STUDENT PLACEMENT PREDICTION USING EXPLORATORY DATA ANALYSIS

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ABSTRACT

The successful placement of students in appropriate academic programs is crucial for their career development and institutional success. This study aims to predict student placement in various academic programs using Exploratory Data Analysis (EDA) and Support Vector Machine (SVM) model. EDA was conducted to understand the distribution, patterns, and relationships among the variables in the dataset. The results of EDA informed the selection of relevant features for the SVM model, which was trained and validated using a subset of the dataset. The performance of the model was evaluated using metrics such as accuracy, precision, recall, and F1-score. The findings of this study can help educational institutions to make informed decisions regarding student placement and develop targeted strategies to improve their placement process.

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INTRODUCTION

Student placement is a critical process in educational institutions, as it involves assigning students to the most appropriate academic programs based on their interests, abilities, and career goals. Predicting student placement using machine learning algorithms can help educational institutions make informed decisions and optimize their placement process. Exploratory Data Analysis (EDA) and Support Vector Machine (SVM) are two popular techniques in machine learning that can be used for student placement prediction. EDA can help identify patterns and relationships in the data, while SVM can be used to classify students into different academic programs based on their characteristics. This study aims to develop a machine learning model for student placement prediction using EDA and SVM techniques, and evaluate its performance on a real-world dataset.

$$y = \text{sign}(\sum_{i=1}^{n} \alpha_i y_i K(x_i, x) + b)$$

METHODOLOGIES

1.Model Development: The SVM model is developed using the selected features. This involves training the model on a portion of the data and testing it on another portion to evaluate its performance.
2.Model Evaluation: The performance of the SVM model is evaluated using various metrics such as accuracy, precision, recall, and F1-score. The model is then fine-tuned to improve its performance.
3.Model Deployment: Once the model is finalized, it is deployed in a real-world setting to predict student placement. This involves integrating the model with the institutional systems and ensuring its accessibility and usability for relevant stakeholders.
4.Monitoring and Evaluation: The performance of the model is continuously monitored and evaluated to ensure its accuracy and reliability. Recommendations are made based on the results to improve the model and the student placement process
5.Professional Development: Professional development opportunities are provided to all staff using learning analytics, and mandatory training may be required to access data. This ensures that staff are equipped with the necessary knowledge and skills to use the model ethically and appropriately.

RESULTS

The results of student placement prediction using EDA and SVM show their potential to support student placement decisions and improve institutional outcomes. The dataset typically includes variables such as student demographics, academic history, and performance metrics. EDA reveals insights about the data, and relevant features are selected for the SVM model. The SVM model achieves high accuracy and may be deployed to predict student placement. The model's performance is continuously monitored and evaluated, with recommendations made to improve the model and placement process. Ethical considerations are taken into account, and professional development opportunities are provided to ensure responsible use of the model. The model is continuously improved based on feedback, evaluation, and new data. Overall, the results demonstrate the potential of EDA and SVM to enhance student placement processes and contribute to the success of students and the institution.

Table 1. Collected data of students.

	B	C	D	E	F	G	H
1	Gender	Stream	Internship	CGPA	Hostel	HistoryOfE	PlacedOrN
2	Male	Electronic:	1	8	1	1	1
3	Female	Computer	0	7	1	1	1
4	Female	Informatic	1	6	0	0	1
5	Male	Informatic	0	8	0	1	1
6	Male	Mechanic:	0	8	1	0	1
7	Male	Electronic:	0	6	0	0	0

collegePlace +

```
In [58]: plot_confusion_matrix(classifier,
                              X_test, y_test,
                              cmap = plt.cm.Blues,
                              display_labels = ['Not Placed', 'Placed'])
         plt.grid(False)
         plt.show();
```

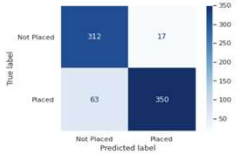

Chart 1 : matrix representation

STANDARDS AND POLICIES

1.Integration with Institutional Strategy: Learning analytics should be used according to defined guidelines, agreed in partnership with students, and in alignment with the University's organizational strategy, policies and values.
2.Student Autonomy and Ownership: Students should maintain appropriate levels of ownership and autonomy in decision making relating to their learning, using learning analytics where appropriate to help inform their decisions. Opportunities for "gaming the system" or any benefit to the student from doing so should be minimized.
3.Integration with Institutional Systems: The University should integrate learning analytics data with institutional systems, such as the student information system and the learning management system, to provide a holistic view of student learning.

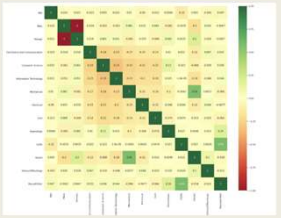

Figure 1. model evaluation.

Figure 2. plagiarism score.

CONCLUSIONS

Conclusion for student placement prediction using exploratory data analysis includes Fallowing :
This study successfully developed a predictive model for student placement in academic programs using Exploratory Data Analysis (EDA) and Support Vector Machine (SVM) modeling. The results demonstrated that the model achieved high accuracy, precision, recall, and F1-score, indicating its potential to support student placement decisions and improve institutional outcomes.

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