

Intelligent Admissions: The Future Of University Decision Making With Machine Learning

1. INTRODUCTION

1.1. Overview

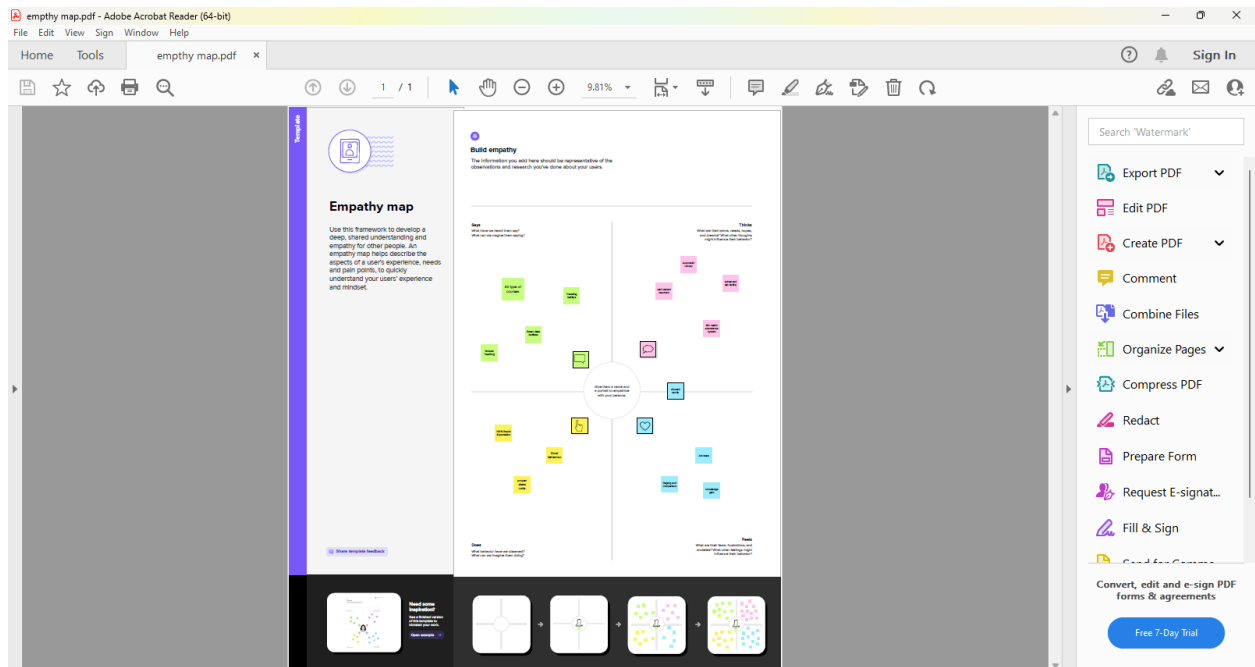
University admission is the process by which students are selected to attend a college or university. The process typically involves several steps, including submitting an application, taking entrance exams, and participating in interviews or other evaluations. Students are often worried about their chances of admission in University. The university admission process for students can be demanding, but by being well-informed, prepared, and organized, students can increase their chances of being admitted to the university of their choice. The aim of this project is to help students in short listing universities with their profiles. Machine learning algorithms are then used to train a model on this data, which can be used to predict the chances of future applicants being admitted. With this project, students can make more informed decisions about which universities to apply to, and universities can make more efficient use of their resources by focusing on the most promising applicants. 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.

