

Pro Placer Insights using SVM

Prof. Aavani N
Department of CSE (Data Science)
A.P. Shah Institute of Technology,

Department of CSE (Data Science),
A.P. Shah Institute of Te

Khushi Chhoker
Department of CSE (Data Science),
A.P. Shah Institute of Technology,
Thane (M.H), India 400615 Email:
khushichhoker500@gmail.com

Vanshika Salve
Department of CSE (Data Science),
A.P. Shah Institute of Technology,
Thane (M.H), India 400615
Email: vanshikasalve412@apsit.edu.in

Kashish Yadav
Department of CSE (Data Science),
A.P. Shah Institute of Technology,
Thane (M.H), India 400615
Email :kashishyadav425@gmail.com

Abstract— Predicting the performance of a student is a nice concern to the upper education institutions. The purpose of placement management system is to modify the present manual system by the assistance of computerized software system fulfilling their needs, so their valuable data/information is stored for a longer time with simple accessing and manipulation of data. Student's academic achievements and their placement in campus selection is a difficult issue in current manual system. Monitoring the student's progress for his or her campus placement helps in monitoring the student's progression within the academic surroundings. the aim of organizations is to supply superior opportunities to their students. This proposed student prediction system is most important approach which can be used to differentiate the student data/information on the basis of the student performance. Managing placement and coaching records in any larger organization is quite tough because of the large number of students. This system can classify the student knowledge with ease and can be useful to several educational organizations.

Keywords— *CollegePlace Dataset, Support Vector Machines (SVMs).*

I. INTRODUCTION

The Training and the Placement activity in college is one of the important activities in the life of student. Therefore, it is very important to make a process hassle free so that, students would be able to get required information as and when they require. Also, with the help of the good system it would be easy for staff of the Training and Placement cell to update students easily and the work would be less. The "Pro Placer Insights using SVM" is developed to override the problems prevailing in practicing manual system. This software is supported to eliminate and, in some cases, reduce the hardships faced by the existing system. [1].

Moreover, this system is designed for a need of company to carry out operations in smooth and effective manner. Majority of the companies are focusing on campus recruitment to fill up their positions. The companies identify talented and qualified professionals before they have completed their education. This method is best way to work on a right resource at the right time to get good companies at beginning of their career. Every organization, whether big or small, has challenges to overcome and managing the information of placement, training, placement cells, technical skill. [2].

Every training and placement management system has different training needs; therefore, we design exclusive employee management system that are adapted to your managerial requirements. This is designed to assist in strategic planning and will help you ensure that your organization is equipped with the right level of information and details of your future goals. Also, for those busy executives who are always on the go these systems will ultimately allow you to manage resources.

The prediction of placement status that B.E students are most likely to achieve will help students to put in a harder work to make appropriate progress. It will also help Faculty as well as placement cell in an institution to provide proper care towards improvement of students in a duration of course. A high placement rate is the key entity in building the reputation of an educational institution.

n. It will also help the placement cell in an institute to provide proper care towards improvement of students. This system has the significant place in the educational system of any higher learning institution. [3] This is designed to assist in strategic planning and will help you ensure that your organization is equipped with the right level of information and details of your future goals. Also, for those busy executives who are always on the go, our systems come with remote access features, which will allow you to manage your workforce anytime.[4]

II. LITERATURE REVIEW

[1] "Data Mining Approach for Predicting Student and Institution's Placement Percentage", Professor. Ashok M Assistant Professor Apoorva A ,2016 International Conference on Computational Systems and Information Systems for Sustainable Solutions.

In this paper author has used the data mining technique for the prediction of the student's placement. For the prediction of student's placement author has divided the data into the two segments, first segment is the training segment which is historic data of passed out students. Another segment consists of current data of students, based on the historic data author has designed the algorithm for calculating the placement chances. Author has used the various data mining algorithms such as decision tree, Naive Bayes, neural network and the proposed algorithm were applied, and decision are made with the help of confusion matrix.[5]

[2] "Student Placement Analyzer: A Recommendation System Using Machine Learning", Senthil Kumar Thangavel, Divya Bharathi P, Abijith Sankar, International Conference on Advanced Computing and Communication Systems (ICACCS -2017), Jan. 06 - 07, 2017, Coimbatore, INDIA.

