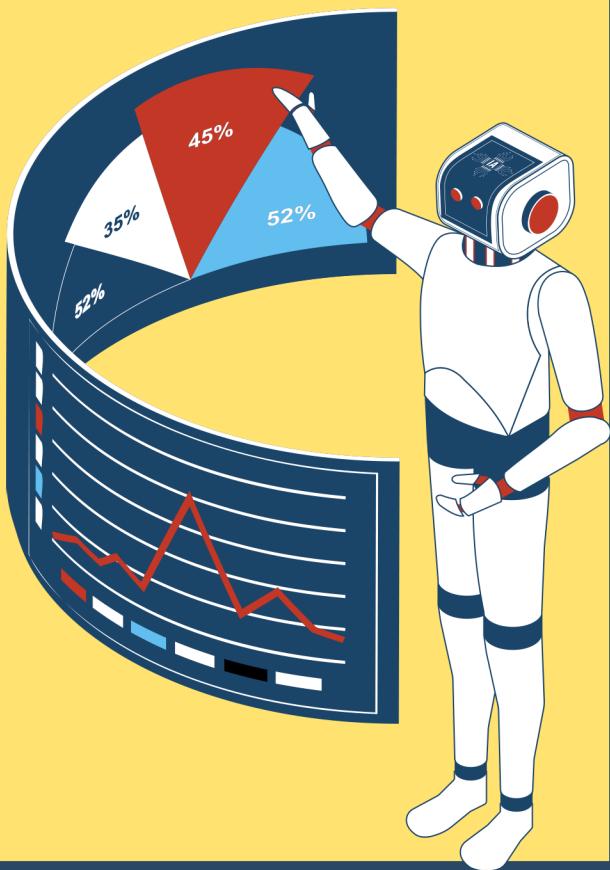


# Placement prediction WebApp Using Python & Machine Learning



# Abstract:

- » An educational institution has one of the most important objectives that is placement of a student. Educational institutions are always working for the placement of student by introducing new courses and skills. The analytical study of the skills of student, both technical and soft skills give idea about the student will be placed or not. This model will give idea about the skill to be prepared for the placement
- » The proposed model predicts whether the student will place or not. It uses technical and soft skills. In this project the previous year student's data is used to predict the chance of student placement. The built model is based on the decision tree classification algorithm. This classification model classifies the student into the placed or not placed category.
- » This classification model will help the student to check their progress easily from time to time. Parameters used for the prediction are the academic score, internship done or not, total number of backlogs etc. The proposed model is also compared with the other classification model with their accuracy. The accuracy obtained from this model is 85%. The model also helps in analysis of difference between skillset of placed and not placed student.

**Keywords:** Machine learning, Decision tree algorithm, python flask



# INTRODUCTION:

## Purpose:

To study the machine learning algorithms and implantation of same for the prediction of the student. The model built using decision tree algorithm able to predict the placement of student based on previous year student data. Help students to improve their skillset from time to time. Compare Built model's accuracy with already existing models for placement prediction to understand efficiency of the algorithm used.

## Scope:

The project is based on the decision tree classification algorithm in machine learning. It involves the study and comparison between the different machine learning algorithms. The model also able to study the analysis of student skillset require for placement.



# Objectives:



To study the decision tree algorithm.



To implement decision tree algorithm for placement prediction.



To compare the performance of decision tree algorithm with other machine learning algorithms to understand efficiency of algorithms.

# ABBREVIATIONS USED:

- 01** CSS – Cascading Style Sheets
- 02** HTML- Hyper Text Markup Language.
- 03** ML- Machine Learning
- 04** REST- Representational State Transfer.
- 05** API- Application Programming Interface
- 06** SVM- Support Vector Machine
- 07** KNN- K-Nearest Neighbours
- 08** XGBoost- Extreme Gradient boosting

# SYSTEM ANALYSIS

INPUT

- Gender: Categorical (e.g., Male, Female)
- Stream: Categorical (e.g., Engineering, Commerce, Science)
- Internship: Binary (0 or 1 indicating no or yes, respectively)
- CGPA: Continuous numerical
- Backlogs: Discrete numerical (number of backlogs)