1.2. Purpose

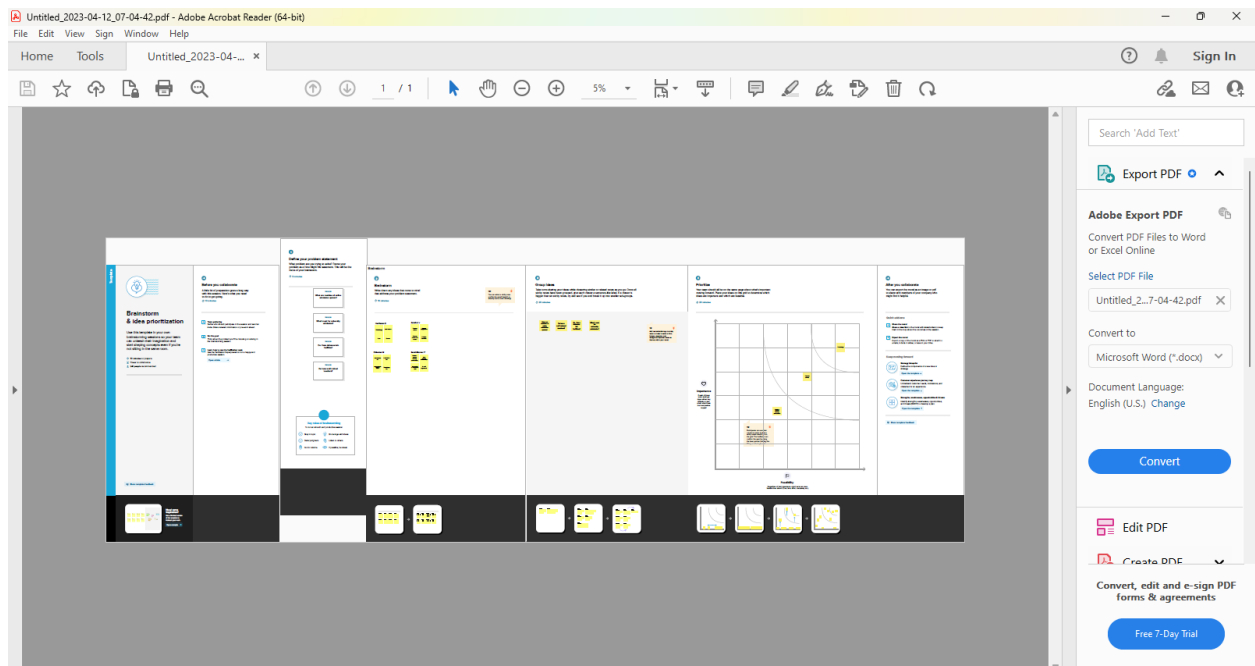
The purpose of this paper is to propose a theoretical model that integrates the different groups of factors which influence the future of University decision-making process of intelligent Admission, analyzing different dimensions of this process and explaining those factors which determine students' choice. Design/methodology/approach – A hypothetical model is presented which shows the purchase intention as an independent variable dependent on five factors: personal reasons; the effect of country image, influenced by city image, institution image, and the evaluation of the programmed of study. The consideration, whether conscious or unconscious on the part of the prospective student, of the different elements making up the factors included in this study will determine the final choice made by that student. Findings – The limitations of this study stem from the nature of the study itself. As a theoretical model, it aims to integrate the factors identified in the existing literature. Thus, future research must try to examine the existing relationships among the aforementioned factors. In particular, it must analyze the weight of each factor on the purchase intention, and the relative importance of each element for the factor it belongs to. Therefore, determining the relative importance of each element and factor would constitute an important source of information for future of university decision making with machine learning. Originality/value – There are few studies which try to tackle the future university decision-making process of the prospective intelligent admission from an integrated point of view. This paper contributes to bridging that gap.

2. Problem Definition & Design Thinking

2.1. Empathy Map



2.2. Ideation & Brainstorming Map



3. RESULT

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UNIVERSITY ADMISSION PREDICTION SYSTEM

Enter your details and get probability of your admission

Enter GRE Score

Enter TOEFL Score

Select University no

☐ 1

☒ 2

☐ 3

☐ 4

☐ 5

Enter SOP

Enter LOR

Enter CGPA

Research

☐ Research

☒ NO Research

← → ↻ localhost:5000/y_predict

Apps HP Connected Reverso Sci-Hub: removing... Google (1) GradeTrust: A Se... (1) Leach Protocol... ACT Fibernet Portal... WhatsAppweb 05_59_06project th... आपदासिक खोज (संय...

