

# UNIVERSITY ADMIT ELIGIBILITY PREDICTOR

## INTRODUCTION:

Students are often worried about their chances of admission to University. The aim of this project is to help students in shortlisting universities with their profiles. The predicted output gives them a fair idea about their admission chances in a particular university. This analysis should also help students who are currently preparing or will be preparing to get a better idea. The model of the project is developed using advanced data sciences and python. The Model uses data of the student like his marks, rank in different exams, grade points, research etc to predict the eligibility of the student to get into a university.

## LITERATURE SURVEY:

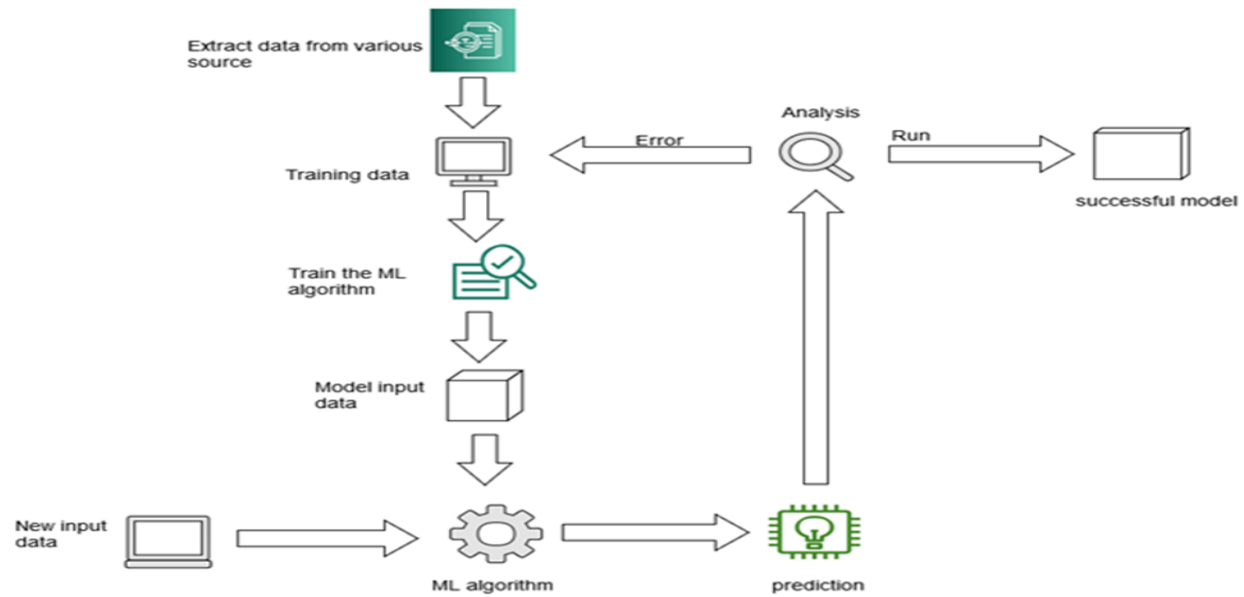
### College Admission Prediction using Ensemble Machine Learning Models

The Education Based Prediction System helps a person decide what colleges they can apply to with their scores. The dataset that is used for processing consists of the following parameters: University name, Quants and Verbal Scores (GRE) TOEFL and AWA Scores. The GRE Test (Graduate Record Examinations) is a standardized test used by many universities and graduate schools around the world as part of the graduate admissions process. In this method a model is built to help students to pick the right universities based on their profiles. The dataset contains information on the student profile and the university details with a field detailing if the admission was positive or not. Various algorithms have been used i.e. Ensemble Machine Learning and the predictions have been compared using key performance indicators. Regression models are used to describe a relation between different variables by using the observed data into a line. Straight lines are used in linear regression models, whereas curved lines are used in logistic and non-linear regression models.

One of the most popular classification algorithms and easiest to learn and understand in decision trees. Decision tree algorithm is also used for solving classification and regression problems. Decision trees use a class label for predicting, for a record. It starts from the root of the tree. Then compare the values of the root with its record attribute. After the comparison, it follows the branch which is corresponding to the value and jumps upon to the next node. The data is ready to be processed, we split it into training and testing data. For this, we will be using 3 machine learning algorithms; linear regression, random forest and neural network. Once these models are built over the dataset, we compare them using key performance indicators. These indicators help us choose the right model for predicting whether an applicant has chances of admission.