OUTPUT

Prediction of placement outcome: High chances or low chances



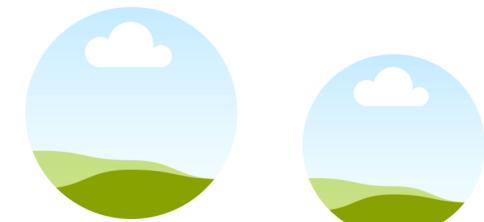
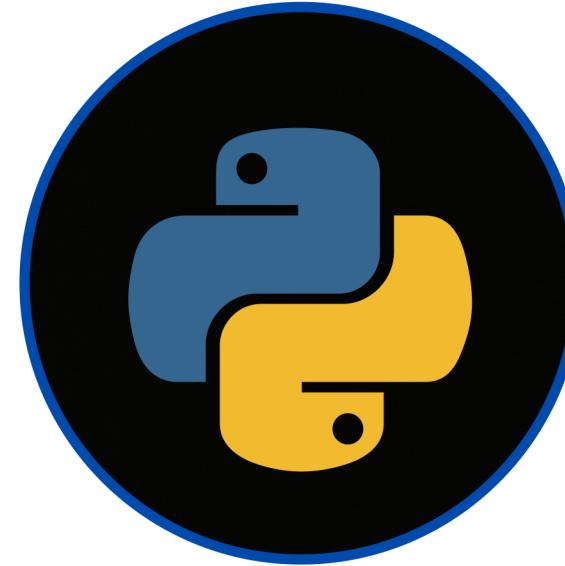
# SYSTEM REQUIREMENTS

## Hardware Requirements:

- PC with the configuration as Pentium IV 1.7 GHz. 128M.B RAM, 40 G.B HDD, 15" Color
- Adequate storage space for storing the application code, trained model, and any associated data files
- Monitor, Keyboard, Mouse

# Software Requirements:

- Python 3.x: Required for running the Flask web application and machine learning model
- Flask: Web framework for building the user interface and handling HTTP requests.
- NumPy: Library for numerical computations, used for data manipulation
- pandas: Library for data manipulation and analysis, used for loading and preprocessing data
- scikit-learn: Library for machine learning algorithms and tools, used for training and using the prediction model
- Web browser: Users need a modern web browser to access the web interface

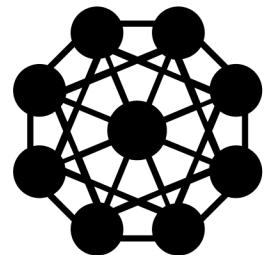


# SOFTWARE SPECIFICATIONS:

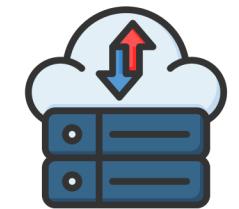
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Flask Web Application



