

Admission IQ Using Machine Learning

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Abstract - Making a short list of universities can be very difficult for graduate students. Undergraduates frequently ponder whether their profile fits the requirements of the universities they have their sights set on. Computer tools have been used more and more to help with college applications in recent years. Students must choose colleges that fit their profiles because college admissions are expensive. Undergraduates can use a machine learning algorithm to help them choose their ideal colleges based on a variety of factors, including university ranking, SOP, GRE, LOR, CGPA, and TOEFL scores. The algorithm can forecast a student's chances of being accepted into a certain university by accounting for each of these variables. This suggested approach can help college students make well-informed decisions about their future and improve their chances of being accepted into the University of their Choice.

Keywords: Prediction System, Stacked Ensemble Model, Machine Learning, Deep Learning, University Admission.

I. INTRODUCTION

Students find it quite difficult to choose colleges. In order to be admitted to graduate school, they need to remember additional requirements. In highly ranked institutes, admission chances are significantly lower due to intense competition. To gain admission to a chosen institute, the Prediction System will recommend institutions mostly based solely on their profiles. As a result, the machine learning version will anticipate college students' shared chances of being admitted to universities. GRE results, accomplishments, talents, etc. are all included in the student profile.

Finding a college to attend based on their GPA, GRE, Quants, Verbal, TOEFL, and AWA scores would be challenging for anyone pursuing graduate or postgraduate study. Instead of applying to universities where they have a probability of being accepted, people could apply to numerous institutions that seek applicants with a better score set. Their future would suffer as a result of this. Applying to universities one has a strong probability of being accepted into is far more significant than applying to universities one may never be accepted to. There aren't many effective methods for determining which institutions to apply to.

To address the aforementioned issue, we have created the Admission Prediction System. By projecting which universities the students will be able to get into based on their grades or test results, it will save them time and effort. It is intended to save kids money and time by removing the need for them to spend it on stressful college research and counselling.

II. MACHINE LEARNING

Arthur Samuel stated in 1959 that computers may learn without being explicitly taught, thanks to a branch of computer science called machine learning. The study of pattern recognition and computational learning in artificial intelligence served as the foundation for the field of machine learning. Through algorithm development, an algorithm is constructed to learn from and predict data. It is closely related to mathematical optimization, which offers machine learning application, theory, and method fields. In general, computational statistics, another discipline that uses computers to generate predictions, is closely connected to (and usually overlaps with) machine learning.

The creation of statistical models and algorithms that enable computers to learn from and make predictions or judgments based on data is the main goal of machine learning. Without being specifically designed, it is used to find patterns and relationships in data and solve certain problems.

ML facilitates the creation of models that aid in the generalization of training data. Large volumes of labeled data are fed into machine learning (ML) algorithms during the training phase, where the algorithms evaluate, extract useful features, and spot trends. Then predictions are created utilizing.

III. LITERATURE REVIEW

A) A University Admission Prediction System using Stacked Ensemble Learning

In the following paper, S. Sridhar presents a case in which a graduate student faces difficulties when shortlisting universities. Due to the software's very dynamic nature, college students tend to focus on tailoring their profiles to

meet the requirements of guaranteed admissions. Furthermore, the importance of using a preferred or chosen institution cannot be overstated, which means that undergraduates must narrow down their short list of colleges based on each individual's qualifications. Students can use the college admission prediction tool to determine their chances of getting into a particular college. A stacked ensemble classifier was presented by Santosh Kolagati, Siddartha Mootha, and Sashank Sridhar to forecast an applicant's chances of being admitted to a particular college [1].

The suggested method's end findings show that it outperforms several other algorithms in terms of admissions prediction when compared to itself. As a result, observations were made. With an overall accuracy of 91%, the suggested method—the stacked ensemble model—performs well. The field of college admission prediction serves an additional function as more and more students pursue their dreams of graduating from a prestigious university. This paper provides a strong method for estimating the likelihood that a student will get admitted to a particular university.

B) Graduate School Recommender System: Assisting Admission Seekers to Apply for Graduate Studies in Appropriate Graduate Schools

In this paper, M. Hasan provides the results of a completed study on the design and development of a recommendation device that helps students applying to graduation programs choose the best graduating institution that fits their overall educational profile. Here, we've developed a technique to transform a relational and MySQL database for college students that contains all kinds of relevant information into a standard database structure for the academic records of a few students who have already been granted the opportunity to study abroad.

Mahamudul Hasan, Deen Md. Abdullah, Md. Shamimur Rahman, and Shibbir Ahmed. In order to help students applying for graduate programs select the ideal university for their profile, the Proposed Recommender Gadget has developed and enhanced an Android app[2].

