Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	10 October 2023
Team ID	NM2023TMID07501
Project Name	Unleashing The Potential Of Our Youth: A Student Performance Analysis

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table

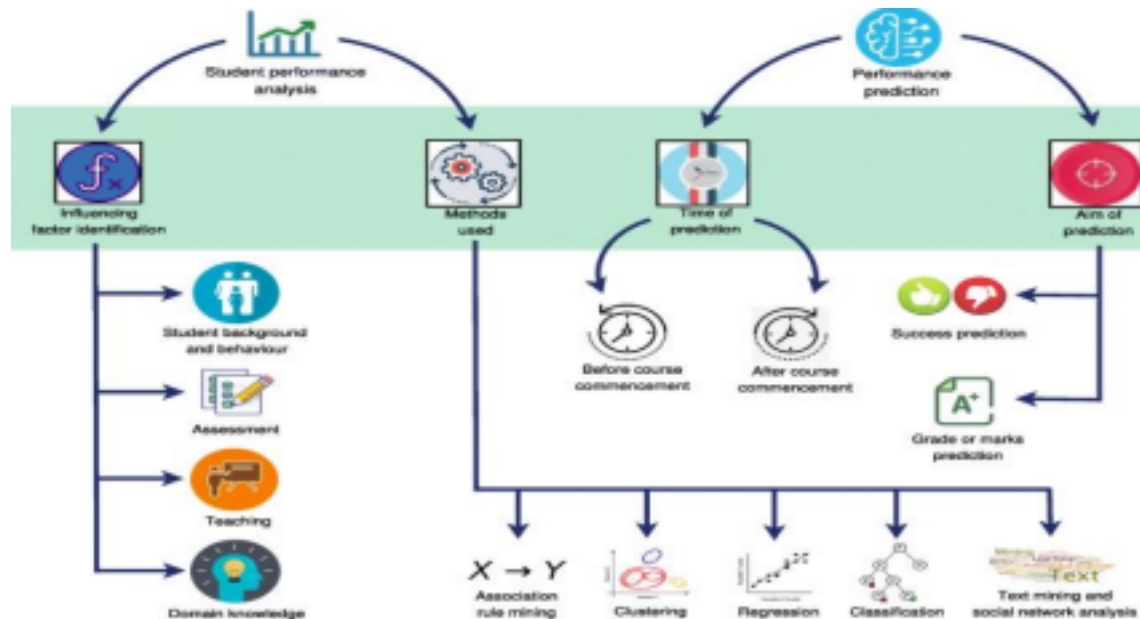2 **Example: A Student Performance Analysis**

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	HTML, CSS, JavaScript, React JS
2.	Application Logic-1	Data Preprocessing and Cleaning	Python (Pandas, Numpy)
3.	Application Logic-2	Predictive Analytics	Python (Scikit-Learn, XGBoost)
4.	Application Logic-3	Natural Language Processing	IBM Watson Assistant
5.	Database	Data Type, Configurations	IBM DB2
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
7.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
8.	External API-1	Education Data API	National Center for Education Statistics (NCES) API
9.	External API-2	Location Data API	Google Maps API
10.	Machine Learning Model	Supervised Learning Model	Random Forest, Support Vector Machine (SVM)
11.	Infrastructure (Server / Cloud)	Application Deployment on Cloud	IBM Cloud, Github

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology

1.	Open-Source Frameworks	List the open-source frameworks used	Pandas, NumPy
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	HTTPS
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	Docker

S.No	Characteristics	Description	Technology
4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Kubernetes
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	Redis

References:

https://www.analyticsvidhya.com/blog/2023/04/student-performance-analysis-and-prediction/