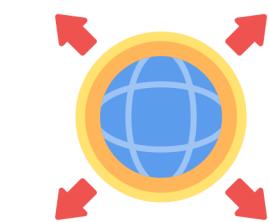
Machine Learning Model



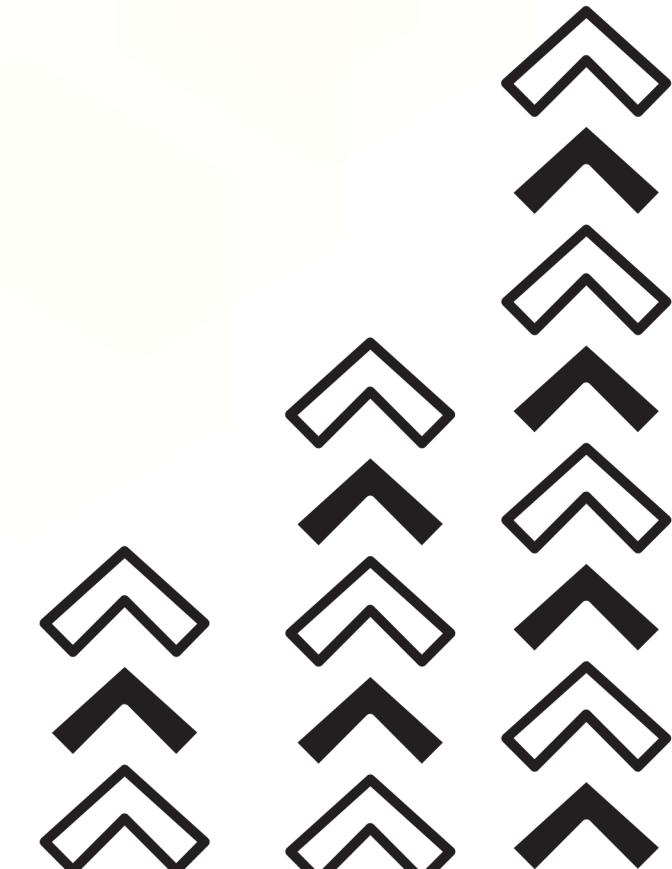
Data Storage



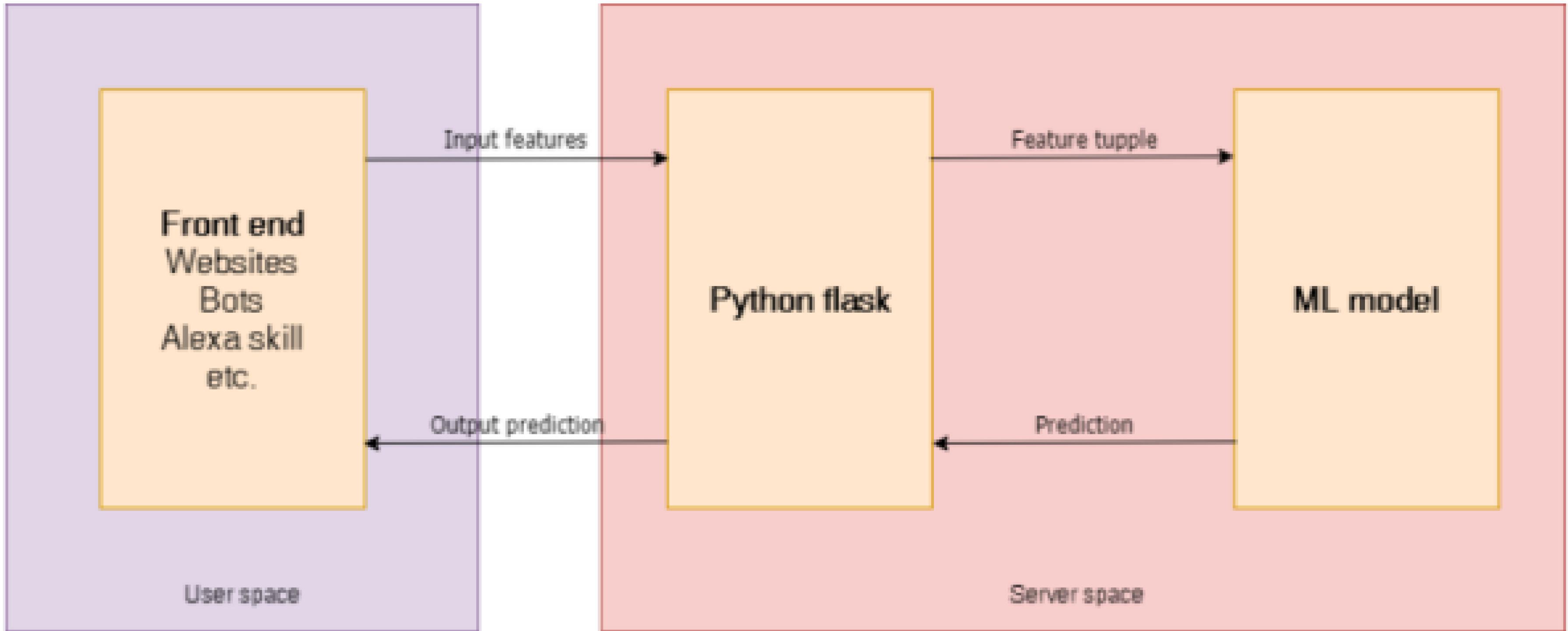
