

Project Design Phase-II

Technology Stack (Architecture & Stack)

Date	16 October 2022
Team ID	PNT2022TMID35844
Project Name	Project – IoT Based Smart Crop Protection System for Agriculture
Maximum Marks	4 Marks

Technical Architecture:

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

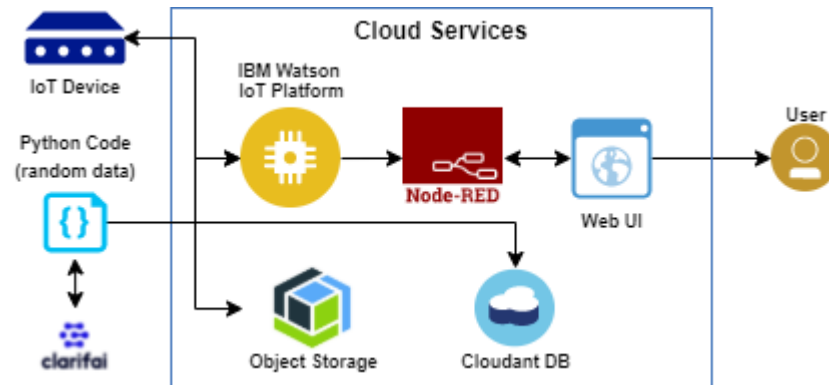


Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	User interacts with the system via Mobile App	Python
2.	Application Logic-1	System is trained to detect animals and birds intrusion into the fields	Clarifai service
3.	Application Logic-2	The device will also monitor the soil moisture levels, temperature, and humidity values and store them	IBM IoT platform
4.	Application Logic-3	Visualizing the soil moisture, temperature, and humidity values	Web application using Node Red services
5.	Cloud Database	Database Service on Cloud regarding location	IBM Cloudant DB service
6.	File Storage	Image URL is stored	IBM Cloud Object storage
7.	External API-1	Detection of animals and birds intruding the field	Clarifai service
8.	Machine Learning Model	Processing the captured images for verifying the presence of animal or bird	Clarifai services
9.	Infrastructure (Server / Cloud)	Display the image in the Node-RED web UI and also display the temperature, humidity, and soil moisture levels. Integrate the buttons in the UI to control the Motors.	Python Script

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Python IDLE , Clarifai Service API, IBM Watson IoT Platform, Node-RED Service , Cloudant DB	Python , IBM Watson , IBM Cloudant.
2.	Security Implementations	IBM Cloud	Image stored in cloud and can be retrieved from Object storage
3.	Scalable Architecture	Extending functionality and features of the system on a regular basis based on customer feedback.	Web App using Node Red
4.	Availability	Can be accessed remotely from anywhere in the world	IBM Iot Platform
5.	Performance	The real time information from IoT devices was used to control the motor and prevent intrusion of animals.	Clarifai service