The outcomes of the suggested method demonstrate the effectiveness of multiple machine learning algorithms to demonstrate the method in student admission prediction. It has been discovered that KNN provides 91% accuracy.

C) HRSPCA: Hybrid Recommender System for Predicting College Admission

In this study, A. Ragab presents a new college admission prediction machine that uses a hybrid recommendation system to forecast a student's acceptance. This is due to the substantial

annual enrollment of University College students who are required to attend institutes [3].

Ahmed M. K., Abdul Fatah, and Abdul H. M. R. proposed a hybrid recommender-based university admissions model. The purpose of the recommender device aims to equitably enroll students in college programs while also adhering to the established requirements of the university. These requirements include enrollment capacity at the university, prior learning requirements, scholar rankings, CGPA, first-year certified exam cost, etc [3].

The suggested recommender device has created and developed a web portal that makes use of student data from database sources. In addition to the prediction model, it had two hybrid recommenders. Students are suggested to the university according to their profiles. Real student data from KAU was utilized to validate the system, which is also applicable to a number of other colleges. This paper suggested that the introduction of two hybrid recommenders in addition to the prediction model improved the performance of the HRSPCA system.

D) Prediction Probability of Getting an Admission into a University using Machine Learning

According to A. Sivasangari conditions in this study, college students frequently struggle to find a supportive group with which to conduct further research based solely on their profile. A few internet tools and advisory services support colleges; however, the online apps are inaccurate, and the advisory services charge exorbitant consulting fees. Thus, this study aims to generalize a version that appropriately predicts the fraction of probability into the college.

Y. Bindhu, R. Vignesh, V. Shivani, A. Sivasangari, and D. Deepa suggested a version that uses an enhanced set of criteria, random wooded area methods, and linear regression. The proportion of probabilities entering the college is accurately predicted by the suggested version. In order to help scholars determine whether or not their profile is appropriate, this edition also provides the evaluation of rankings rather than the risk of prediction based solely on historical data. The suggested version is the best quantitative outcome of a confirmatory incentive expectation version to date and offers a 95% accuracy with the cat boost set of rules [4].

E) Prediction of Graduate Admission using Multiple Supervised Machine Learning Models

In this work, Z. Bitar suggests that there is currently a growing interest in postgraduate study as a means of coping with the competitive labor market. This adds to the workload of college admissions staff in addition to adding to the

pressure on candidates. Any chance to speed up the admissions process motivates both candidates and faculty to look for quicker, more efficient, and more precise methods of admission prediction.

Multiple supervised machine learning models were developed by Z. Bitar and A. Mousa as a way to forecast graduate admissions. The primary goal of this work is to examine different supervised predictive analysis techniques using labeled and unlabeled datasets based on the popular UCLA real-world application, including regression, classification, and ensemble methods[5].

Numerous model performances were presented in this work, including the regression coefficient of determination, classification accuracy, and area under the curve (AUC). In order to adjust precision, ensemble techniques were also used, particularly for impotent or unstable classifiers

This predictor performed admirably; nevertheless, it solely considers the applicant's educational background and ignores personal information due to the dataset. Around the world, admissions practices could be significantly impacted by this prediction. The predictor that is offered can be applied in multiple contexts, such as human resource departments, recruiting agencies, and university admissions offices.

IV. PROPOSED WORK

During model construction, the dataset is regularly divided into train and test sets of 80% and 20%. The training set contains 400 profiles, while the testing set contains 100. Pre-processing is an important phase of the procedure. The goal is to clean up the data and prepare it for use in a predictive algorithm. The methods employed include Naïve Bayes, decision trees, logistic regression, support vector machines, and KNN. This is a hybrid recommendation model. The website contains three modules.

4.1 Admin Module

Registration: Admins can register using a form that includes required fields like name, email, and password. The website will validate the information you submitted. The data is then stored in a database.

Login: Create a login form that compares user credentials to stored data in the database. Redirect the user to the admin dashboard after a successful login.