Development Environment



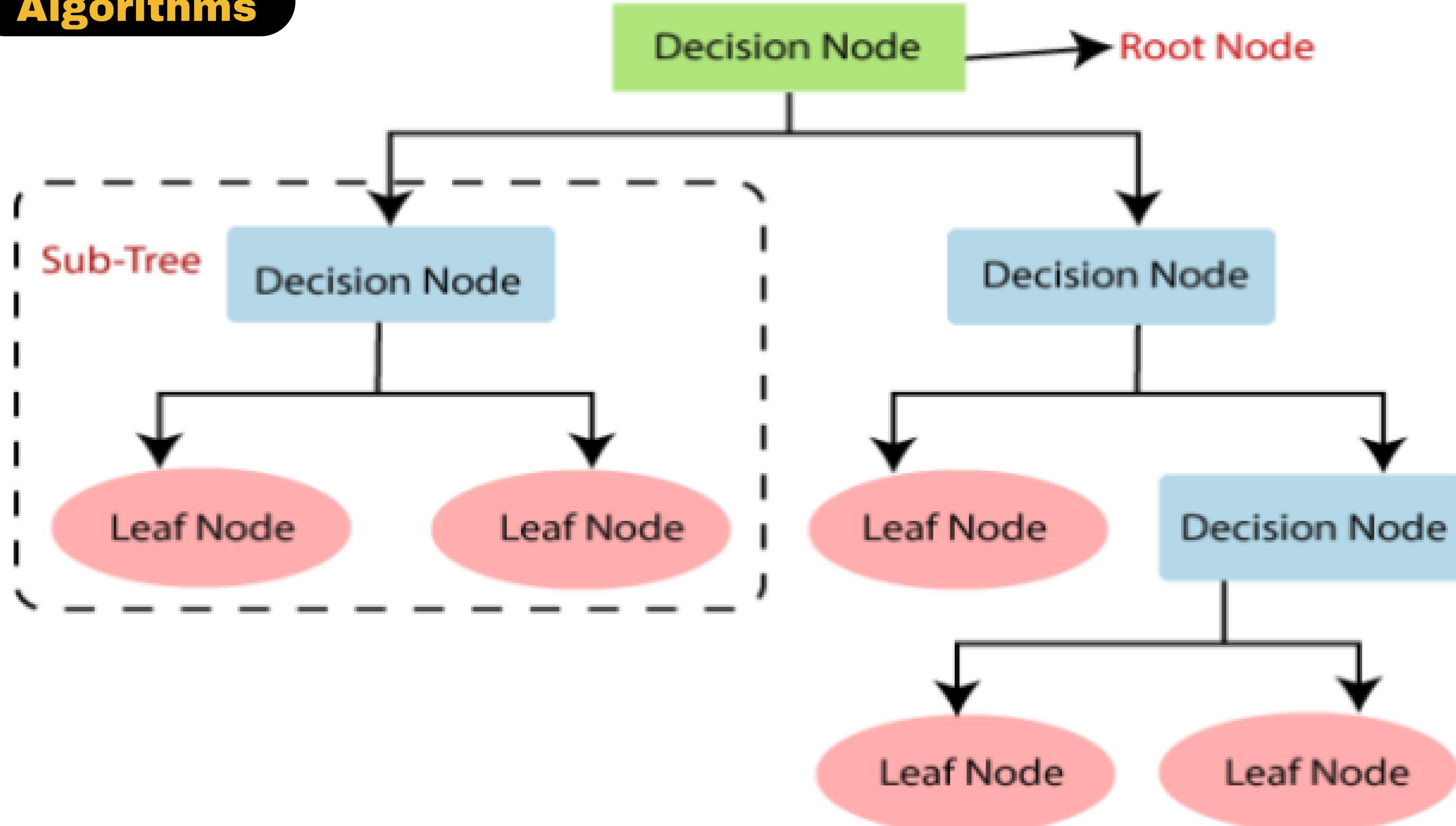
Deployment Environment



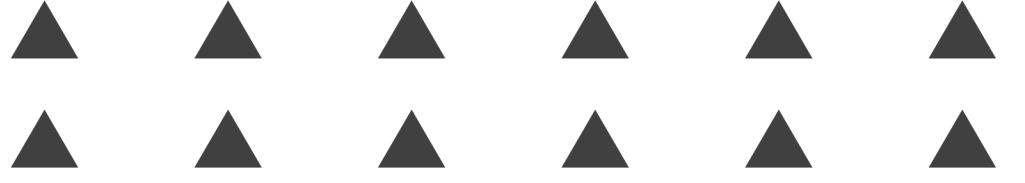
