**Project Design Phase-II**

**Technology Stack (Architecture & Stack)**

**Technical Architecture:**

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

**Estimation of crop yield using Data Analytics :**



Data Pre

processing



Agricultural

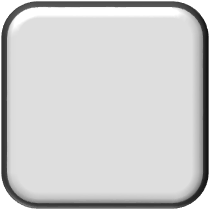
Dataset



Final

preprocessed

data



Train and

test

model



Machine Learning

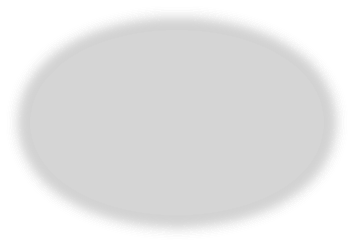
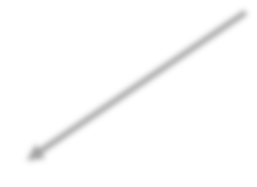
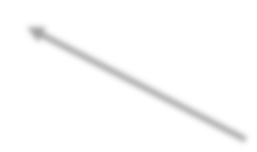
algorithm



Prediction

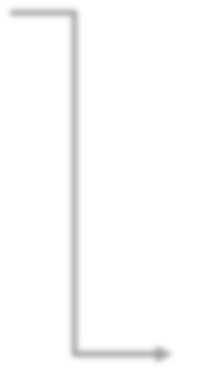


Accuracy



Linear

regression



|  |  |  |  |
| --- | --- | --- | --- |
| **S.No** | **Characteristics** | **Description** | **Technology** |
| 1. | Open-Source Frameworks | Bootstrap is a free,open source front-end development framework | Bootstrap, React etc., |
| 2. | Security Implementations | Improves user experience and provides greater security. | Authentication etc. |
| 3. | Scalable Architecture | A 3-tier architecture wherein application gets data from various sources, manipulates it, stores them in IBM Cloud and Cognos. | IBM Cloud, IBM Cognos. |

**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. |
| 2. | Application logic 1 | Login as a user in the application | Java / Python |
| 3. | Application logic 2 | Login as admin in the application | IBM Watson STT service |
| 4. | Application logic 3 | Login as merchants in the application | IBM Watson Assistant |
| 5. | Database | Data related to crop production in previous and also crop data. | 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 | Weather API are application programming interface that allow you to connect to large databases. | IBM Weather API, etc. |
| 9. | External API-2 | Soil testing is a quick and accurate method to determine the relative acidity of the soil and the level of several essential nutrient needed. | Soil API, etc. |
| 10. | Machine Learning Model | It is mostly used for finding out the relationship between variables and forecasting | Linear Regression |
| 11. | Infrastructure (Server / Cloud) | Application Deployment on Local System / Cloud  Local Server Configuration  Cloud Server Configuration :l1 | Local, Cloud Foundry, Kubernetes, etc. |

**Table-2: Application Characteristics:**

|  |  |  |  |
| --- | --- | --- | --- |
| **S.No** | **Characteristics** | **Description** | **Technology** |
| 4. | Availability | The application is being developed is made available to all users | Cognos Analytics |
| 5. | Performance | Multiple technologies and services that will improve the usability in agriculture activities. | Robots, IOT agriculture sensors. |

**References:**

[**https://c4model.com/**](https://c4model.com/)

[**https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/**](https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/) [**https://www.ibm.com/cloud/architecture**](https://www.ibm.com/cloud/architecture) [**https://aws.amazon.com/architecture**](https://aws.amazon.com/architecture)

[**https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d**](https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d)