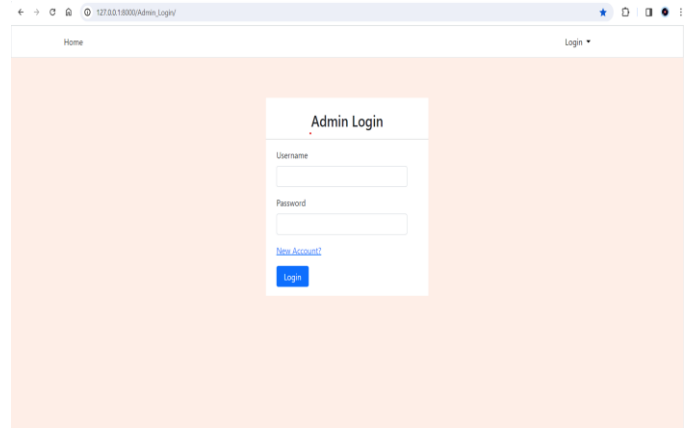


Figure 1: Admin Module

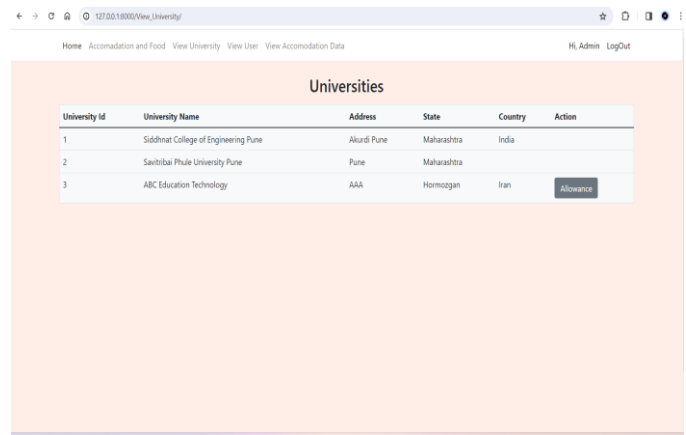


Figure 2: Approved University

University Approved: When a new university applies for registration, a notification system alerts the administrator. The admin can approve or deny registration requests.

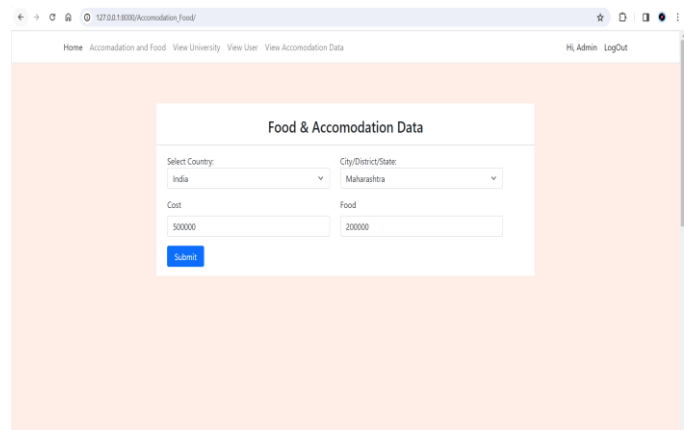


Figure 3: Food & Accommodation Data

Add Country/State Data: This form allows the administrator to add additional countries and states. Create a table in the database to hold monthly or yearly housing and food costs by nation and state. The administrator can change or delete the data.

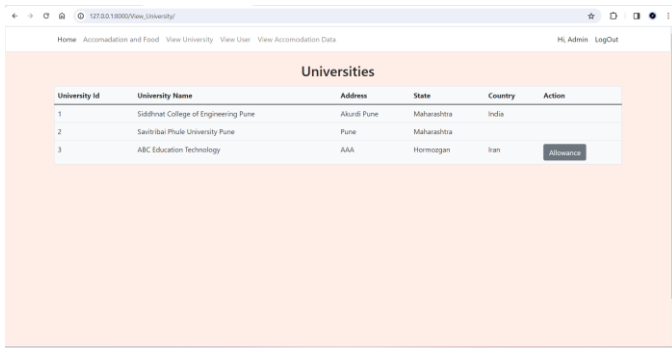


Figure 4: View University

View University: The page displays a list of registered universities, including their name, country, and entrance score. The administrator has the ability to modify or delete university data.

4.2 Student Module

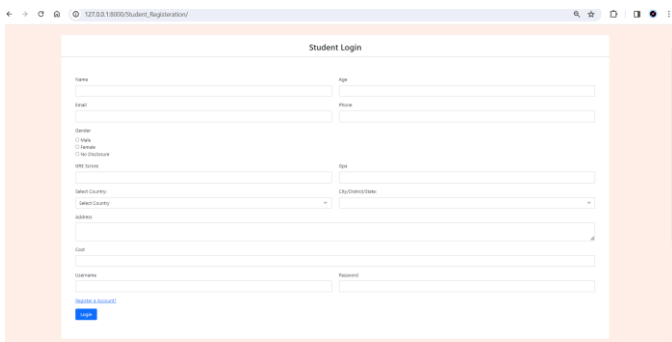


Figure 5: New Student Registration Page

Student Registration: The registration form includes required inputs such as name, email, and password. Implement validation tests to verify that the user enters correct information. Save user data in the database.

Login: The login form checks user credentials against recorded data in the database. Following a successful login, redirect the user to the student dashboard.

