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

Date	03 October 2022
Team ID	PNT2022TMID35809
Project Name	IOT based Smart Crop Protection System
Maximum Marks	4 Marks

Technical Architecture:

• The Deliverable shall include the architectural diagram as below and the information as per the table 1 & table 2

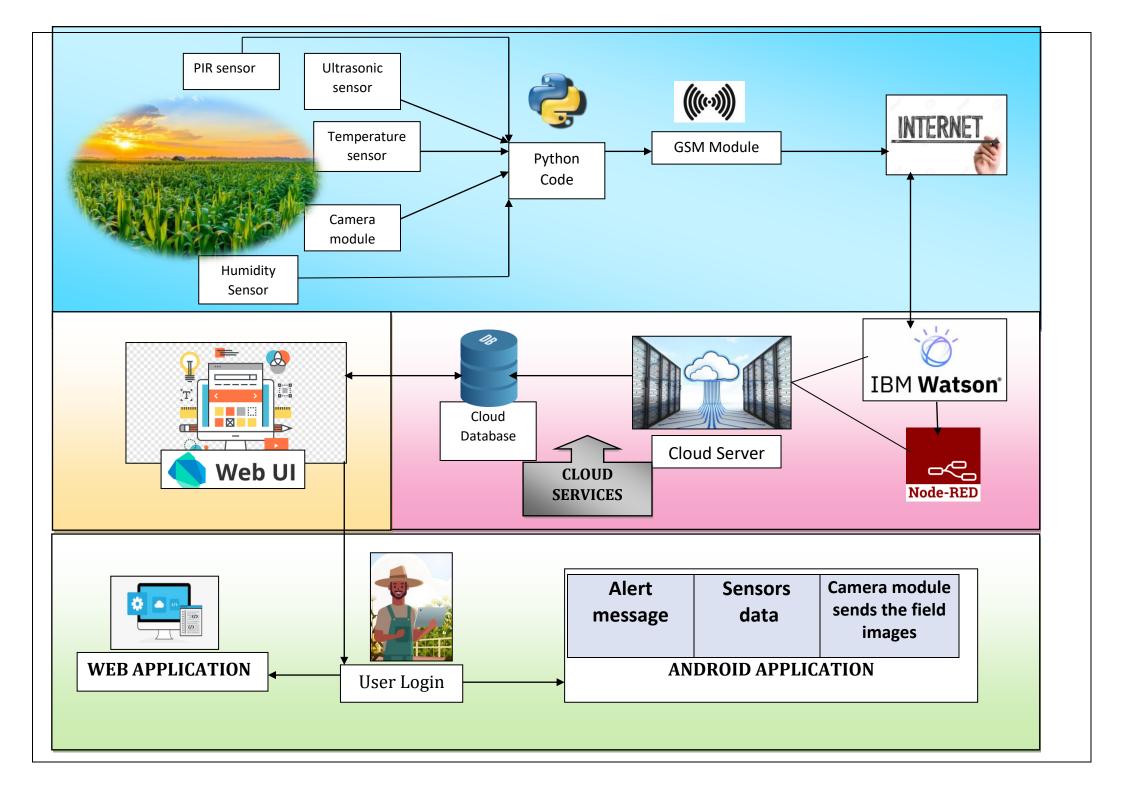


Table-1 : **COMPONENTS & TECHNOLOGIES**:

S.No	Component	Description	Technology
1.	User Interface	User can interact the entire field system through web based UI or app via internet module	HTML, CSS, JavaScript / Angular Js / React Js etc.
2.	Arudino uno / raspberry pi	To interface the data from various system and connecting the peripeheral devices	C++ / Python
3.	Chat bot service	Communication for help and suggestion	IBM Watson STT service
4.	Web server	Node red is used to wiring together all the hardware device.	Node-red, Javascript
5.	Database	Data about the farming field ,climatic condition and water level etc	MySQL
6.	Cloud Database	Database Service on Cloud	IBM Cloudant
7.	File Storage	File storage requirements for storing the sensed information of the field	IBM Block Storage or Other Storage Service or Local Filesystem
8.	Weather API-1(Temperature sensor,humidity sensor etc)	To know the climatic and environment condition.	IBM Weather API
9.	GSM	To intimate the threats immediately and update the field report.	Python/C++
10.	Machine Learning Model and Sensors.	To detect the objects causing threats to field	Object Recognition Model/python/CNN
11.	Maps -external API 2	Used in system to locate the crops	Google maps geolocation API

Table-2: APPLICATION CHARACTERISTICS:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Frameworks used in IBM Watson	Python
2.	Security Implementations	Data encrypted by IBM Cloudant and User password based system protect the entire system	SHA-256,IBMcloudant specific securities.
3.	Scalable Architecture	New features can be added and updation of the system is done based on the development in technology.	python
4.	Availability	The system can access from anywhere and available at all time. Control and maintenance of field through the cloud service.	API ,python ,cloud services.
5.	Performance	Sensors and other integrated device help to sense the data of climatic condition ,soil condition etc to protect the crop cultivation from threats.	IBM cloud services.IBM Watson platform.