Technical Architecture

Date	05 November 2022
N	PNT2022TMID21016
Project Name	University Admit Eligibility Predictor
Maximum Marks	4 Marks

System Architecture Diagram:

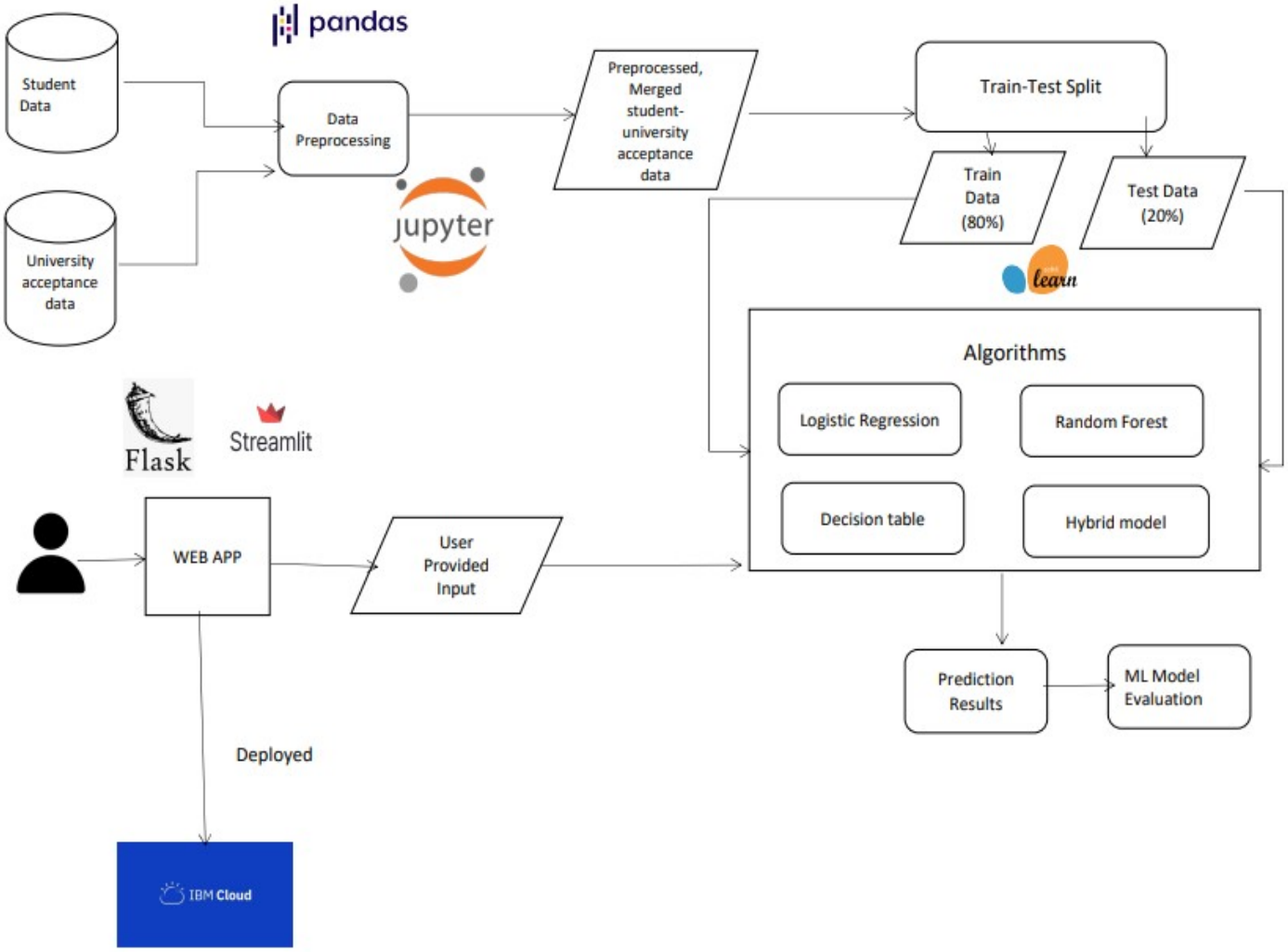

Table-1: Components & Technologies

S NO.	Component	Description	Technology
1.	User Interface	The Front-end part of the application for accepting user data.	Flask, Streamlit
2.	Dataset pre-processing	Removing inconsistencies in the dataset.	Pandas, Numpy, Python
3.	Application Logic	The main business logic for the application.	Python
4.	Database	For storing the details about the student & universities	MySQL, IBM DB2, IBM Cloudant, etc.
5.	Data Visualization	Graphical visualization of student data, University's previous acceptance pattern, Heat maps depicting the correlation of different attributes that play a major role in deciding their acceptance, etc	Matplotlib, Seaborn, Plotly
6.	File Storage	For storing the SOPs, LORs, scorecards and other required PDF documents uploaded by the user.	IBM Cloud File Storage
7.	ML Model	Models to be used for prediction – LogisticRegression, DTree, Random Forest and a Hybrid Deep Learning based model.	Scikit-Learn
8.	Performance Metrics	Accuracy of the ML model on the trained and tested data.	Root Mean Squared Logarithmic Error (RMSLE), Mean Squared Error (MSE)
9.	Infrastructure	Cloud Server Configuration for hosting the web app.	IBM Cloud Hosting

Table-2: **Application Characteristics**

SN O.	Characteristics	Description	Technologies Used
1.	Security Implementations	Authentication of the users is crucial before making the predictions.	Cloud authentication serviceswith modern, secure encryption schemes like SHA 256
2.	Availability	Since the web app is hosted on cloud, so it is accessible and supports any device from anywhere. Also, load balancing will be implemented using IBM cloud services to distribute the load across multiple servers.	IBM Cloud Hosting, IBM Load Balancer
3.	Performance	Four different ML models will be implemented,– Logistic Regression, Decision Tree, Random Forest and hybrid model and then highest accurate model is determined after comparing the model accuracy and recall values.	Scikit-Learn, Root Mean Squared Logarithmic Error (RMSLE), Mean Squared Error(MSE)
	Scalable Architecture	Even if the number of users for the web application increases the proposed architecture is scalable, as the system has a cloud storage for storing the PDF and documents, which can easily handle many requests. Also, the possibility of the website downtime or crashing is very minimal even if the number of users increase as IBM Load balancer manages the distribution of load across various server.	IBM Cloud Services