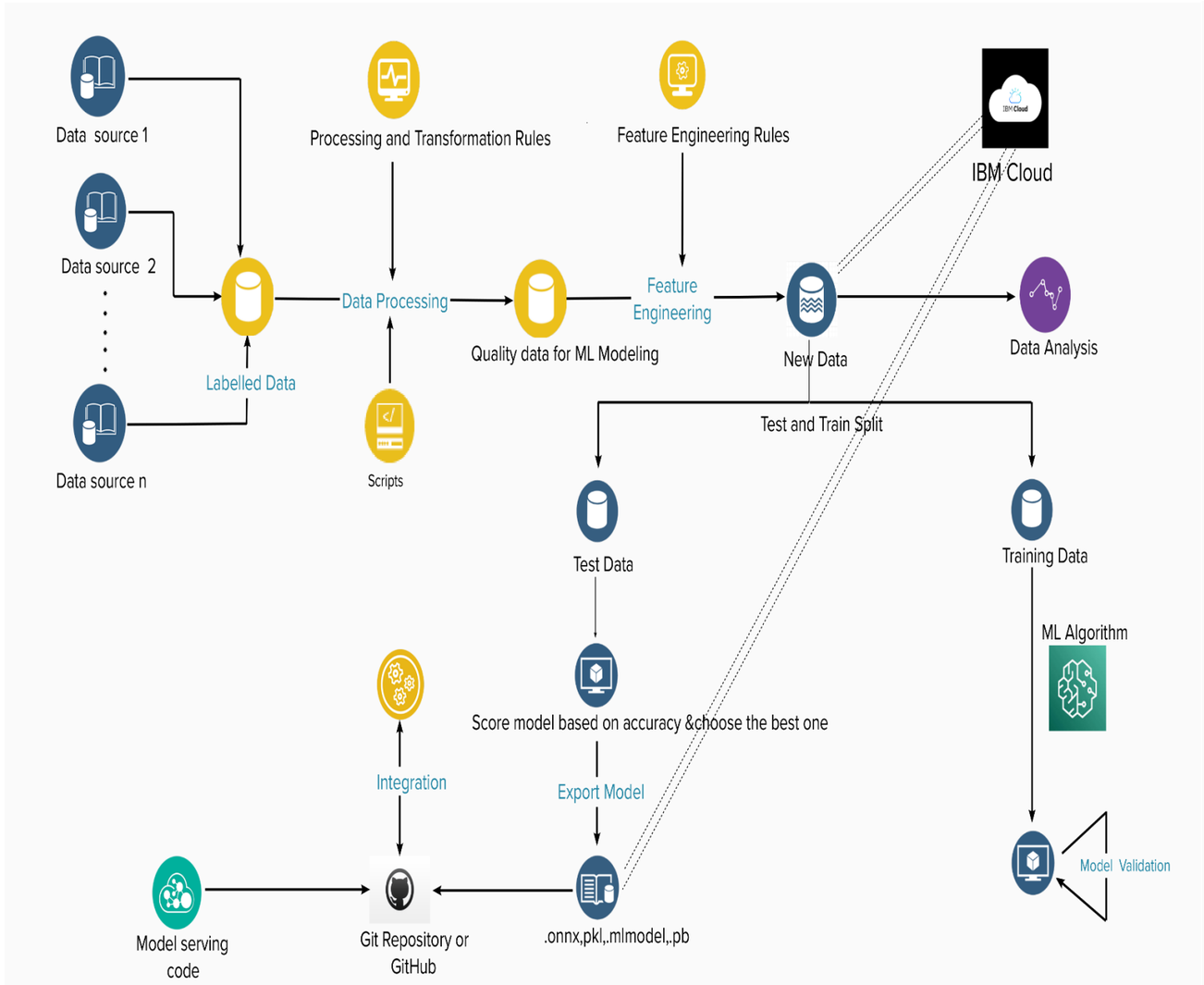
Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	13 October 2022
Team ID	PNT2022TMID05406
Project Name	Exploratory Analysis of Rainfall Data in India For Agriculture
Maximum Marks	4 Marks

Technical Architecture:



