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

Date	03 October 2022
Team ID	PNT2022TMID51321
Project Name	Crude Oil Price Prediction
Maximum Marks	4 Marks

Technical Architecture:
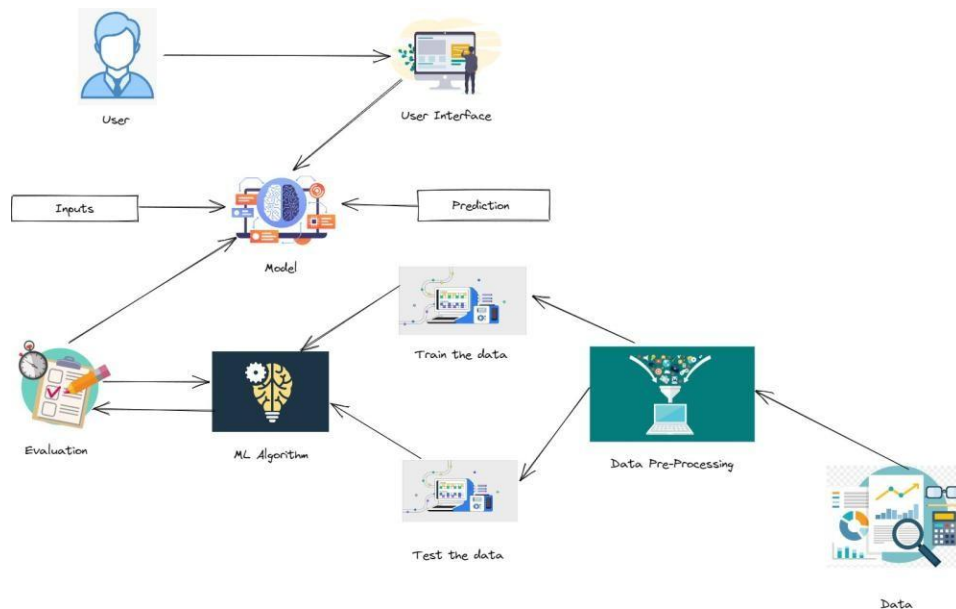
- The data is divided into train and test datasets
- LSTM model parameters are then adjusted to achieve optimal training model parameters based on the training data input
- On the basis of historical data contained in the dataset, this dataset aims to predict future crude oil prices.
- The value of these crude oils to the refinery must be determined on the basis of a comprehensive crude oil evaluation.
- A ML algorithm that's trained on a particular dataset and tested on the same dataset will have a higher accuracy because it knows what to expect
- The user interface allows the user to see the predicted price

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Using the website interface, the user interacts with the application and gets all the information they need	HTML, CSS, JavaScript / Angular Js / React Js etc.
2.	Application Logic-1	In order to implement this logic, it is necessary to extract the desired contents from the dataset.	Python
3.	Application Logic-2	To predict the value, this logic requires training the dataset	Anaconda Jupyter or Google colab
4.	Database	A dataset is downloaded, loaded, and separated into training and testing	Anaconda Jupyter
5.	Cloud Database	Database Service on Cloud	IBM cloud,IBM Watson studio
6.	File Storage	In the cloud environment, massive amounts of data must be processed in real time and stored	IBM Block Storage or Other Storage Service or Local Filesystem
7.	Machine Learning Model	In this method, the user is able to feed a computer algorithm an enormous amount of data, which the computer will analyze and use to make recommendations and decisions based solely on the input data.	Long Short Term Memory(LSTM)

| 8. | Infrastructure (Server / Cloud) | Application Deployment on Local System / Cloud Local Server Configuration: Google server (Collab) | Local, Cloud Foundry, Kubernetes, etc. |

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	A software whose original source code is freely available for redistribution and modification by the user	Python, Google colab, Anaconda Jupyter.
2.	Security Implementations	The IBM Watson studio Application Firewall adds a number of security components not found in most recommended security frameworks. A firewall's architecture relies on a shared library that can be easily updated whenever new security threats occur.	Encryptions, Data isolation,Data protection,Transport layer security (TLS)protocol.
3.	Scalable Architecture	The Python programming language is one of the pioneers of scaling programming languages. Scalability can be improved by enabling or disabling dispatcher services on individual servers to balance the load on a given computer.	Technology used in the architecture is Python with IBM Watson studio

S.No	Characteristics	Description	Technology
4.	Availability	A system's availability refers to its ability to withstand or recover from unusual circumstances, such as a computer failure. Jupyter Notebook is an interactive computing platform based on the web. Among the features of the notebook are interactive code, equations, narratives, visualizations, etc.	Technology used in the architecture is Python with IBM Watson studio
5.	Performance	This step is essential if we want to maximize our benefits with as little effort as possible. The goal of designing for capacity is to determine what hardware is required to perform optimally under the anticipated load of your system.	Technology used in the architecture is Python with IBM Watson studio