Predicting Chance of Admission

A Machine Learning Web App using Flask.

Prediction : You have a chance



4. ADVANTAGES

1. Personalized learning

Not every student adapts to knowledge the same way. Some grasp quickly, whereas some need time. The conventional learning system lacked the concept of customized learning for every unique student. This is where Artificial Intelligence comes to the rescue.

AI in education ensures that the educational software is personalized for every individual. Moreover, with supporting technologies like Machine learning in education, the system backs up how the student perceives various lessons and adapts to that process to minimize the burden.

This blend of AI and education focuses on every individual's requirements through features like AI-embedded games, customized programs, and more to learn effectively.

2. Task automation

With AI in schools and virtual classrooms, the technology takes up most of the value-added tasks. Along with creating a tailored teaching process, AI software systems can take care of checking the homework, grading the tests, organizing research papers, maintaining reports, and making presentations and notes along with other administrative tasks.

This is probably why [businesses rely on integrated AI technology to achieve their day-to-day goals](#). By automating everyday activities, AI makes the learning environment more knowledgeable and productive.

3. Smart content creation

Artificial Intelligence and Machine learning can also help teachers and research experts create innovative content for convenient preaching and learning. Here are a few examples of AI smart content creation;

- **Information visualization**

Where traditional teaching methods cannot offer visual elements except the lab tryouts, AI smart content creation stimulates the real-life experience of visualized web-based study environments. The technology helps with 2D-3D visualization, where students can perceive information in more than one way.

- **Digital lesson generation**

AI in education can help generate bit-size learning through low-storage study materials and other lessons in digital format. This way, students and experts can leverage the entire study material without taking much space in the system. Moreover, these materials will be accessible from any device, so you don't have to worry about remote learning.

For instance, [Appinventive developed an online learning platform, "Gurushala,"](#) that educates millions of students by providing free study material and other interactive forms of learning. Gurushala is one true example of bringing positive change in the digital education generation in today's era.

- **Frequent content updates**

AI also allows users to create and update the information frequently to keep the lessons up-to-date with time. The users also get notified every time new information is added, which helps prepare for upcoming tasks.

4. Adaptable access

With AI in the education market, the information can now be made available to the global audience. A recent survey projects that more than 60% of education businesses rely on [AI/ML-based education app development](#) supported by modern tools and features. Features like multilingual support help translate information into various languages, making it convenient for every native to teach and learn.

AI also plays a vital role in preaching to an audience with visual or hearing impairment. There are AI-powered converter tools such as Presentation Translator that provide real-time subtitles for virtual lectures.

5. Determining classroom vulnerabilities

One of the significant AI technology benefits in education is maintaining a positive impact with remote learning on our environmental footprint. However, many experts believe that AI will soon replace the human touch in learning. Now, this might be the case for other industries but not for the education sector. AI and education go hand-in-hand, complementing manual and virtual teaching.

AI merely supports the experts by automating several tasks and improvising the teaching and learning process for individuals.

6. Closing skill gap

Upskilling students is a valuable solution for businesses that are still struggling with the technology gap. AI and ML-powered software and application development solutions deliver widely available and affordable opportunities for students to upskill.

This is not just limited to students; upskilling and training the existing business workforce can boost morale and spark a company-wide commitment to improvement and innovation.

On top of that, Deep learning and Machine learning for education impact the L&D (Learning and Development) arena by analyzing how people acquire skills. As soon as the system adapts to human ways of studying and learning, it automates the learning process accordingly.

7. Customized data-based feedback

Feedback is a crucial ingredient when it comes to designing learning experiences, whether in a workplace or classroom. The fundamental difference between effective teaching and merely giving out content is that effective teaching includes giving continuous feedback. It's essential that feedback comes from a trusted source; therefore, AI in education analyzes and determines work reports based on everyday data.