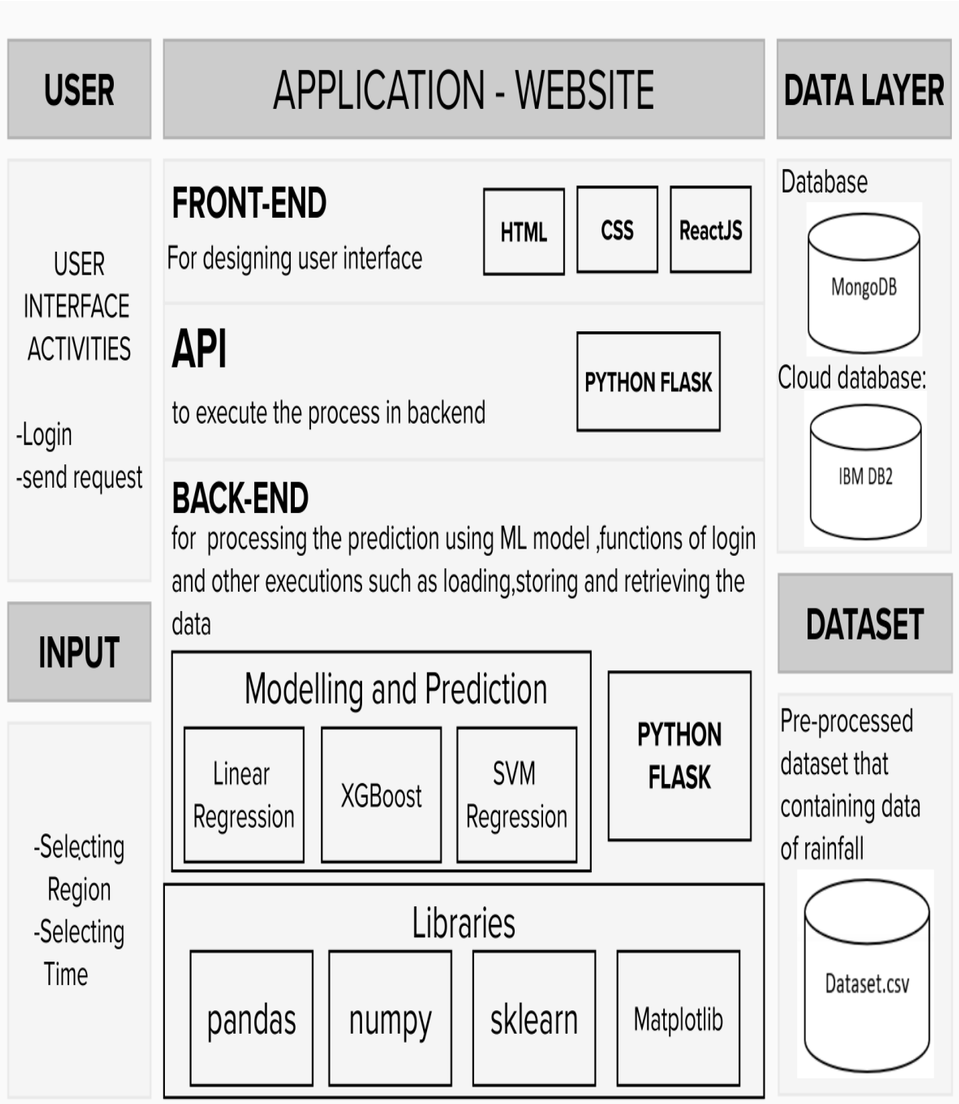


Table-1: Components & Technologies:

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
2.	Database	The place where data can be stored and retrieved during the execution of the application	CSV Store, NoSQL
3.	Cloud database	Used for integrating components while using python flask	IBM DB2, IBM Cloudant
4.	API	Used to call the functions in order to access the execution in another framework	Python Flask , NodeJS (if needed)
5.	Application Logics	Logic for each and every process in the application	Python, JavaScript
6.	Machine Learning Model	The model is developed to predict the rainfall using ML algorithms	Sklearn Regressors, ML Algorithms, XGBoost
7.	Data Pre-processing and Analysis	The available data is formatted or converted into the format which will be suitable for the ML model	Numpy, Matplotlib, Pandas, Seaborn, Geopandas

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Backend Framework, Non-structured Database, CSS Framework styling	Python Flask / NodeJS, MongoDB, IBM DB2, CSS-3
2.	Security Implementations	Email Verification and authentication, Authentication and authorisation using JSON object by comparing the data exists in database	SSL Certs, Direct verification using Backend Framework

S.No	Characteristics	Description	Technology
3.	Scalable Architecture	To ensure that enough resource is allocated on the hosting platform to keep up with demand	IBM Cloud Kubernetes Service
4.	Availability	The website will be made available by hosting it in cloud hosting platforms	Heroku cloud hosting (for testing) , IBM cloud hosting
5.	Performance	Multiple prediction requests should be handled simultaneously without affecting the speed and accuracy of prediction	Load Balancers and Distributed servers

References:

https://c4model.com/

https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/

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https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d