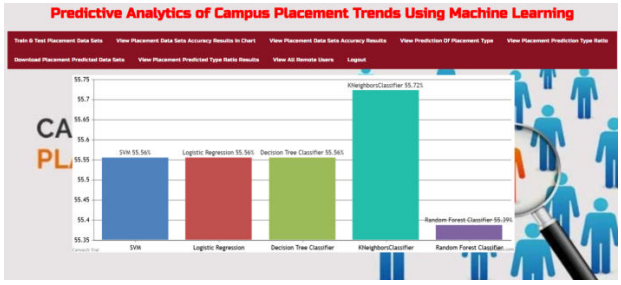
Register



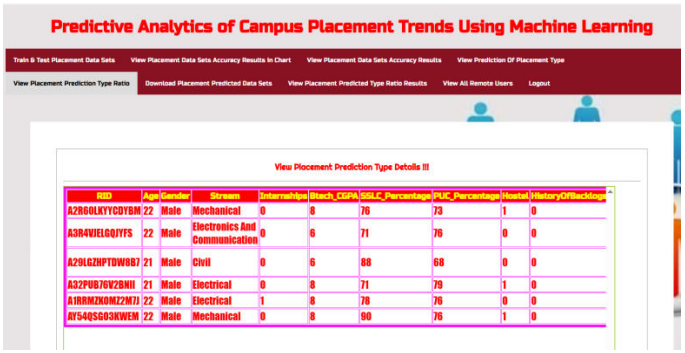
Model Generation



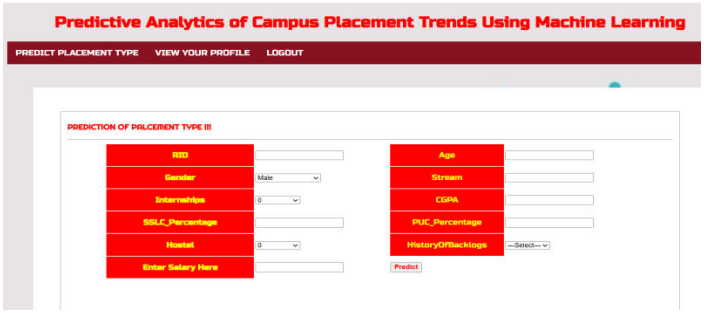
Pie Chart



Prediction Details



Prediction



8.CONCLUSION

Both the school and the students stand to benefit greatly from the campus placement program. In order to evaluate strategies for raising students' academic performance, researchers used the classification algorithms Decision Tree and Random Forest. The methods are applied on the dataset and attributes that were used to build the model. Decision Tree achieves an accuracy of 84% after analysis, but Random Forest achieves 86%. Based on the study and projections indicated earlier, it is recommended to employ the Random Forest approach for anticipating placement results.

9. REFERENCES

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