# >>> SYSTEM ARCHITECTURE AND DESIGN



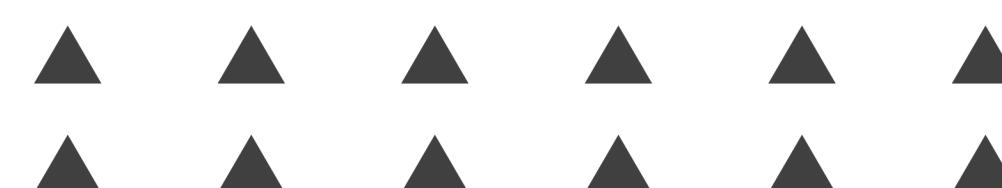
# Algorithms



# SYSTEM TESTING



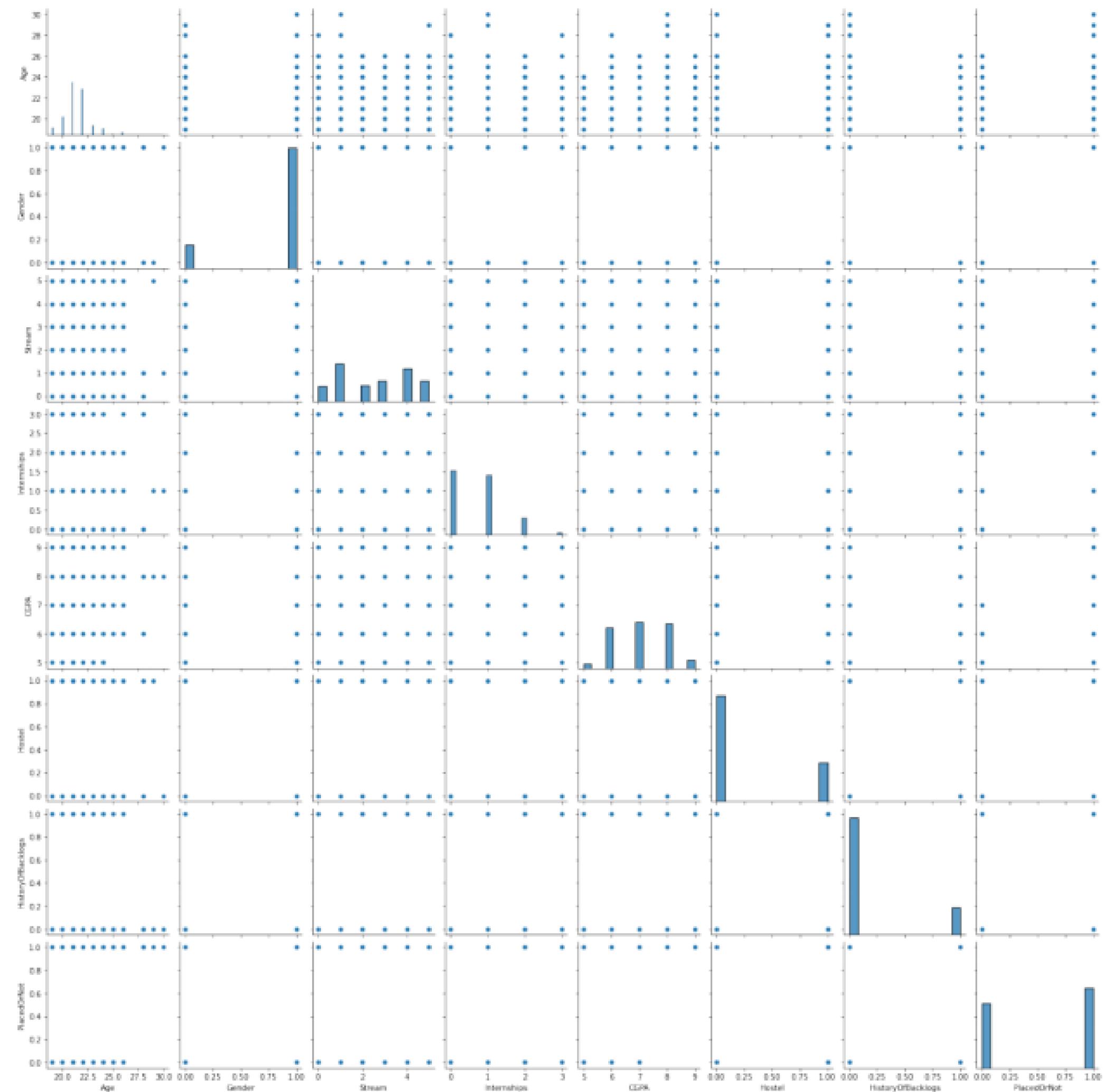
- Unit Testing
- Integration Testing
- Functional Testing
- Performance Testing
- Security Testing
- Usability Testing
- Regression Testing
- Deployment Testing



