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

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| Date | 09 November 2022 |
| Team ID | PNT2022TMID26244 |
| Project Name | Statistical Machine Learning Approaches to Liver Disease Prediction |
| Maximum Marks | 4 Marks |

**Technical Architecture:**

It involves the development of a technical blueprint with regard to the arrangement, interaction, and interdependence of all elements so that system-relevant requirements are met.

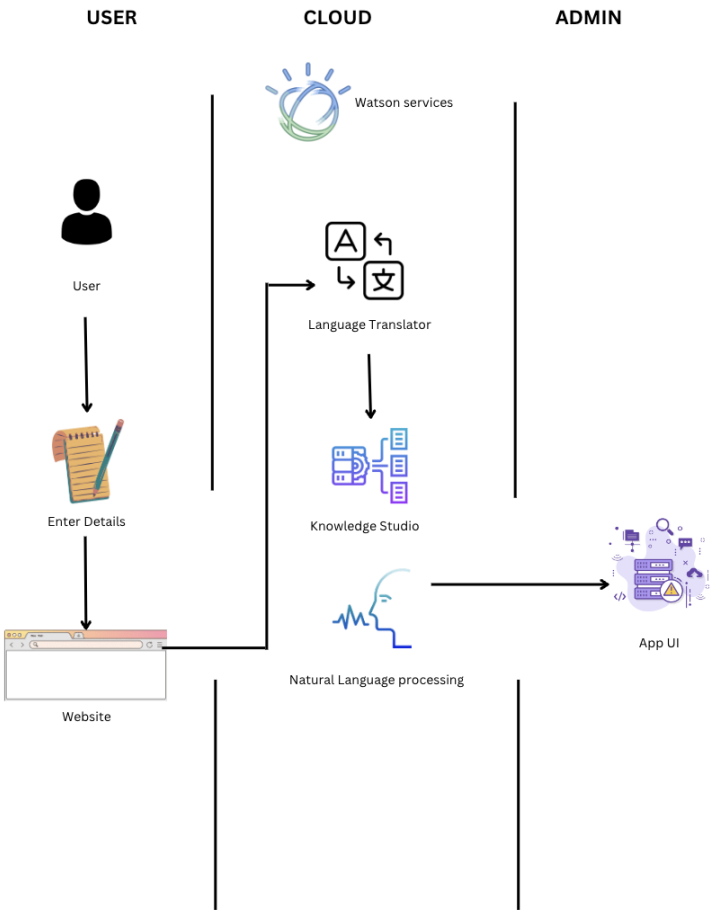

**Table-1 : Components & Technologies:**

| S.No | Component | Description | Technology |
|---|---|---|---|
| 1. | User Interface | How user interacts with application<br>● User interacts with the UI (User Interface) by knowing about their lifestyle changes. | HTML, CSS, JavaScript / Angular Js / React Js etc. |
| 2. | Application Logic-1 | Logic for a process in the application<br>● Python,Python Web Frame Works,Python For Data Visualization. | Java / Python |
| 3. | Application Logic-2 | Logic for a process in the application<br>● Data Preprocessing Techniques,Machine Learning,IBM Cloud,IBM Watson Studio,Python-Flask | IBM Watson STT service |
| 4. | Application Logic-3 | Logic for a process in the application<br>● Data Preprocessing Techniques,Machine Learning,IBM Cloud,IBM Watson Studio,Python-Flask | IBM Watson Assistant |
| 5. | Database | Data Type, Configurations etc.<br>● Dataset from different open sources like kaggle.com, data.gov, UCI machine learning repository etc. | MySQL, NoSQL, etc. |
| 6. | Cloud Database | Database Service on Cloud<br>● Cloud Data Services provides a hybrid, open source-based approach that application developers, data scientists and IT architects seek to address their data-intensive needs and deliver both immediate and longer-term benefits. | IBM DB2, IBM Cloudant etc. |

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| 7. | File Storage | File storage requirements<br>● Scalability.<br>● Cost efficiency<br>● Cloud integration | IBM Block Storage or Other Storage Service or Local Filesystem |
| 8. | External API-1 | Purpose of External API used in the application<br>● An Application Programming Interface (API) allows pieces of code to interact with one another. Developers use APIs to build their websites with specific features, like a Google Maps interface. | IBM Weather API, etc. |
| 9. | External API-2 | Purpose of External API used in the application<br>● API enables interaction between data, applications, and devices. It delivers data and facilitates connectivity between devices and programs. | Aadhar API, etc. |
| 10 | Machine Learning Model | Purpose of Machine Learning Model<br>● Machine learning allows the user to feed a computer algorithm an immense amount of data and have the computer analyze and make data-driven recommendations and decisions based on only the input data. | Object Recognition Model, etc. |
| 11 | Infrastructure (Server / Cloud) | ● Application Deployment on Local System / Cloud.Local Server Configuration:A server configuration defines a specific database as the repository for its data. To prevent corruption, that database can be associated with only one server configuration. However, that database can be used by other applications.<br>● Cloud Server Configuration : Cloud configuration is the process of setting hardware and software details for elements of a cloud | Local, Cloud Foundry, Kubernetes, etc. |

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| | | environment to ensure that they can interoperate and communicate. | |

**Table-2: Application Characteristics:**

| S.No | Characteristics | Description | Technology |
|---|---|---|---|
| 1. | Open-Source Frameworks | List the open-source frameworks used<br>Apache spark,caffe,chainer,deeplearning 4j. | Technology of Opensource framework |
| 2. | Security Implementations | Mobile firewalls are an increasingly vital security tool for enterprise. Firewall provides a end-user devices with an added layer of security.<br>. | e.g. SHA-256, Encryptions, IAM Controls, OWASP etc. |
| 3. | Scalable Architecture | Scalability allows a business to grow and generate revenue without being held back by its structure or lack of resources | Cloud,artificial architecture. |
| 4. | Availability | Elimination of single-points-of-failure; reliable crossover or failover points; and failure detection capabilities. | Disk pools,switched devices,metro mirror. |
| 5. | Performance | Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc<br>A network of servers that distributes content from an "origin" server throughout the world by caching content close to where each end user is accessing the internet via a web-enabled device. | Environment conditions,input/direction,corrective feedback. |