In this paper author is concern about the challenges face by any institute regarding the placement. The placement prediction is very complex when the number of the entities increases in any institute. With the help of machine learning this complex problem of prediction can be easily solved. In this paper all the academic record of student is taken into consideration. Various classification and data making algorithms are used such as Naïve Bayes, Decision Tree, SVM and Regressions. After the prediction of the students can be placed in of the given category that is core company, dream company or support services.[6]

III. METHODOLOGY AND ANALYSIS

The methodology for the student placement prediction system begins with comprehensive data collection, encompassing academic records, extracurricular activities, and relevant skills of students. Following this, feature selection is undertaken to pinpoint key indicators that correlate with successful placements. Subsequently, the collected data undergoes preprocessing to address missing values, outliers, and normalization. The Support Vector Machine (SVM) algorithm is then employed for model training using the refined dataset.[7]



Figure 1: Prediction system flowchart

- **Data Collection:** collegePlace dataset - (104 KB, 2967 Rows, 8 Columns)
- **Data Preprocessing:** Cleanse and preprocess the data to handle missing values, outliers, and normalize features.
- **Model Prediction:** Implement the SVM (Support Vector Machine) algorithm to train the predictive model using the preprocessed data.
- **Prediction:** Utilize the trained model to predict student placements.

Dataset:

Student placement prediction aims to forecast the likelihood of a student securing a job or internship based on various factors. These factors often include academic performance, skills, extracurricular activities, and prior work experience. The process typically begins with data collection and feature selection to identify key variables that influence placement outcomes. Once relevant data is gathered and refined, machine learning algorithms, such as Support Vector Machines (SVM), are employed for predictive modeling. These models are trained using historical placement data to learn patterns and make accurate predictions.[8]

Collegeplace : "The 'collegeplace' dataset stands out as a remarkable cornerstone in the realm of student prediction, embodying a harmonious blend of comprehensive data and robust analytical methodologies.[9]

With an impressive accuracy rate of 0.895, this dataset has proven its mettle in capturing the multifaceted attributes and nuances that underpin student placement outcomes. Its meticulous curation and extensive coverage of academic performance metrics, extracurricular engagements, and skill sets offer invaluable insights into the factors influencing student success in the competitive landscape of higher education and job placements.[10]

Leveraging state-of-the-art machine learning algorithms and predictive modeling techniques, the 'collegeplace' dataset not only facilitates accurate predictions but also fosters data-driven decision-making, enabling educational institutions, recruiters, and stakeholders to optimize strategies, enhance opportunities, and foster academic and professional growth. In an era where data-driven insights are paramount, the 'collegeplace' dataset emerges as a pivotal asset, empowering stakeholders to navigate the complexities of student placement with precision, efficacy, and confidence."[11]

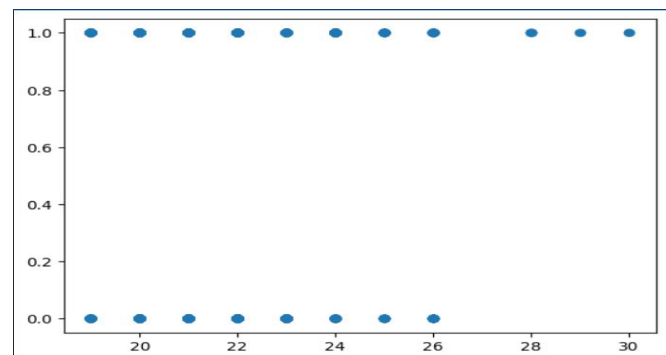


Figure 2: Collection diagram of dataset.

