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

Date	03 October 2022
Team ID	NM2023TMID03082
Project Name	Unleashing the Potential of Our Youth: A Student Performance Analysis
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

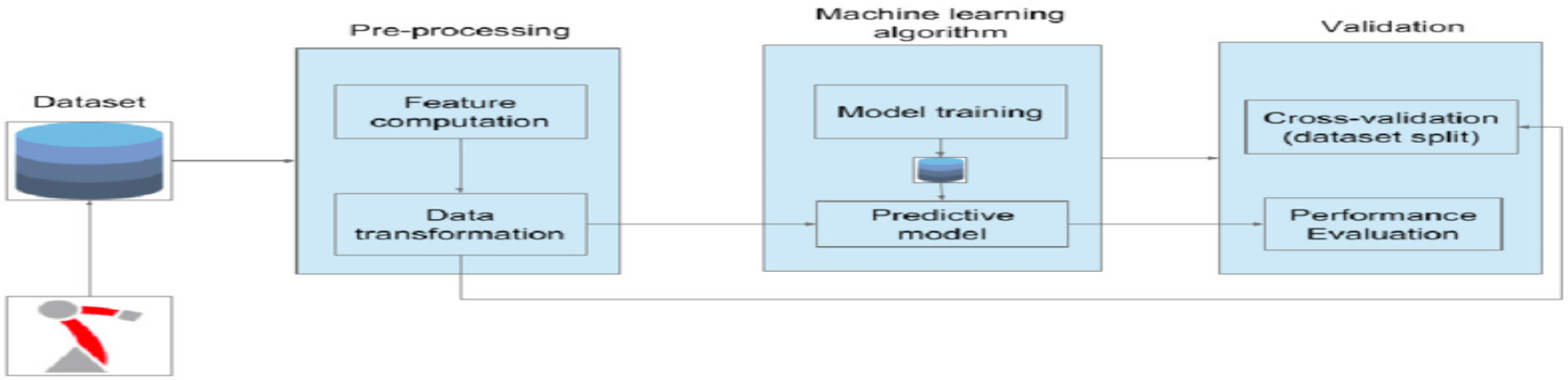
Example: Student Performance Analysis using Data Analytics:

IBM Cognos is used for visualization purposes and the data is stored in DB2 database.

Predictive Analytics is done to assess the performance of the students.

Reference:

https://www.researchgate.net/figure/Architectural-diagram-of-the-student-performance_fig1_283515180