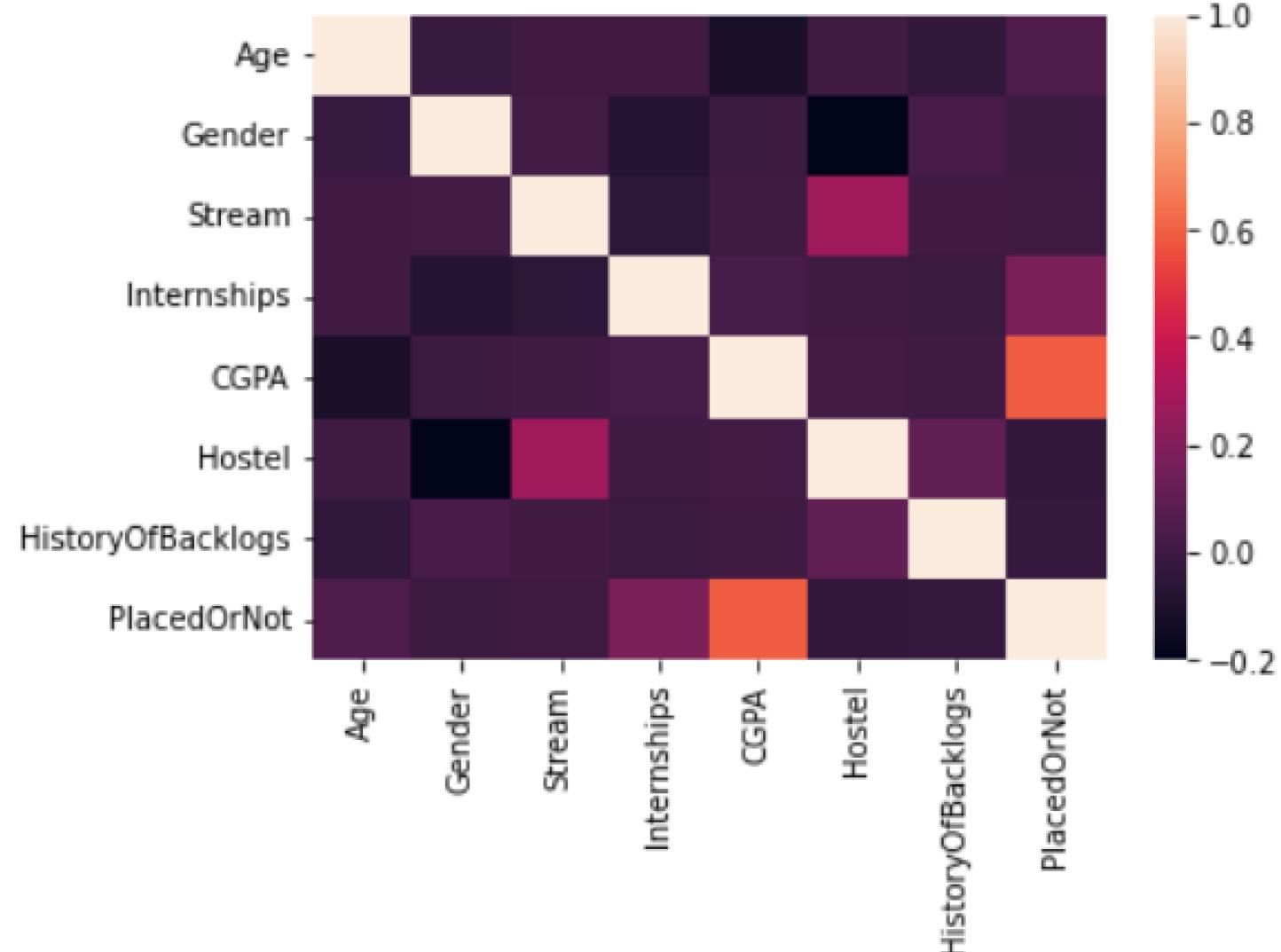
# RESULTS

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## Dataset Interpretation ( Correlation graph )



# Correlation heatmap



# Dataset Description

	Age	Gender	Stream	Internships	CGPA	Hostel	HistoryOfBacklogs	PlacedOrNot
count	2966.000000	2966.000000	2966.000000	2966.000000	2966.000000	2966.000000	2966.000000	2966.000000
mean	21.485840	0.834457	2.562374	0.703641	7.073837	0.269049		
std	1.324933	0.371732	1.653853	0.740197	0.967748	0.443540		
min	19.000000	0.000000	0.000000	0.000000	5.000000	0.000000		
25%	21.000000	1.000000	1.000000	0.000000	6.000000	0.000000		
50%	21.000000	1.000000	3.000000	1.000000	7.000000	0.000000		
75%	22.000000	1.000000	4.000000	1.000000	8.000000	1.000000		
max	30.000000	1.000000	5.000000	3.000000	9.000000	1.000000		
HistoryOfBacklogs		PlacedOrNot						
2966.000000		2966.000000						
0.192178		0.552596						
0.394079		0.497310						
0.000000		0.000000						
0.000000		0.000000						
0.000000		1.000000						
0.000000		1.000000						
1.000000		1.000000						

# ► Model accuracy

( The model showed 85.7% accuracy, 96.6% precision, 76.9% recall and 85.7% F1 score )

```
acc = metrics.accuracy_score(y_test,y_pred)  
acc
```

```
0.8573033707865169
```

```
pre = metrics.precision_score(y_test,y_pred)  
pre
```

```
0.9669211195928753
```

```
re = metrics.recall_score(y_test,y_pred)  
re
```

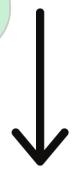
```
0.7692307692307693
```

```
f1 = metrics.f1_score(y_test,y_pred)  
f1
```

```
0.8568207440811726
```

# Webapp results

Final web page



Webpage Interface

Welcome to Placement Prediction App

Select Stream  
Please select

Enter CGPA

Enter Previous Internships

Enter Backlogs

Select Gender  
Please select

Submit

Result Page

Welcome to Placement Prediction App

Your Result is  
Yes

This Website uses Decision Tree Model to predict results

# CONCLUSION



The campus placement process holds immense significance for both educational institutions and students, serving as a critical juncture that defines the future trajectories of individuals and reflects the effectiveness of academic programs. This project endeavours to enhance the performance and opportunities for students by leveraging advanced analytical techniques, specifically classification algorithms like Decision Trees, to analyse and forecast placement outcomes.



**THANK YOU !**