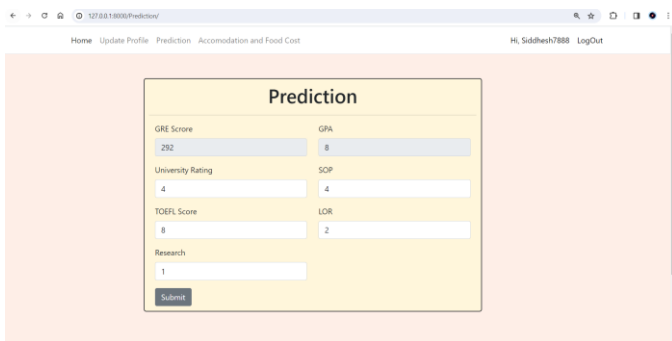


Figure 6: Prediction Page

Add Profile Page: The Add Profile form allows users to provide their profile information, including GRE, GPA, and

TOEFL scores. The user has the option to change or delete their profile information

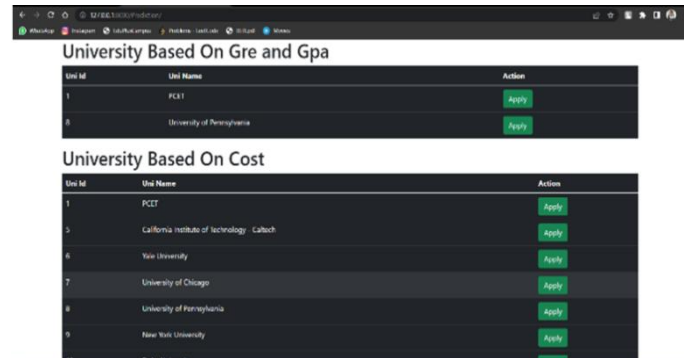


Figure 7: Prediction based on GRE, GPA, and Cost

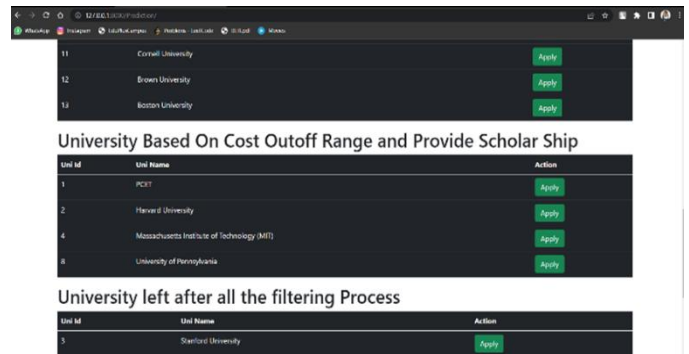


Figure 8: Prediction based on cost and scholarship

Prediction: Use the hybrid ensemble method to forecast a user's acceptance probability based on their profile data.

- If admission is likely, recommend universities depending on the applicant's GRE and GPA results. Consider recommending universities for straight admission if the student has the financial means. If an applicant finds it difficult to pay for a university, recommend one that offers scholarships.

If acceptance is unlikely, recommend all universities that meet the eligibility requirements.

4.3 University Module

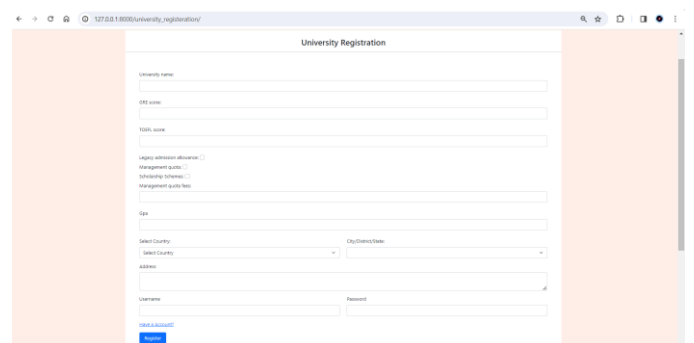


Figure 7: New University Registration Page

University registration: The registration form includes necessary information like a university name, e-mail, and password. To verify that the data is valid, perform validation checks. Save university records in a database system.

University Login: Create a login page that validates the educational institution's credentials against the information stored in the database. Redirect users to the university dashboard after a successful login.

Requirements Add: The educational institution can add criteria for admission, including GRE, TOEFL, and entrance scores, via a form. The university can change or remove their required data.

Approve Students: This enables the university to review all student applications. Allow the university to either accept or decline student applications depending on their admission norms.

V. CONCLUSION

The suggested system is an "Admission IQ Using Machine Learning" built in Django using Python. It is a hybrid recommendation system that speeds up prediction. It takes between three and five seconds to suggest universities to students based on their dataset.

This strategy accurately predicts a student's admission to a suitable university based on their academic performance. As more students pursue degrees, university admission becomes increasingly important.

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