A data-based feedback system helps with student satisfaction, removes the bias factor from learning, and helps understand where the skills are lacking. This feedback is tailored according to every student and employee's performance recorded in the system.

8. 24*7 assistance with conversational AI

[Chatbots](#) are an increasingly familiar example of how AI in education consumes data to inform itself and provide assistance accordingly. This benefits both business professionals and teachers for [user engagement](#) in customized learning.

Conversational AI systems also deliver intelligent tutoring by closely observing the pattern of content consumption and catering to their needs accordingly. As per industry research, global eLearning is expected to grow at a compound annual growth rate of [9.1%](#) by 2026.

People worldwide are opting for distance learning and corporate training courses where they don't have to take a break from their classes, family, or job. Here AI chatbots can solve enrollment queries, deliver instant solutions, provide access to required study material and be at assistance 24*7.

9. Secure and decentralized learning systems

The education industry is delivering rapid innovations with AI but is often held back by issues like data protection, alterable data accessibility, outdated certification processes, etc. Amidst all these challenges, AI-based decentralized solutions can bring a positive technical revolution to the education sector.

For instance, [Nova is a blockchain-based learning management system crafted by Appinventiv](#), which is an answer to the genuinity and authentication issues prevalent in the education market. This LMS is powered and backed up by AI and blockchain technology helping millions of teachers and students with data and information protection solutions.

10. AI in examinations

AI software systems can be actively used in examinations and interviews to help detect suspicious behavior and alert the supervisor. The AI programs keep track of each individual through web cameras, microphones, and web browsers and perform a keystroke analysis where any movement alerts the system.

This AI technology benefit in education has proven to be one of the most effective online examination solutions.

An AI-based software and application solution can be beneficial in more ways than one can imagine. This is why EdTech startups and enterprises are attracted to AI technology solutions that successfully address the wide range of users' pain points. Therefore, If you are a part of the professional education sector, it's officially time to integrate AI solutions into your education business.

DISADVANTAGES

There is a risk of students becoming overly reliant on AI feedback, which may limit their ability to improve their writing skills independently. AI tools can be used to create intelligent tutoring systems that can adapt to the learning needs of individual students.

Disadvantages of Artificial Intelligence

- High Costs. The ability to create a machine that can simulate human intelligence is no small feat. ...
- No creativity. A big disadvantage of AI is that it cannot learn to think outside the box. ...
- Unemployment. ...
- 4. Make Humans Lazy. ...

- No Ethics. ...
- Emotionless. ...
- No Improvement.

Nothing is perfect in the world. Machine Learning has some serious limitations, which are bigger than human errors.