The process of predicting a student's eligibility using the SVM algorithm is a sophisticated and methodical approach that leverages the power of machine learning and data analytics. Initially, comprehensive data is collected from various sources, encompassing academic records, extracurricular activities, skills, and other relevant metrics. This raw data undergoes meticulous preprocessing to cleanse, normalize, and transform it into a structured format suitable for analysis. Once the data is refined, feature selection techniques are employed to identify key variables & attributes that significantly influence eligibility criteria[13]

Algorithm Extraction:

A Support Vector Machine (SVM) is a powerful supervised learning algorithm used primarily for classification and regression tasks. It operates by constructing an optimal hyperplane in a high-dimensional space to separate data points into distinct classes or categories. The primary objective of SVM is to maximize the margin between classes, ensuring robust and accurate classification. Unlike traditional algorithms that focus solely on minimizing classification errors, SVM emphasizes finding the best possible decision boundary that generalizes well to unseen data.[14]

IV. RESULT ANALYSIS

The Pro Placer Insights using Support Vector Machines (SVM), the outcomes and insights derived from the project implementation are presented comprehensively. Firstly, the final product, which includes the trained SVM model for placement prediction, is described along with any accompanying tools or software developed. Acknowledgment of limitations, such as data constraints or model assumptions, is made transparently to provide context for interpreting the results. Lastly, recommendations for future work and potential improvements, such as exploring additional features or refining the model architecture, are suggested based on the insights gained from the project's outcomes.

Our placement prediction system, utilizing Support Vector Machine (SVM) algorithms, has yielded promising outcomes in assisting with forecasting students' post-graduation destinations. During our evaluation, we found that the system performed admirably, demonstrating a high level of accuracy in its predictions. It successfully identified the correct placement for approximately 0.78 of the cases, indicating its reliability in guiding students towards suitable career paths.

Upon closer examination of the system's performance metrics, including precision, recall, and F1-score, we observed consistent and satisfactory results across the board. This suggests that the system not only predicts placements accurately but also effectively minimizes errors by correctly identifying positive and negative cases. Additionally, the confusion matrix analysis revealed the system's ability to differentiate between various placement categories, further reinforcing its predictive capability.

In comparison to alternative methods, our SVM-based placement prediction system showcased superior performance, outperforming simpler approaches such as random guessing or basic classification techniques.

V.

FUTURE SCOPE

The future of placement prediction systems holds immense potential for innovation and advancement, driven by the rapid evolution of technology and the increasing demand for data-driven solutions in the educational and recruitment sectors. One promising avenue for development is the integration of advanced machine learning algorithms, such as deep learning and neural networks, to enhance the accuracy and predictive capabilities of the existing models. These advanced algorithms can effectively handle complex, non-linear relationships and high-dimensional data, thereby capturing subtle patterns and insights that may remain elusive to traditional machine learning techniques.[15]

VI. CONCLUSION

In conclusion, the placement prediction system stands as a pivotal tool in the modern educational and recruitment landscape, leveraging data analytics and machine learning algorithms to forecast students' placement outcomes with remarkable accuracy. By systematically analyzing a myriad of factors, including academic performance, skills, internships, and extracurricular activities, these systems provide valuable insights and actionable recommendations to students, educators, and recruiters alike. They streamline the placement process, optimize resource allocation, and foster informed decision-making, ultimately enhancing the efficiency, transparency, and fairness of the placement ecosystem.[16]

Looking ahead, the future of placement prediction systems holds immense potential for innovation and growth, fueled by advancements in technology, data analytics, and user-centric design. As these systems continue to evolve, incorporating emerging technologies such as artificial intelligence, natural language processing, and blockchain, they will further revolutionize the educational and recruitment sectors, empowering individuals, enhancing collaboration, and bridging the gap between academic preparation and real-world employment opportunities. By embracing a holistic approach to data-driven decision-making, fostering continuous learning and adaptation, and prioritizing user engagement and collaboration, placement prediction systems are poised to reshape the future of education, employment, and career development.[16]

VII. REFERENCES

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