

# Chance of Admission Prediction Using Machine Learning

## Project Report

### 1. Introduction

With increasing competition for higher education, predicting the probability of admission to graduate programs has become highly valuable for students. This project focuses on building a machine learning model that predicts a student's chance of admission based on academic and profile-related factors.

### 2. Problem Statement

Students often struggle to evaluate their admission chances due to multiple influencing factors such as GRE score, TOEFL score, university rating, SOP, LOR, CGPA, and research experience. The objective of this project is to design a predictive system that accurately estimates the probability of admission.

### 3. Objectives

- Analyze student admission data
- Perform data preprocessing and visualization
- Train and evaluate machine learning models
- Predict the probability of admission for new students

### 4. Dataset Description

The dataset used in this project contains student profiles with attributes such as GRE Score, TOEFL Score, University Rating, Statement of Purpose (SOP), Letter of Recommendation (LOR), CGPA, Research Experience, and Chance of Admit.

### 5. System Architecture

The system follows a standard machine learning pipeline: Data Collection → Data Preprocessing → Exploratory Data Analysis → Model Training → Model Evaluation → Prediction.

### 6. Methodology

Data preprocessing includes handling missing values, feature scaling, and splitting the dataset into training and testing sets. Linear Regression and other regression models are used to predict the admission probability.

### 7. Algorithms Used

- Linear Regression
- Ridge Regression
- Lasso Regression

### 8. Model Evaluation

The model performance is evaluated using metrics such as R-squared score and Mean Squared Error (MSE). Higher R-squared values indicate better prediction accuracy.

### 9. Results and Discussion

The trained model successfully predicts admission chances with good accuracy. CGPA, GRE score, and research experience were found to be the most influential features.

## 10. Applications

- Helps students shortlist universities
- Assists counselors in decision-making
- Useful for educational analytics platforms

## 11. Limitations

The model is limited by dataset size and does not consider subjective factors like interviews or extracurricular activities.

## 12. Future Scope

Future improvements may include larger datasets, advanced models like Random Forest or Neural Networks, and deployment as a web or mobile application.

## 13. Conclusion

This project demonstrates how machine learning can be effectively used to predict admission chances, helping students make informed academic decisions.

## 14. Tools & Technologies

- Python
- Google Colab
- Pandas, NumPy
- Matplotlib, Seaborn
- Scikit-learn