- **1. Data Acquisition**
- The whole concept of machine learning is about identifying useful data. The outcome will be incorrect if a credible data source is not provided. The quality of the data is also significant. If the user or institution needs more quality data, wait for it. It will cause delays in providing the output. So, machine learning significantly depends on the data and its quality.
- **2. Time and Resources**
- The data that machines process remains huge in quantity and differs greatly. Machines require time so that their algorithm can adjust to the environment and learn it. Trials runs are held to check the accuracy and reliability of the machine. It requires massive and expensive resources and high-quality expertise to set up that quality of infrastructure. Trials runs are costly as they would cost in terms of time and expenses.
- **3. Results Interpretations**
- One of the biggest advantages of Machine learning is that interpreted data that we get from the cannot be hundred percent accurate. It will have some degree of inaccuracy. For a high degree of accuracy, algorithms should be developed so that they give reliable results.
- **4. High Error Chances**
- The error committed during the initial stages is huge, and if not corrected at that time, it creates havoc. Biasness and wrongness have to be dealt with separately; they are not interconnected. Machine learning depends on two factors, **i.e., data and algorithm**. All the errors are dependent on the two variables. Any incorrectness in any variables would have huge repercussions on the output.
- **5. Social Changes**
- Machine learning is bringing numerous social changes in society. The role of machine learning-based technology in society has increased multifold. It is influencing the thought process of society and creating unwanted problems in society. Character assassination and sensitive details are disturbing the social fabric of society.
- **6. Elimination of Human Interface**
- Automation, Artificial Intelligence, and Machine Learning have eliminated human interface from some work. It has eliminated employment opportunities. Now, all those works are conducted with the help of artificial intelligence and machine learning.
- **7. Changing Nature of Jobs**
- With the advancement of machine learning, the nature of the job is changing. Now, all the work are done by machine, and it is eating up the jobs for human which were done earlier by them. It is difficult for those without technical education to adjust to these changes.
- **8. Highly Expensive**
- This software is highly expensive, and not everybody can own it. Government agencies, big private firms, and enterprises mostly own it. It needs to be made accessible to everybody for wide use.
- **9. Privacy Concern**
- As we know that one of the pillars of machine learning is data. The collection of data has raised the fundamental question of privacy. The way data is collected and used for commercial purposes has always been a **contentious issue**. In India, the Supreme court of India has declared privacy a fundamental right of Indians. Without the user's permission, data cannot be collected, used, or stored. However, many cases have come up that big firms collect the data without the user's knowledge and using it for their commercial gains.
- **10. Research and Innovations**
- Machine learning is evolving concept. This area has not seen any major developments yet that fully revolutionized any economic sector. The area requires continuous research and innovation.



5. APPLICATIONS

Artificial intelligence, machine learning, and big data have afforded tremendous improvements to almost every field, including higher education. For example:

- The University of Aberystwyth in the UK has already developed—over a decade ago, in fact—the necessary robotic infrastructure to carry out scientific research on its own: developing hypotheses, conducting experiments, and analyzing required datasets. This represents a significant development in the experimental and research arena in order to ensure the accuracy of results and allow the human employees to focus on a more critical function
- The publisher Elsevier is using artificial intelligence to analyze literature reviews, measure plagiarism, and identify forged numerical or statistical features and details. This will ensure that unethical behavior is flagged before any publication goes live. Similarly, higher education institutions could benefit from such practices by implementing AI-induced mechanisms that would prevent malpractices in the assessment process, resulting in higher quality results.
- Intelligent chatbots based on natural language programming (NLP) are being already used by universities across the globe. The Technical University of Berlin (TUB), for example, has developed a chatbot system that can guide students around campus and help them choose their courses. Administrators at Spain's University of Murcia were surprised to learn that its chatbot system answered 91% of 38,708 questions accurately. The chatbot enabled the university to operate outside of working hours and had a positive psychological impact on students—they became more motivated to use the chatbot over time, knowing there would be a tool to communicate directly with the university administration on an ongoing basis.
- Virtual assistants play a key role at many universities. Carnegie Mellon University, through its Open Learning Initiative (OLI), has developed AI-induced cognitive tutors to engage students. This had positive results in students' overall performance and dedication levels. Similarly, at Georgia Institute of Technology, a virtual teaching assistant (TA), using IBM's Watson Platform, was implemented in order to provide responses to about 40,000 questions during the course 'Knowledge-Based Artificial Intelligence'. This ensured the prevention of low student retention rates and positive class engagement.

What Artificial Intelligence Can Bring to Higher Ed

Among some of the benefits of using information technologies in higher education, machine learning improves the learning experience and the ability to analyze the management of campus at all levels and better organize tasks. In addition to this, it allows the ability to receive new opinions from the input of a computer. Consider the following use cases.

A New Way to Plan Programs

Imagine planning only one academic program: How many variables should you be considering? How many options do you have available? How many combinations of courses, rooms, or students should you consider? How long does it take humans to reach a decision?

If we consider curriculum development, AI's speed, accuracy, and consistency can ensure that an adequate subject selection and distribution will be established based on pre-set parameters by the educator or administrator. This would enhance the institution's dynamic adaptation to the growing number of students and new programs.