### University Predictor using Machine Learning:

The main objective of this method is to help the students to save their time and money that they have to spend at the education consultancy firms. And also it will help them to limit their number of applications to a small number by providing them the suggestion of the universities where they have the best chance of securing admission thus saving more money on the application fees. The architecture is given below:



Multiple machine learning algorithms were used for this research, K- Nearest Neighbor and Multivariate Logistic Regression algorithms were used to predict the likelihood of the students getting admission into university based on their profile. Decision Tree algorithm was used to predict the rank of the college that would be suitable for the students based on their profile and suggest the list of universities accordingly. To conclude in this method K-nearest neighbor and Multivariate logistic regression algorithms were used to create a model that can be used to predict the likelihood of success of a students application to the university based on his/her profile. Both algorithms were tested and their performance was evaluated based on different factors like Accuracy, Sensitivity, Specificity and Kappa value. K-Nearest Neighbor outperformed the model created using Logistic Regression on all the performance measures.

### Predicting Undergraduate Admission:

A method is proposed to build a model that predicts undergraduate admission in universities. Here, the authors apply three machine learning algorithms XGBoost, LightGBM, and GBM on a collected dataset to estimate the probability of getting admission to the university after attending or before attending the admission test. They also evaluate and compare the performance levels of these three

algorithms based on two different evaluation metrics – accuracy and F1 score. Furthermore, the authors explore the important factors which influence predicting undergraduate admission. Proposed a comparative approach to predicting graduate admissions by developing four models of machine learning regression: linear regression, vector support, decision tree, and random forest. The authors prepared the collected data in tabular form from the questionnaire feedback of the students who participated during the data collection. XGBoost gives the best accuracy and F1 score among the three algorithms although the score is lower as expected. In this case, the dataset did not include the expected score of the applicants in the examination. This shows algorithm comparison for predicting admission after the test. Unlike the first case, the score achieved above 80% GBM outperforms XGBoost and LightGBM. The evaluation metrics – accuracy and F1 score both are 95% for GBM. The proposed model using LightGBM and XGBoost also shows excellent results i.e. 93% and above 80% respectively. This method can be applied to predict admission in any other faculties or universities also.

#### **PREDICTING STUDENT UNIVERSITY ADMISSION USING LOGISTIC REGRESSION:**

In this method a model is built to predict the admission of a student into a university. It is built using logistic regression. Logistic regression is a type of statistical model that is often used for classification and predictive analytics. Logistic regression estimates the probability of an event occurring, such as voted or didn't vote, based on a given dataset of independent variables. Since the outcome is a probability, the dependent variable is bounded between 0 and 1. In logistic regression, a logit transformation is applied on the odds—that is, the probability of success divided by the probability of failure. This is also commonly known as the log odds, or the natural logarithm of odds. The admission decision depends on criteria within the particular college or degree program. The analysis might seem straightforward but caution has to be exercised to consider the scores like GRE, TOEFL, university rating, SOP, LOR and CGPA and any outliers should not impact the decision making process. The independent variables in this study will be measured statistically to predict graduate school admission. Higher the GRE, TOEFL score then higher the admit chances. The model predicts 87.5% accuracy and can be used for predicting the admit chances based on the above factors. This model will be helpful for the universities to predict the admission and ease their process of selection and timelines.

#### **Graduate Admission Prediction:**

Student admission problem is very important in educational institutions. This paper addresses machine learning models to predict the chance of a student to be admitted to a master's program. The machine learning models are multiple linear regression, k-nearest neighbor, random forest, and Multilayer Perceptron. Experiments show that the Multilayer Perceptron model surpasses other models. This model uses concepts like Shapiro-Wilk Normality Test, Multiple linear regression, KNN, Random Forest and Multilayer perceptron to predict the eligibility of students.

#### REFERENCE LINKS:

1. <https://medium.com/@jigar18011999/university-predictor-by-machine-learning-2d880e9f3a3>
2. <https://bmcgeriatr.biomedcentral.com/articles/10.1186/1471-2318-7-13>
3. [https://scholar.google.com/scholar?hl=en&as\\_sdt=0%2C5&q=University+Admit+Eligibility+Predictor&btnG=#d=gs\\_qabs&t=1662816689959&u=%23p%3DbGJLUNS-E7AJ](https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=University+Admit+Eligibility+Predictor&btnG=#d=gs_qabs&t=1662816689959&u=%23p%3DbGJLUNS-E7AJ)
4. [https://www.researchgate.net/publication/348433004\\_Graduate\\_Admission\\_Prediction\\_Using\\_Machine\\_Learning](https://www.researchgate.net/publication/348433004_Graduate_Admission_Prediction_Using_Machine_Learning)
5. <https://towardsdatascience.com/predicting-ms-admission-afbad9c5c599>
6. <http://www.ijarset.com/upload/2021/july/07-mail2vkk-07.PDF>