

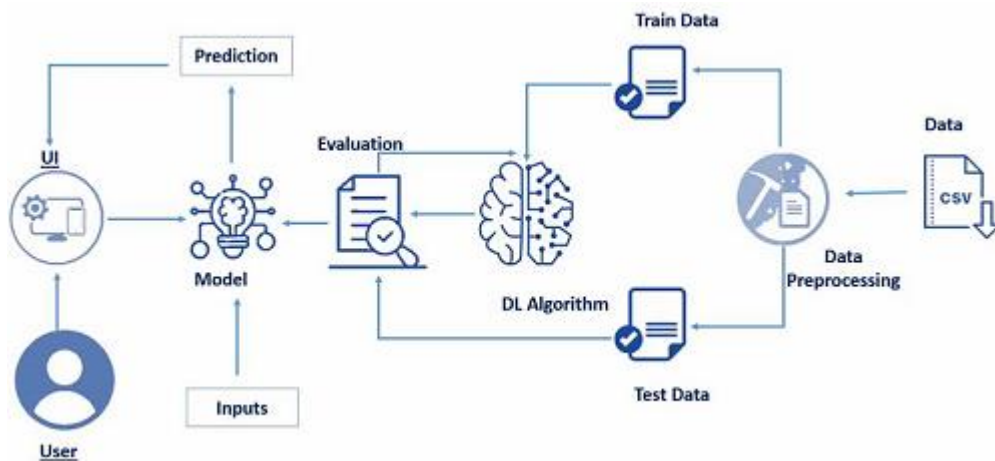
**Project Design Phase-II**  
**Technology Stack (Architecture & Stack)**

|               |                            |
|---------------|----------------------------|
| Date          | 29 October 2022            |
| Team ID       | PNT2022TMID47290           |
| Project Name  | Crude oil price prediction |
| Maximum Marks | 4 Marks                    |

**Technical Architecture:**

The Crack spread is defined as the price difference between crude oil and its refined oil, reflecting the supply and demand relationship between the crude oil market and its refined product market. It used the random walk model (RWM) as a benchmark to compare the crack spread futures and crude oil futures and found the crack future could forecast the movements of oil spot price as reasonable as the crude oil futures

**Example: Except for the influence factors, researchers are also very concerned about the forecast methods for improving forecast accuracy.**



**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<br>Local Server Configuration:<br>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)  | Technology used                                     |
| 4.   | Availability             | Justify the availability of application (e.g. use of load balancers, distributed servers etc.)                            | Technology used                                     |
| 5.   | Performance              | Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc. | Technology used                                     |

**References:**

<https://c4model.com/>

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

<https://www.ibm.com/cloud/architecture>

<https://aws.amazon.com/architecture>

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