Bias-Free Admissions Management

Machine learning and big data analysis fully exploit the power of artificial intelligence to expand the number of options and scenarios of any complex planning in our institution, such as admissions management.

Let's take the example of Kira Talent, a Canada-based start-up that sells a cloud-based admissions planning platform. The company was able to shortlist up to nine different types of human bias during the student admission process, such as race, religion, and gender. However, the most critical and determining bias originates in the reviewer's psychological exhaustion and the ever-growing variety of interviewers. This creates an inconsistency in the human-driven interview process which can be prevented by using AI. Alongside this, AI could also help to increase the accuracy of background checks, avoiding admission scandals like the ones that occurred in recent times.

Comparably, Taylor University in Indiana uses Salesforce AI-driven software that includes Protected Fields, which is a feature that displays pop-up alerts in order to avoid biases such as surnames that might indicate the place of origin, race, or even religion.

Large-Scale Learning Analysis

At the World Economic Forum in Davos, Switzerland, Dr. Katharina Hauck, senior lecturer in health economics at Imperial College London, talked about the future of AI and how it is beginning to enhance large-scale analysis, for example, in the health industry. It uses variable selection models through which it tests the importance of each factor with respect to the rest in scenarios where there may be more than 100,000 sub-models, allowing us to reduce estimates from weeks to a few days. This discipline could play a key role in the area of learning analysis, not only in curriculum quality but in the creation of more adaptive learning systems.

The long-term benefits of implementing learning analysis in higher education can be:

- Improving student retention. For example, at the University of New England, the student attrition was reduced to 12% and the students displayed a growing sense of belonging to the class and learning community in general.
- Supporting informed decision-making. In this case, at the University of Adelaide, educators were able to enhance the design of collaborative activities based on the data collected. Additionally, learning analysis can provide inputs about the most suitable teaching assistants to be assigned to a particular group of students, as it is applied at the University of Edinburgh.

Scenario Planning and Improved Decision Making

Machine learning information allows administrators to explore possible future scenarios simulating realities at low cost without incurring many of the risks of real experimentation. With the help of human questions and a good conceptual framework, smart machines can help managers to review vast volumes of data to discover patterns.

In addition to that, the use of machine learning in management can show the long-term consequences of certain short-term decisions. Thus, machines can help identify unexpected consequences of a resolution or discover value niches with rapid experimentation, at high speed.

For example, artificial intelligence is used to track student performance as it occurs at Georgia State and Arizona State where this technology is being used to predict scores and assure that deserving students reach their full potential and prevent those who are underperforming from dropping out. Universities will need to cope at the pace of technological development which will require the creation of new jobs, departments, and degree courses.

In this way, higher education executives can consider the various scenarios available in preventing moral, ethical, or cultural disturbances from taking place.

Implementing the Technology: Recommendations

Higher education institutions utilize Enterprise Resource Planning (ERP) systems which allow us to manage all the influx of information. However, they fail to automate the delivery of solutions. Thus, many universities have realized that an ERP isn't adequate to handle so much workload because it cannot dynamically manage the automation of the academic planning process.

It is here where machine learning techniques become essential using what is termed as "intelligent decision-making systems" that allow the elimination of several inconveniences of ERP and other traditional decision-making systems, such as lack of historical data references and lack of dynamic functioning. AI will be able to effectively manage simulations and predictions in areas such as decentralization of campus management, general planning, student profiling, and collaborative work.

