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

Date	03 October 2022
Team ID	**PNT2022TMID46873**
Project Name	Predicting the energy output of wind turbine based on weather condition
Maximum Marks	4 Marks

Technical Architecture:

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

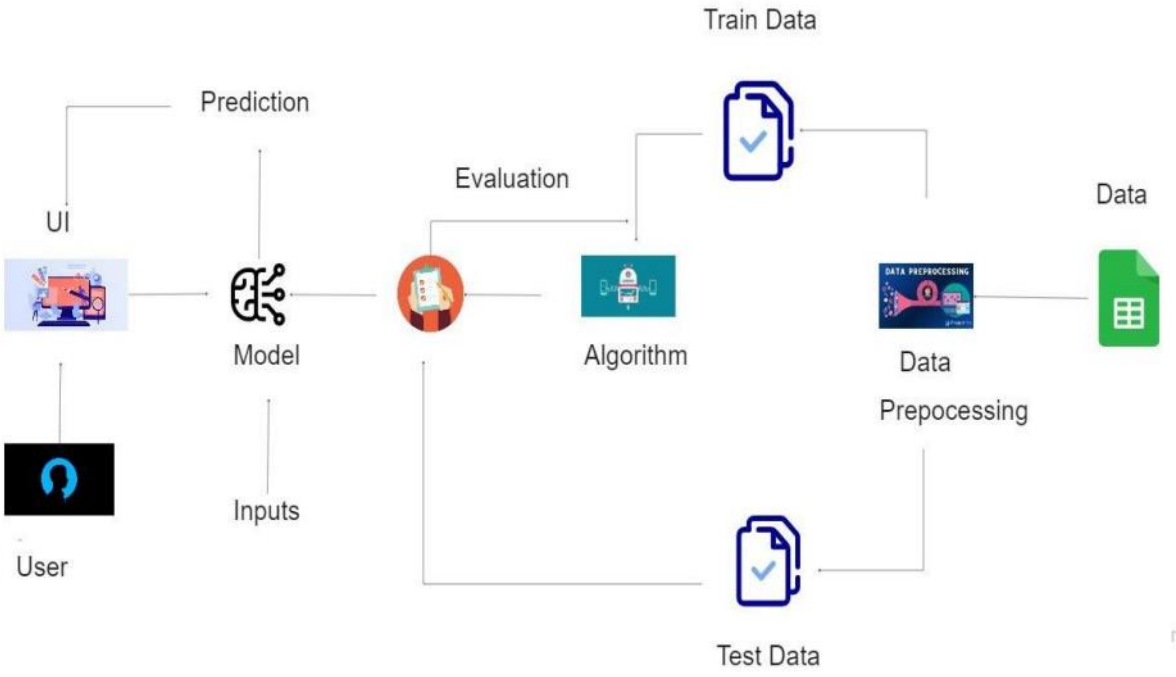

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1	User Interface	Through Mobile app or Web Application the information processed will be sent to the user through message or mail.	HTML, CSS, JavaScript / Angular Js / React Js etc
2	Application Logic-1	Predicting system is developed with a method of combining statistical models and physical models. The inlet condition of the wind farm is forecasted by the auto regressive model.	Machine learning
3	Application Logic-2	Here we can develop the software process like creating a web application/mobile application to interface with users.	IBM Watson STT service

4	Application Logic-3	Here the predicted data is checked with actual output to increase the power output and efficiency	IBM Watson Assistant
5	Database	We can save all the data in SQL or any other database so that the user can retrieve data whenever required.	MySQL, NoSQL, etc.
6	Cloud Database	The database we created and the predefined data's like power output from external API can be combined here and can be stored safely with security for future purpose.	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	With the help of external API only we can know the weather condition and compare with our actualoutput.	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	Prediction of wind output power, etc.
11	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Through our ideas Cloud Server Configuration : Through IBM	Local, Cloud Foundry, Kubernetes, etc

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1	Open-Source Frameworks	MIT App Inventor, Python, Weather App API.	Technology of Opensource framework
2	Security Implementations	Here we are using IBM Cloud and it is the very secured place where we can store the data and retrieve the information whenever needed	IBM Cloud, MIT App Invertor , IBM Watson Assistant
3	Scalable Architecture	Machine learning is becoming an increasingly popular and desirable solution. This work presents a specially designed architecture based on IBM Cloud services for predicting the output power of wind turbine. Used services in IBM a stress test to prove the ability of the developed architecture for data processing was completed	IBM Cloud
4	Availability	Many important features are available in this application instead of using the repaired windmill, we can easily find the fault in windmill by comparing actual output with predicted output through machine learning in python, with this we can improve efficiency by adding components and optimize the condition of windmills and batteries.	Python for data analysis , IBM Watson, IBM Cloud , Weather API'S , Analytics