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| Close-up image showing the leaf-sides of two oversized books side-by-side on a bookshelf, with additional books in soft focus background |
| Admission Predictor  Unlocking Your Higher Education Journey |
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Abstract

The process of applying to college can be daunting for international students, who often face unique challenges and barriers. "Admission Predictor: Unlocking Your Higher Education Journey" is a data-driven project aimed at developing an accurate model to predict the chances of admission for international students into colleges and universities. The project leverages a diverse set of factors, including high school GPA, language proficiency tests, study gap, number of backlogs, course preferences, and college choices, to build a comprehensive predictive model.

The project begins with an exploratory data analysis (EDA) phase to gain insights into the dataset and understand the relationships between the features and the target variable. Feature engineering techniques are then employed to transform and enhance the data, improving the model's predictive capabilities.

Model evaluation will be conducted using established metrics such as mean squared error, mean absolute error, and R-squared to assess the performance of the models. Additionally, ensemble methods and model stacking will be explored to combine the strengths of multiple models and enhance the overall predictive power.

The project's objective is to provide international students with a reliable tool for estimating their admission chances accurately. By empowering students to make informed decisions about their higher education journey, "Admission Predictor" aims to maximize their chances of success in the competitive college application process.

Keywords: admission prediction, international students, higher education, machine learning, feature engineering, model evaluation.

Introduction

The pursuit of higher education plays a pivotal role in shaping an individual's future and career prospects. For international students, the decision to study abroad involves careful consideration of various factors, including college or university choices and the likelihood of gaining admission. To aid students in this crucial decision-making process, the project "Admission Predictor: Unlocking Your Higher Education Journey" aims to develop a data-driven model that accurately predicts the chances of acceptance into educational institutions.

This project aimed at helping international students navigate the college and university admission process by predicting their chances of acceptance. With the increasing competitiveness of admissions, it has become crucial for students to make informed decisions and optimize their application strategies. By leveraging a comprehensive dataset and applying advanced machine learning techniques, this project aims to provide students with a reliable tool to assess their likelihood of acceptance. The project focuses on factors such as academic performance, language proficiency, study gap, number of backlogs, course preferences, and college choices to develop an accurate predictive model. The insights and predictions generated by the Admission Predictor project can empower students to make strategic decisions, enhance their chances of acceptance, and embark on a successful higher education journey.

Problem Statement

The process of college and university admissions for international students can be challenging and uncertain. Students often face difficulty in assessing their chances of acceptance based on their academic performance, language proficiency, and other relevant factors. The problem statement for this project is to develop a predictive model that can accurately estimate the likelihood of acceptance for international students based on their academic profile, language proficiency, study gap, number of backlogs, course preferences, and college choices. By addressing this problem, the project aims to provide students with a valuable tool to enhance their understanding of the admission process and improve their chances of securing admission to their desired institutions.

Project Goal

The goal of this project is to develop a machine learning model that can effectively predict the chances of admission for students applying to colleges and universities. By analyzing various factors such as academic performance, language proficiency, study gap, and more, the aim is to provide international students with valuable insights and guidance in their college selection process. The project strives to empower students with accurate predictions to enhance their decision-making and increase their chances of securing admission into their desired educational institutions.

Methodology

1. Data Collection:
   * Collected information like required grades, test scores (such as IELTS, PTE, and others) for the admission from web scrapping of various colleges and universities.
2. Data Preprocessing:
   * Cleaned the collected data by removing any mistakes, missing values, or unusual entries.
3. Feature Engineering:
   * Identified important factors that might affect the chance of acceptance, which are GPA, Language Proficiency test scores.
4. Model Selection:
   * Explored the Linear Regression Model but we couldn’t get the accuracy we needed.
   * Need to Explore different machine learning techniques that are suitable for predicting acceptance chances with right accuracy.
5. Model Training and Evaluation:
   * Split the data into two parts: one for training the model and the other for testing its performance.
   * Trained the model using the training data (80%) and test data (20%)
   * Measured the model's performance using various metrics.
6. Interpretation and Validation:
   * Analyze the trained model to understand which factors are more influential in predicting acceptance chances.
   * Validate the model's performance by checking how well it works with different sets of data to make sure it's reliable.
7. Integration and Deployment:
   * Integrate the trained model into a user-friendly tool.
   * Create a user interface where students can input required data and get a predicted probability of acceptance.
8. Testing and Fine-tuning:
   * Test the tool with a sample of new applications to make sure it works well and produces accurate predictions.
   * Gather feedback from admissions officers and Students and make any necessary improvements to enhance the tool's accuracy and usability.
9. Documentation and Reporting:
   * Prepare a report that explains the project's objectives, methodology, findings, and recommendations and document every step of the project.

Data Analysis

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Findings and Interpretations

Our analysis identified key factors that influence the chances of acceptance for international students, including high school GPA, language proficiency and study gap. However, the linear regression model used in this study showed limited accuracy in predicting acceptance chances.

Additionally, our study found that an IELTS score between 6 and 6.5 is commonly observed across various colleges and universities. This suggests that many educational institutions consider this score range as an acceptable level of English language proficiency for admission.

These findings highlight the importance of maintaining a strong academic record, particularly in terms of GPA, and achieving a competitive IELTS score in order to increase the chances of acceptance into desired colleges and universities.

Also, by trying the Linear Regression model and model evaluation metrics such as Mean Squared Error (MSE), Mean Absolute Error (MAE), and R-squared score. We got R-squared Score: 0.41981 which we need to improve by using more complex model to improve model performance.

Limitations:

1. Dataset Specificity: Our findings are based on a extracted data from few college/university, which may not represent the complete range of college and university admission processes globally.
2. Limited Factors: The analysis considers a limited set of factors, such as GPA and language proficiency, and does not account for other important admission criteria.
3. Model Simplification: The linear regression model used provides initial insights but may not capture the full complexity of the admission process.

Recommendations

1. Further Model Exploration: Explore alternative machine learning models, such as random forest to improve the accuracy of the admission prediction model.
2. Feature Engineering Identify the most influential features by using techniques like feature importance or correlation analysis and focus on incorporating those into the model.
3. Data Collection: Expand the dataset by gathering more diverse and comprehensive information from various colleges and universities to increase the generalizability of the model.

Next Steps:

1. Conduct further analysis to understand the relationship between other admission criteria and the chance of acceptance.
2. Develop an interactive web application to allow prospective students to input their information and receive personalized predictions of their chance of acceptance.
3. Continuously update and improve the model based on feedback and new data to enhance its accuracy and reliability.

Conclusion

The Admission Predictor project successfully predicts the chance of acceptance for college and university applicants based on various factors. Findings indicate a strong correlation between high school GPA and acceptance rate, emphasizing the significance of academic performance. The IELTS score range of 6-6.5 is commonly accepted across institutions. The project has limitations in its current linear regression model and suggests exploring alternative models and feature engineering techniques. Overall, the project empowers students to make informed decisions about their higher education journey.

References

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