The best way toward a full-fledged implementation is to provide an adjustment time frame period crossing the required stages upon this technological revolution:

- Implementation: the institution must define its own technological requirements depending on the work methodology, structure, program distribution and financial investment required.
- Rejection: confusion and distress will take place as it is required to address the fact that these new technologies will take away several job roles and create unemployment at a certain rate. Data privacy will also be an active concern as data requirements will increase with the development of technology and the need for a constant flow of real-time dynamic data where data ownership might become an obsolete concept. Similarly, the staff will be undergoing a fundamental upskilling process when it comes to new teaching methodologies with the utilization of various tools and, consequently, reluctance toward adaption will be present.
- Adjustment: upon the regular use of this technology, the staff and students will understand the need for implementation and will show interest in understanding the mechanisms involved and long-term impact on institutional productivity.
- Acceptance: also known as the Technology Acceptance Model (TAM), which explains the acceptance of new technologies by users based on three key elements: the technological usefulness, easiness to operate, and attitudinal approach.
- Continuous Development: after accepting the need and interactivity of this technology, users will feel the need to take part in future advances that these systems can bring about, acknowledging the durable benefits provided.

6. CONCLUSION

The main role of AI in education is the automation of both academic and administrative tasks, personalized learning, smart content, and all-time accessibility. Over the course of time, AI has resolved the issue of accessibility in several fields like health, environment, etc. India's potential for AI growth has made it unavoidable for the country to integrate technology into education in order to take advantage of it and better educate India's young people for the future.

7.CODING

```
import numpy as np
```

```
import pandas as pd
```

```
import matplotlib.pyplot as plt
```

```
import seaborn as sns
```

```
%matplotlib inline
```

```
data = pd.read_csv('Admission_Predict.csv')
```

```
data.info()
```

```
data.isnull().any()
```

```
data=data.rename(columns = {'Chance of Admit':'Chance of Admit'})
```

```
data.describe()
```

```
sns.distplot(data['GRE Score'])
```

```
sns.pairplot(data=data,hue='Research',markers=["^","v"],palette='inferno')
```

```
<Axes: xlabel='University Rating', ylabel='CGPA'>
```

```
pip install numpy
```

```
pip install pandas
```

```
pip install matplotlib
```

```
pip install seaborn
```

```
import numpy as np
```

```
import pandas as pd
```

```
import matplotlib.pyplot as plt
```



```

import seaborn as sns

%matplotlib inline

Category = ['GRE Score','TOEFL Score','University Rating','SOP','LOR','CGPA','Research','Chance of
Admit']

color = ['yellowgreen','gold','lightskyblue','pink','red','purple','orange','gray']

start = True

for i in np.arange(4):

fig = plt.figure(figsize=(14,8))

plt.subplot2grid((4,2),(i,0))

data[category[2*i]].hist(color=color[2*i],bins=10)

plt.title(category[2*i])

plt.subplot2grid((4,2),(i,1))

data[category[2*i+1]].hist(color=color[2*i+1],bins=10)

plt.title(category[2*i+1])

plt.subplots_adjust(hspace = 0.7, wspace = 0.2)

plt.show()

from sklearn.preprocessing import MinMaxScaler

sc = MinMaxScaler()

x=sc.fit_transform(x)

x

x=data.iloc[:,0:7].values

x

y=data.iloc[:,7:].values

y

from sklearn.model_selection import train_test_split

x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.30,random_state=101)

```

```

y_train=(y_train>0.5)

y_train

y_test=(y_test>0.5)

from sklearn.linear_model.logistic import LogisticRegression

cls=LogisticRegression(random_state=0)

lr=cls.fit(x_train,y_train)

y_pred=lr.predict(x_test)

y_pred

from sklearn.metrics import accuracy_score,recall_score,roc_auc_score,confusion_matrix

print("\nAccuracy score: %f" %(accuracy_score(y_test,y_pred)*100))

print("Recall score: %f" %(recall_score(y_test,y_pred)*100))

print("ROC score: %f\n" %(roc_auc_score(y_test,y_pred)*100))

print(confusion_matrix(y_test,y_pred))

from sklearn.metrics import accuracy_score,recall_score,roc_score,confusion_matr:

print (classification_report(y_train,pred))

print (classification_report(y_test,pred))

import numpy as np

from flask import flask,request,jsonify,render_template

import pickle

app=Flask(__name__)

from tensorflow.keras.models import load_model

model=load_model('model.h5')

def home():

    return render_template('Demo2.html')

```