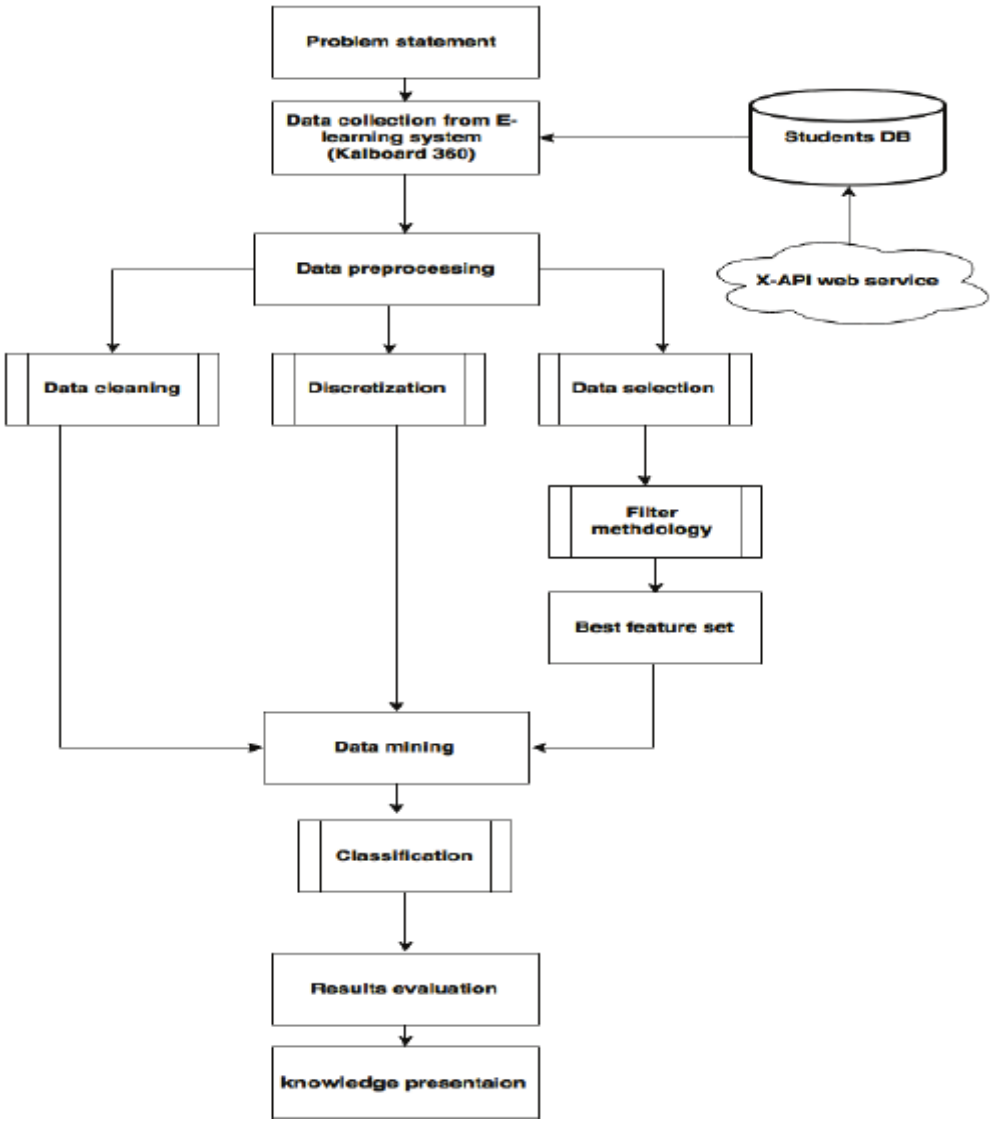

Problem statement
Data collection from E-learning system (Kalboard 360)
Students DB
Data preprocessing
X-API web service
Data cleaning
Discretization
Data selection
Filter methdology
Best feature set
Data mining
Classification
Results evaluation
knowledge presentaion

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 / Angular Js / React Js etc.
2.	Application Logic-1	Logic for a process in the application	Java / Python
3.	Application Logic-2	Logic for a process in the application	IBM Watson STT service
4.	Application Logic-3	Logic for a process in the application	IBM Watson Assistant
5.	Database	Data Type, Configurations etc.	MySQL, NoSQL, etc.
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	Purpose of External API used in the application	IBM Weather API, etc.
9.	External API-2	Purpose of External API used in the application	Aadhar API, etc.
10.	Machine Learning Model	Purpose of Machine Learning Model	Object Recognition Model, etc.
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration :	Local, Cloud Foundry, Kubernetes, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Technology of Opensource framework
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	Microservices Architecture, Distributed Database, Load Balancers, Containerization and Orchestration, Serverless Computing, Caching, Content Delivery Networks (CDNs),

			Asynchronous Processing, Auto-scaling, Database Sharding, Elastic Search, Monitoring and Logging, Scalable Storage Solutions, Content Distribution, Database Indexing and Query Optimization, Horizontal Scaling, Failover and Redundancy
4.	Availability	Justify the availability of application (e.g., use ofload balancers, distributed servers etc.)	Load Balancers, Redundancy, Content Delivery Networks (CDNs), Serverless Computing, Monitoring and Alerting, Database Replication, Data Backup and Recovery, Content Distribution
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	Caching, Content Delivery Networks (CDNs),Database Indexing, Asynchronous Processing, Serverless Computing, Load Balancers, Data Compression, Database Scaling